IMPLEMENTATION OF MULTILATERAL ENVIRONMENTAL AGREEMENTS IN MALAYSIA

Case Studies : Montreal Protocol, Climate Change Convention And the Biodiversity Convention

by

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University of Wales Cardiff

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And the Biodiversity Convention

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This thesis is submitted to the Department of City and Regional Planning, Faculty of Engineering and Environmental Design, University of Wales in fulfillment of the requirements of candidature for the degree of

DOCTOR OF PHILOSOPHY

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DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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Date: 11 October 1999

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by footnotes and in the appended references.

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STATEMENT 2

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ABSTRACT

This study aims to identify and analyse the factors that affect the implementation of multilateral environmental agreements (MEAs) in Malaysia and the impacts of the implementation on the country. The MEA is one of the instruments of international co-operation to mitigate global environmental problems. It contains formal policy agreements on global environment of many different nations. The MEA is used to translate international environmental co-operation into a local agenda.

As case studies, the research focuses on the implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. The study uses primary and secondary sources of information. Primary sources are mainly from administrative records (official memoranda, minutes of meetings, reports, and speeches), newspapers, interviews and proceedings from the Conference of Parties.

The conceptual framework to be advanced in this study is one which explains the analysis of the implementation process of multilateral environmental agreements. Based on the literature review, a framework for the analysis of the implementation of a multilateral environmental agreement is constructed which identified seven factors believed to influence the implementation of MEA. The factors are grouped into three categories such as agreement structure, governmental factors and implementation instruments.

The study contributes to the greater understanding of international environmental co-operation by identifying the factors that influence the implementation of multilateral environmental agreements in Malaysia. Among the factors that affect the implementation are perceptions, policy makers, the system of government and politics, legal and regulative framework, and the organisational structures.

In this regard, the study also added to the overall understanding of MEA within the context of environmental policy analysis. The findings demonstrate that the formulation (policy making) of the MEA and its implementation process are elements of policy analysis. Both the formulation and implementation of MEAs can be considered as political processes because they are greatly dominated by negotiation, bargaining and compromise right from the beginning of MEA's formulation through reformulation and their implementation.

In conclusion, despite various constraints, Malaysia is shown to have carried out her commitments significantly, taking into consideration her national needs as a developing country and her contribution to overall global environmental degradation.

ABBREVIATIONS

3rdMP	-	Third Malaysia Plan (1976-1980)
4th MP	-	Fourth Malaysia Plan (1981-1985)
5th MP	-	Fifth Malaysia Plan (1986-1990)
6th MP	-	Sixth Malaysia Plan (1991-1995)
7th MP	-	Seventh Malaysia Plan (1996-2000)
ADB	-	Asian Development Bank
AG	-	Attorney General's Chamber
AIJ	-	Activities Implemented Jointly
AOSIS	-	Alliance of Small Island States
AP	-	Application Permit
ASEAN	-	Association of South East Asian Nations
Bernama	-	Berita Nasional Malaysia (Malaysia National News Agency)
BH	-	Berita Harian (daily newspaper)
BM	-	Berlin Mandate
CBD	-	Convention on Biological Diversity
CEMD	-	Conservation and Environmental Management Division
CETEC	-	Centre for Environmental Technologies
CFCs	-	Chlorofluorocarbons
CH_4	-	Methane
CITES	-	Convention on International Trade of Endangered Species
CO_2	-	Carbon Dioxide
CoP	-	Conference of Parties
CP	-	Country Programme
DANCED	-	Danish Co-operation on Environment and Development
DG	-	Director General
DoA	-	Department of Agriculture
DoE	-	Department of Environment
EAS		Environmental Assessment Statement
EIA		Environmental Impact Assessment
DoF	-	Department of Fisheries
DWNP	-	Department of Wildlife and National Parks
EPA	-	Environmental Protection Agency
EPAP	-	Energy Policy Analysis and Planning to the Year 2020 Study
EPU	-	Economic Planning Unit, Prime Minister's Department
EQA	-	Environmental Quality Act

EQC	-	Environmental Quality Council
ExCom	-	Executive Committee
FAO	-	Food and Agriculture Organisation
FACE	-	Forests Absorbing Carbon Dioxide Emission Foundation
FD	-	Forest Department
FELDA		Federal Land Development Authority
FRIM	-	Forest Research Institute of Malaysia
FSD	-	Fire Service Department
GATT	-	General Agreement on Trade and Tariffs
GDP	-	Gross Domestic Product
GEF		Global Environmental Facility
GHGs	-	Greenhouse Gases
GMAC	-	Genetic Modification Advisory Committee
GMOs	-	Genetically Modified Organisms
HC		Hydrocarbon
HCFC s	-	Hydrochlorofluorocarbons (transitional substances)
HFCs	-	Hydrofluorocarbons
ICCBD2	-	Second Intergovernmental Committee for Convention on Biological Diversity
IMP2	-	Industrial Master Plan 2
INC/FCCC	-	Intergovernmental Negotiating Committee for a Framework Convention on Climate Change
INEP	-	Integrated National Energy Planning Study (1990-2020)
IPCC	-	Intergovernmental Panel on Climate Change
IPRs	-	Intellectual Property Rights
ISIS	-	Institute of Strategic and International Studies
IUCN		The World Conservation Union
JI	-	Joint Implementation
LMOs	-	Living Modified Organisms
MAC	-	Mobile Air Condition (Car air-conditioning)
MARDI	-	Malaysian Agricultural Research Development Institute
MEAs	-	Multilateral Environmental Agreements
MECM	-	Ministry of Energy, Communications and Multimedia
MEXCOE	-	Meeting Between the Minister of Science, Technology and the Environment with the State Ministers and Executive Councillors Responsible for Environmental Matters

MHLG	-	Ministry of Housing and Local Government
MIDA	-	Malaysia Industrial Development Authority
MITI	-	Ministry of International Trade and Industry
MLCD	-	Ministry of Land and Cooperative Development
MNCs		Multinational Corporations
MoA	-	Ministry of Agriculture
MoF	-	Ministry of Finance
MOFA	-	Ministry of Foreign Affairs
MoP	-	Meeting of Parties
MOSTE	-	Ministry of Science, Technology and the Environment
MoT	-	Ministry of Transport
MOU	-	Memorandum of Understanding
MP	-	Montreal Protocol on the Substances that deplete the Ozone Layer
MPI	-	Ministry of Primary Industries
MPKSN	-	National Council for Scientific Research and Development
MSD		Meteorological Service Department
NAP	-	National Agricultural Policy
NBD	-	National Biotechnology Directorate
NCI		National Cancer Institute, USA
NEDO	-	New Energy and Industrial Technology Development Organisation,
NEES	-	New England Electric Supply Company
N_2O	-	Nitrous Oxide
NPBD		National Policy on Biological Diversity
NSC	-	National Steering Committee
NST	-	New Straits Times/New Sunday Times
ODP	-	Ozone Depleting Potential
ODSs	-	Ozone Depleting Substances
PFCs	-	Perfluorocarbons
PFE	-	Permanent Forest Estates
RI	-	Research Institute
RIL	-	Reduced Impact Logging
SBSTA	-	Subsidiary Body on Scientific and Technological Advice
SF_6	-	Sulphur Hexaflouride
SMIs	-	Small Medium Industries
SO_2	-	Sulphur Dioxide
TC	-	Technical Committee

TNB	-	Tenaga National Berhad (National Electrical Utility Company)
UKM		Universiti Kebangsaan Malaysia
UNCED		United Nations Conference on Development and the Environment
UNDP	-	United Nations Development Programme
UNEP	-	United Nations Environmental Programme
UNFCCC		United Nations Framework Convention on Climate Change
UNGASS	-	United Nations General Assembly Special Session
UNIDO	-	United Nations Industrial Development Organisation
USEPA	-	United States Environmental Protection Agency
WG	-	Working Group
WMO	-	World Meteorological Organisation

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"States shall co-operate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities..."

(Rio Declaration-Principle 7)

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION TO THE THESIS

The study of environmental management within a country is usually focused on the implementation of national policies and legislation to solve local environmental problems and issues; and the role of local institutions in the implementation process. However, the transboundary nature of environmental problems and issues no longer allows a country to focus only on the mitigation of local environmental problems. The depletion of the ozone layer by chlorofluorocarbons, global warming caused by the anthropogenic emissions of greenhouse gases and the loss of biological resources through massive deforestation are environmental problems that affect almost every country, either directly or indirectly. These environmental changes also contribute to international conflicts whereby the North points to tropical deforestation as a cause of global warming and the South stresses the harmful effects of fossil fuels; hence, the call for a collective global environmental management, involving all countries affected by the environmental problems. However, Hurrell and Kingsbury (1992) argued that collective environmental management poses a severe and therefore politically sensitive challenge because it involves the creation of rules and institutions that embody notions of shared responsibility and shared duties. This will impinge very heavily on the domestic structures and organisations of states that seek to embody some notion of a common good for the planet as a whole.

Under the auspices of the United Nations, international environmental co-operation has been initiated to address these global environmental problems. One of the instruments used in the co-operation is the multilateral environmental agreement (MEA). MEAs are internationally conceived agreements but their implementation is

carried out by individual country Parties using local resources. Wallace (1984) pointed out that a prevalent feature of international co-operation is its reliance on formalising policy agreements in treaties, conventions and written agreements. Hence, she said that commitments become in a sense entrenched in national law and national administrative practice. Sands (1996) iterated that to implement international agreements a state usually needs to develop, adopt or modify relevant national legislation or give effect to national policies, programmes or strategies by administrative or other means. Therefore, the success of international environmental co-operation depends on the ability of the country Parties to implement the MEAs.

In this regard, Malaysia has actively participated in international environmental co-operation by becoming a party to many MEAs. Her contribution to international environmental co-operation therefore depends on her ability to implement the MEAs nationally. Although she is a party to their formation, the implementation of the MEAs does not occur automatically and it has to go through several processes such as the formation of national policies and legislation, and the interdependence of the capabilities of local organisations. Rittberger (1983) contended that in the implementation of global conference diplomacy[1], the acceptance of consensus does not command automatic acceptance within a state, irrespective of its government's position during the conference negotiations and its approval of the outcomes. There is a lack of coherent policy making as regards the implementation of conference outcome because of interdepartmental disagreements and rivalries. The lack of coherent policy making is often exacerbated by multiple channels of special interest articulation and incorporation which at best generate a

1 Global Conference Diplomacy refers to processes of internationally co-ordinated policy-making through negotiations which take place at the regular or special sessions of the main intergovernmental bodies of the UN system [...]

web of cross pressures and at worst produce a stream of counter pressures creating a volatile, if not hostile domestic political environment for the implementation of internationally negotiated policy programmes.

For the above mentioned reasons, the present researcher seeks to investigate Malaysia's implementation of MEAs. In this study attention will be paid to the implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. Related to this, Dowdeswell, the former Executive Director of UNEP, spoke in 1994 of the need to examine further the characteristics of implementation mechanisms, and of the unique features of the law they are designed to implement. She believed this would facilitate the effective implementation of international environmental accords and would result in tangible environmental improvements. However, she added that the principles of "common but differentiated responsibilities" and "equitable sharing of costs and benefits" constitute the essence of the partnership concept within the environmental accords.

Nonetheless, while seeking to maintain global well being Malaysia also needs to protect her national interests. Therefore, it is crucial that she understands the impact of the implementation on her overall development to enable her to plan her future involvement in international environmental co-operation. Furthermore, Malaysia has already been a Party to the three MEAs for more than five years and it is now appropriate to analyse their implementation. This is in line with several implementation theorists who have suggested that five to ten years is required for the intended and unintended consequences of policies fully to reveal themselves (Sabatier, 1986).

This chapter sets out the framework necessary for the study to proceed. Firstly, it briefly describes local environmental problems and the collective effort of the international community to alleviate global environmental problems.

Secondly, the chapter outlines a statement of the problems under investigation and the aim of the thesis.

The chapter then continues with an elaboration of the objectives and the research questions. The research questions are grouped together under the relevant research objectives.

Fourthly, the chapter highlights and builds on several implementation theories and then provides the conceptual framework for an analysis of the implementation process of MEAs.

Lastly, the chapter outlines the overall organisation of the thesis by highlighting the gist of each chapter.

1.2 BACKGROUND

Environmental problems are not new phenomena. Sagan *et al.* cited in Park (1986) reported that deforestation as a form of land management practice had been in existence over the last 4 millennia, while agricultural practices, which led to desertification in the Sahara and Arabia, were carried out as early as 5000 B.C. However, the erosion of biological resources has been high on the international agenda only recently, even though these have been gradually eroded throughout the centuries. In this regard, Silverberg cited in Park (1986) reported that 2 species of mammals were known to have become extinct between 1801-1850, and 30 species became extinct between 1851 and 1900. However, the emergence of new dimensions of environmental problems such as pollution, which is intense and

widespread, is alarming and cannot be ignored. The transboundary nature of these environmental problems has eliminated the demarcation line, which previously seemingly separated localised environmental problems from global problems. For instance, although the loss of forest is confined to a specific locality, it has, in fact, a global effect such as depriving the world of important genetic and biological resources. Similarly, the emission of greenhouse gases, which is not confined to any specific area, disrupts the earth's normal ecological functions and causes global warming and consequent rises in sea level.

The middle of the nineteenth century witnessed a rising level of air pollution, water pollution and land-based pollution. Of the three types of pollution, air or atmospheric pollution seemed to dominate the attention of the international community at the turn of the century. For example, in England, the earliest record of air pollution dates back to the thirteenth century when in 1273 she passed a decree prohibiting the burning of sea-coal in London. In 1850, a Scottish chemist, Robert Angus Smith, discovered that the burning of coal might have caused the high levels of sulphuric acid in Manchester. Later, in 1862, the *Times* reported *"whole tracts of country [...] have been swept by deadly blights till they are barren as the shores of the Dead Sea"*. Consequently, the British Parliament created the Alkali Inspectorate in 1863 and passed the *Alkali Act* to control emissions of acid fumes from growing industry. More recently, the smog in London (December 1952) contributed to 4000 deaths from respiratory and heart disease, and paved the way for the government to legislate the *Clean Air Act* in 1956 (Boehmer-Christiansen and Skea, 1991).

Malaysia also has had her taste of environmental problems going back to the 19th century, attributed to the industrial revolution that took place in the West. The industrial revolution demanded raw materials such as tin. Tin has been mined in

Malaya (Malaysia after Independence) since ancient times; it was recorded in 1649 that about 349 tonnes of tin were exported through Malacca (Fermor cited in Aiken *et al.* 1982). The tin mining industries polluted the water sources by discharging effluents and the disposal of tailings (waste from tin). Therefore, indirectly, the environmental problem then was linked to resource-based degradation activities which, in this instance, was tin mining.

However, it is interesting to note that some of the earliest environmental legislation was designed not to curb the discharge of effluents and tailings but to restrain the utilisation of hardwood in the smelting of tin. For instance, between 1887 and 1898, the states of Perak, Selangor and Negri Sembilan introduced laws banning all furnaces except *relau tongka (*a type of furnace*)*, which does not require high quality hardwood for burning (Ooi, cited in Aiken *et al.* 1982). Hence, instead of protecting the water sources, the legislation protected the forest from degradation. It was only in 1895 that the waterways were protected from pollution from the mining activities. The *Mining Codes* allowed only fine slimes to be discharged into the river and the discharge of tailing was forbidden on virgin land. The water system was also polluted from soil erosion as a result of the agricultural practice of `clean weeding' the rubber plantations which caused heavy siltation in the river system and rendered the paddy land useless. The seriousness of this environmental problem led to the formulation of the *Federated Malay States Silt Control Enactment of 1917* which empowered the State Resident to take action against those people who contributed to the siltation (Aiken *et al.* 1982). The clearing of large areas of jungle to plant these crops had also resulted in the displacement of wild animals, and laws were enacted to protect them. Laws to protect wildlife such as birds of bright plumage had been in place as early as 1884 and the first law to protect the elephant, seladang (wild

buffalo) and rhinoceros was introduced in 1896. Hence, pollution mitigation measures as well as conservation efforts were already in force in Malaysia as early as the 19th century.

As we can see from the above examples, national governments such as Malaysia and the UK have in fact enacted environmental regulations and formulated codes of conduct and guidelines over hundreds of years. Moreover, it has been observed that many governments have increased their commitments to protect the environment. They have devised policies and undertaken specific actions to translate that commitment into practice. Environmental agencies as part of the policy system have mushroomed globally in response to governments' increased recognition of environmental conflict. For instance, in 1972 there were only 25 countries which possessed national environmental agencies, and of these only 11 were in the developing world. In contrast, at present there are over 140 national environmental agencies of which 110 are in the developing world (Wapner, 1995). Expansion in environmental institutions and policy instruments such as environmental laws, which are legislated to ensure enforcement of regulations and standards, have indeed increased.

Meanwhile, efforts at the international level to address global environmental problems seemed to have started as early as 1921. According to Haas *et al.* (1994) there have been about 140 international environmental agreements since 1921. However, it is also recorded that one of the earliest kinds of international environmental co-operation in the form of a multilateral agreement was the *1902 Convention for the Protection of Birds useful for Agriculture, Paris (*Kiss and Shelton, 1991*).* Some international co-operation has not, however, come easily. For example, co-operation between the European States to address air pollution did not

materialised until recently. As early as the nineteenth century, Europe was already suffering from air pollution, yet, it was only in 1979 that the European countries recognised it as an urgent international problem and agreed to sign a convention to mitigate air pollution i.e. the *Convention on Long-Range Transboundary Air Pollution (LRTAP) 1979*. Even then, the Convention came into force only in 1983, demonstrating the laggardly attitude towards it. Boehmer-Christiansen and Skea (1991) reported that it took 16 years before reluctant countries such as the UK were brought within the umbrella of any legally binding international agreement to address the problem of acid rain.

Furthermore, it was not until the late twentieth century that co-operation among members of the international community to mitigate global environmental problems gained momentum. The turning point appeared to come when the United Nations recognised and treated environmental problems as global issues and brought them onto its main agenda. The UN looks upon international co-operation as the principal instrument to mitigate global environmental problems. As a result, the United Nations Conference on Human Environment was held in Stockholm, 1972. Its aim was *"to provide a framework for comprehensive consideration within the United Nations of the problems of the human environment [...] that can only be solved through international co-operation and agreement."*

Since this Conference, the number of countries co-operating to combat global environmental problems have grown in tandem with the number of multilateral environmental agreements. International environmental co-operation culminated with the establishment of UNCED in 1992. Malaysia is one of the countries that actively participated in this effort. Her Prime Minister said at UNCED's inception:

> " We are here to seek ways of achieving sustainable development and of establishing a solid foundation for world-wide co-operation on the environment and development. We appreciate that if anything is to be done towards sustainable development, all countries everywhere must work together" (Mahathir, 1992).

Several years later, adding an international flavour to national planning, the PM tabling the 1999 national budget again proclaimed that the government would enhance co-operation with neighbouring countries to monitor and overcome environmental pollution (The Star, 24/10/1998).

1.3 STATEMENT OF THE PROBLEMS

The history of Malaysia's involvement in international environmental co-operation can be traced back to the 1950s. Ever since November 1957 when Malaysia became a party to her first multilateral environmental agreement (*Plant Protection Agreement for the South East Asia and Pacific Region)* she has continued to participate actively in the international arena to protect the global environment. To date she has signed and/or ratified at least 34 environmental agreements as shown in **Appendix 1**. The negotiation and implementation of these multilateral environmental agreements are carried out by different agencies because each of these agreements deals with different environmental problems and each problem falls under the jurisdiction of different agencies. The multisectoral nature of some of the problems compounds the complexity of the issues. Consequently, each of these agreements is co-ordinated by a leading agency which together with other relevant organisations addresses the negotiation processes and the implementation of these agreements. The involvement of many different agencies points to an ad-hoc

manner of handling international environmental co-operation. This results in the unproductive utilisation of human and financial resources and overlapping or contradictory programmes and strategies. Furthermore, the implementation of the MEAs depends entirely on national policies, legislation and regulations. Policies to address the specific global environmental problems might be in conflict with other existing policies. The legislation to implement the measures might be drawn from an existing Act or might need the creation of new laws.

For a small but complex country like Malaysia, her ratification of many multilateral environmental agreements causes grave concern as to the ability of government to implement these MEAs and monitor their progress. It is also a national anxiety if the implementation of these MEAs affects other development priorities. This anxiety and concern is real, so much so, that the Minister of Science, Technology and the Environment during the 19th Special Session of United Nations General Assembly pointed out that with limited resources, meeting international commitments would put additional stress on Malaysia's capacity to address development priorities (Law, 1997). This concern again surfaced amid the recent economic crisis in Asia. The Minister *said*, "Malaysia will continue to pursue the environmental agenda already agreed according to the international treaties despite the economic turmoil [...] at the moment we are still struggling to comply with the international treaties even with the lack of money [...]" *(*Bernama, 16/9/1998*).*

The investigation on the implementation of MEAs is important to determine Malaysia's contribution to international environmental co-operation. Nonetheless, it is also important to know the impacts of the implementation whether certain development priorities need to be deferred to achieve the objectives of the Agreements. Hence, MEAs must be seen within the overall perspective of

environment and development. In this regard, the Foreign Minister of Malaysia, during the 40th Session of United Nations General Assembly, argued:

> " Environment and development are mutually reinforcing and interrelated. Highlighting environmental issues without a linkage to development will not serve any of our interests. Similarly neither legal instruments nor unilateral measures including bans and distorted campaigns will contribute to our clear and safe world" (Abu Hassan, 1990).

1.4 AIM OF THE THESIS

The aim of the thesis is to identify and analyse the factors that affect the implementation of the three multilateral environmental agreements (MEAs) previously mentioned and to investigate the impacts of their implementation on the country.

By studying the implementation of MEAs in Malaysia, it will be possible to assess the country's commitment to the international community and the various obstacles that she faces in satisfying her commitments. Hence, international environmental co-operation must not be considered to have achieved its objectives once the international community successfully agrees to a multilateral environmental agreement. Rather, the co-operation needs to be visibly active and strengthened. In this study, the implementation of MEAs is the visible yardstick by which to measure co-operation. Here, the measures taken to implement the MEAs are signs that the spirits or principles of co-operation are translated into reality.

1.5 RESEARCH OBJECTIVES

This thesis aims to identify and analyse the factors that affect the implementation of three MEAs and the impacts of the implementation on Malaysia. In order to achieve this aim, specific objectives are laid out. The objectives are to:

(i) Identify the implementation measures that Malaysia has undertaken,

(ii) Determine the factors that affect the implementation process,

(iii) Examine the impact of the implementation of the MEAs on Malaysia's environmental management and development,

(iv) Refine and develop environmental policy analysis; and

(v) Assess Malaysia's commitments to the MEAs and make recommendations for enhanced implementation of MEAs in Malaysia.

1.6 RESEARCH QUESTIONS

The formulation of research questions is an important component of the study. Majchrzak (1984) indicated that the research questions have eventual implications for all studies as they will ultimately determine the methodology employed. She suggested 4 steps to be followed in formulating research questions. The first step is to decide the type of impact desired by the study. The second is to select the aspect of the problem to be focused upon. The next step should identify the malleable variables; and finally, the research questions should be formulated around those variables which are most likely to lead to the desired impact on the aspect of the problem under keen investigation.

In the present study, the research questions need to be formulated to bring about a better understanding of the implementation of MEAs at national level. The research questions also need to address the factors that affected the

implementation. The next step is to look into variables which can be analysed and are amenable to change. In seeking this goal, we need to ask how the relevant policies influence the overall implementation of the MEAs, what factors stop the implementation of a plan, programme or strategy. Is the stoppage due to some law or regulation or is it attributable to the anticipation and perception that the implementation will produce adverse impacts. While seeking to identify the constraints, it is important not to lose sight of the impact of the implementation on Malaysia. It then has to be asked whether the implementation of the agreements will have an adverse impact on the development of the country. Furthermore, do the measures carried out conform strictly to the provision of the agreement or are they an amended version according to the local situation. With these issues in mind, the approach taken will group the research questions under each objective identified earlier as shown below:

Objective I: To identify the measures that Malaysia has undertaken to implement MEAs

Research Questions

(i) What are the policies, programmes and action plans, formulated at the national level required by the agreements?

(ii) Has there been any formulation of new legislation and the establishment of new agencies to carry out specific commitments under the agreement?

Objective 2: To determine the factors that affect the implementation process

Research Questions

(i) Do the existing environmental policies provide and promote the implementation of the agreement?

(ii) Does the presence of a specialised environmental agency, such as the Department of Environment, expedite or hinder the implementation of environmental agreements? At the Ministry level, how does the Ministry of Science, Technology and Environment, as the leading agency in the implementation of all three agreements, co-ordinate other agencies which are under the purview of other Ministers?

(iii) Is the implementation of the agreements affected by the financial resources, human resources and expertise?

(iv) Does the division of power between the federal and state government affect international environmental co-operation? If it does, in what way does it affect implementation? Will a clear demarcation of power provide the impetus to a more effective implementation?

(v) Are there instances in which the federal government has shown itself unable to persuade the state governments to carry out the measures necessary to implement the agreement?

(vi) Has there been any international assistance in technical expertise and funding to implement the agreements nationally?

Objective 3: To examine the impact of the agreements on environmental management and development

Research Questions

(i) What have been the changes in the nature of the country's environmental management since becoming a party to the Agreement?

(ii) Are there any changes in the present organisational structure?

(iii) Are the industrial and private sectors affected by the implementation of the MEAs and how are they affected?

(iv) Does the implementation of the MEAs affect the overall national interest especially other development priorities?

Objective 4: To Refine and Develop Environmental Policy Analysis

Research Question

(i) How does an analysis of the implementation of multilateral environmental agreements provide for the refinement and development of environmental policy analysis? Are the findings from the study sufficiently comparable to allow the development of analytic scheme for multilateral environmental

agreement implementation that are useful in directing theoretical and empirical work.

Objective 5: To Assess the Commitments and Make Recommendations to Enhance Future Implementation of MEAs

Research Question

(i) The implementation of the MEAs needs to be assessed to determine the gap between those measures required by the agreement and the actual measures taken. This is to improve future implementation. Moreover, measures carried out might be different from the requirements of the agreement. Hence, the assessment should include an estimation of Malaysia's international commitments compared to her national interests and the extent of these commitments compared to her own contribution to global environmental degradation.

1.7 CONCEPTUAL FRAMEWORK

1.7.1 Introduction

Bell (1993) pointed to a theoretical or analytical framework as the basis for the analysis and interpretation of data. According to Aaron and Lamm cited in Majchrzak (1984), the development of a model avoids criticism of the research as lacking clarity and understanding of the issues addressed, and possessing too simplistic an analysis and poorly defined foci. Cohen and Manion cited in Bell (1993) argued that the term 'model' is sometimes used interchangeably with the word 'theory'. They explained that both (model and theory) might be seen as explanatory devices or schemes having a conceptual framework. In relation to this, Nachmias

and Nachmias (1984) regarded a conceptual framework as a series of descriptive categories, which have been systematically placed within a broad structure of explicit as well as assumed propositions. In simple language, Miles and Huberman (1984) described a conceptual framework as one which explains, either graphically or in narrative form, the main dimensions to be studied, i.e. the key factors or variables and the presumed relationships between them.

The conceptual framework to be advanced in this study is one which explains the analysis of the implementation process of multilateral environmental agreements. The analysis of the implementation process of multilateral environment agreements is instrumental in the understanding of international environmental co-operation. However, before we proceed to conceptualise the analysis of implementation process of MEAs, there is a need to look first into the theoretical aspects of co-operation. This is because multilateral environmental agreement is a product of co-operation between nations. Hence, we need to define co-operation and the basis on which it emerges.

1.7.2 Co-operation

Jervis (1987) believed that in some cases of co-operation one interaction leads to further co-operation. Some types of co-operation can change a situation facing the actors and their beliefs in such a way as to make further co-operation more likely. He went on to define co-operation as usually doing what the other actors prefer. However, he believed that for decision-makers, the question of co-operation or defection never arises, the important thing is what goals to seek and the tactics that will be most apt to attain them.

Axelford (1984) explained the concept or behaviour of co-operation through his investigation of individuals, who pursue their own interest without the aid of a central authority to force them to co-operate with each other. In this instance, he suggested that it was the chance that players might meet again in the future that made the likelihood of such co-operation possible. Accordingly, he argued that co-operation requires individuals to have a sufficiently large likelihood of meeting again so that they have a stake in their future interaction. Thus this points to the concept of reciprocity as the basis of co-operation. Friendship according to him is not necessary but rather it is its durability that is necessary for co-operation to evolve.

Transposing this situation into the global context, a similarity can be seen in that nations interact without central authority. The presence of the UN or other subsidiaries such as UNEP in the negotiation process cannot be construed as an authority that forces nations to co-operate. UNEP only plays a role in co-ordinating and initiating such co-operation with no coercive power to force sovereign nations to co-operate into agreeing to an international convention or treaty. Hence, it can be observed that such co-operation is based solely on a nation's own free-will either to pursue their own interest or to act in the expectation of some benefit in a future encounter. This argument is completely opposite to Hobbesian theory which states that co-operation cannot develop without a central authority.

However, in contrast to Axelford's (1984) view, there are those who argue that self-interest is a major factor explaining why nations resist co-operating especially when the environment is looked upon as global-property or public goods. Slouka (1972) explained such a position by highlighting the relationship between the environment as public goods and co-operation. Here, the economic theory of public goods is used to support the argument that national propensity to international co-

operation will be low if the public goods (environmental enhancement) obtainable through co-operation can be acquired without participating in the co-operation. Hence, as Barret (1991) suggested, there are strong incentives for government not to co-operate because every user will earn even higher returns by free riding on the virtuous behaviour of the remaining co-operators.

Within international politics, Jervis (1987) classified perceptions and values together with self-interest as psychological impediments to co-operation. According to him co-operation is decreased by other aspects of the ways in which people think. People do not mechanically reciprocate conciliation. Instead, their behaviour is mediated by their analysis of what the other did and why they did it [perception]. The interpretation of another's action is rarely self-evident, but is almost always important. Hence, from the above it would seem that Jervis did not agree with Axelford's concept that reciprocity was the basis of countries' co-operation.

Perception was regarded by Hogwood and Gunn (1984) as an important element in the policy-making process. Perception was looked at in conjunction with a problem which existing policies failed to either cope with or for which no policy stance had yet been adopted. How the problem was defined, depended very much on how it was perceived. Hence, perception is a process in which individuals or groups attach particular meaning and significance to events or other forms of external stimuli. Allison cited by Hogwood and Gunn (1984) defined perception as a highly subjective process, it therefore follows that different individuals, groups or interested parties may perceive the same stimulus differently through different conceptual lenses. According to Carrol (1988) since perception equals reality in the context of politics and diplomacy, if people perceive that damage is being done to them, a transboundary environmental problem exists, regardless of whether or not

there is real environmental damage or cost. The conduct of international environmental diplomacy thus represents an attempt to resolve such transboundary/transnational environmental problems to the satisfaction of the government concerned.

1.7.3 Implementation

Before we attempt to develop a model for the analysis of the implementation of MEAs, we require greater understanding of the meaning of `implementation'. This is because `implementation' evokes a variety of meanings. Some regard implementation as part of the policy-making process. Others consider implementation as the end product of a policy making cycle which is a separate entity, disjointed or set apart from the policy making process. Hyder (1984) defined implementation as putting policies into practice that includes the complex process of planning, organisation, co-ordination and promotion. All these are for achieving the policy objectives. Hence, without implementation, policy remains as a set of formal legal text and declamatory statement (Kiss, 1992). Hyder then put forward an "evolutionary model" to explain the policy process and implementation. He called the model evolutionary because he believed that through the process of implementation, the initial policy takes on a new form. However, this does not mean that there is an improvement over the earlier policy. In this regard, Wallace (1984) described implementing policies across national boundaries as evolutionary because a different species of policy process may be emerging in response to changes in the policy environment.

Ferreira (1993), when discussing compliance with international law, separated implementation from enforcement. He defined implementation as the formal process of adopting national measures giving rise to international legal obligations. The measures include developing national legislation, inventories, and fulfilling reporting requirements. Meanwhile, Donelan cited in Wallace (1984), secured a place for `implementation' in international co-operation when he stated that international co-operation lacks the power, authority, legitimacy and structures on which policy-makers within states rely so heavily *to give effect* to their policy decisions. The words `to give effect' mean `implementation' according to Webster's Dictionary while the Oxford English Dictionary defines `implementation' as to execute, to accomplish and *`to give effect'*. Wallace (1984) qualified what she meant by implementation when she stated that implementation is assumed to encompass not merely the adoption of an international agreement within domestic law but is frequently also an active process of making something operationally effective.

In linking implementation with policy-making, Hill cited in Lewis (1984) described implementation as a `chain' within which issues are increasingly solidified and it is sometimes difficult to say where policy-making stops and implementations begins. Barrett and Hill (1984) again argued that implementation must be regarded as an integral part of the policy process rather than an administrative `follow on' from policy making. More recently, Hill (1997) reiterated that there has been a dangerous tendency to separate implementation issues from policy-making issues whereas it is more important to understand the inter-relationship between implementation and policy-making issues.

Barrett and Hill (1984) extended the study of implementation to cover not only the behaviour of actors in their organisation roles and settings but to include the relationship between groups of actors in inter-organisational settings. They believed the relationship between actors was pertinent to the implementation process. Pressman and Wildavsky (1973) put forward the concept of implementation as an inter-organisational process focused on relations between organisations. They believed that implementation frequently involved exchanges between organisations at different levels of government, or between the centre and the periphery or between the public and private sectors. They argued that the presence of many linkages between the central government (policy maker) and the local authority (implementor) could undermine effective action. In this regard, Sharpf cited in Hanf (1982) argued that policy implementation is not the concern of a single hierarchical integrated organisation but depends rather on the collaboration of a number of independent organisational units from the private and the public sectors.

Lane (1995) introduced the human element into the implementation process. He suggested that implicit in implementation theory is the idea that actors who decide on policy are different from actors who are responsible for the implementation of policy. Related to this, Weale (1992) added professional expertise as another dimension of the human factor affecting policy making and its implementation. He implied that differences in background of actors resulted in them not having the same understanding of problems and consistency of definition. For instance, environmental scientists are not expected to have the same understanding as engineers or lawyers, nor should we expect consistency of interpretation across experts from different national policy systems.

Sabatier and Mazmanian (1981) defined implementation as the carrying out of a basic policy decision usually made in a statute. According to these authors, the decision should ideally identifying the problem(s) being addressed, the objectives to be pursued and structure the implementation process. They then described the process of implementation in a number of stages as follows: firstly, the process begins with the passage of a basic statute. It is then followed by policy outputs (decisions) of implementing agencies and the compliance of target groups with these decisions. The process then embodies the actual impacts of those outputs; both intended and unintended, and the perceived impacts of agency decisions. Finally, the process includes important revisions (attempted revisions) in the basic statute.

In addition to defining the implementation process, Sabatier and Mazmanian believed that the crucial role of implementation analysis was to identify the factors affecting the achievement of statutory objectives throughout the entire implementation process. These authors identified the factors that affected the implementation process as independent variables and divided them into three categories. Firstly, the implementation process is affected by the tractability (versatility) of the problems being addressed by the statute. The implementation process is more successful if the problem is more versatile or easily overcome. For instance, when there is technology available to overcome the problem or assist mitigation measures to contain the environmental problem, then implementation of the statute or policy will be easier.

Secondly, implementation is also affected by the ability of the statute to favourably structure the implementation process. For instance, if the objectives of the statute are precise and clear, they will serve as indispensable aids in programme evaluation and as unambiguous directives to implementing officials. Hence, there will

be no delay in the implementation. Implementation is also enhanced if there is a valid causal theory. A valid causal theory means that the principal casual linkages between government intervention and the attainment of the programme objectives are understood. The officials responsible for implementing the programme must have jurisdiction over a sufficient number of the critical linkages to actually attain the objectives. However, Sabatier and Mazmanian recognised that statutes often do not structure the implementation process very coherently. This is particularly true at the federal level. They attributed inconsistency to among others, the heterogeneity of interests, the diversity of limited activities, constitutional and political incentives towards implementation by state and local agencies, and the assignment of the implementation to sympathetic agencies.

Lastly, Sabatier and Mazmanian believed that non-statutory or non-legal variables also affect the implementation process. These variables are identified as socioeconomic conditions, technology, attitudes of sovereigns, commitment and leadership of agency officials. For instance, socioeconomic conditions can affect the perception of the relative importance of the problem addressed by a statute such that other social problems become relatively more important. Hence, the resources allocated to address such problems will diminish and delay the implementation process.

After identifying the independent variables which affect the implementation process, Sabatier and Mazmanian (1981) proceeded to classify the various stages in the implementation process itself. They classified the stages in terms of dependent variables. With regard to the first variable (policy outputs of implementing agencies), they believed the translation of statutory objectives into policy outputs such as regulations, specific adjudicatory (permit, licensing) decisions and the enforcement of

these decisions to be exceedingly problematic processes. This is because the processes involve the personal and professional conceptions of officials and various implementing agencies with varying degrees of commitments.

According to Sabatier and Mazmanian, the second variable (compliance with policy outputs by targets groups) can only be achieved, for instance, through a variety of sanctions provided by the statute and resources made available to implementing agencies to monitor non-compliance and enforcement.

Sabatier and Mazmanian believed that the third variable (the actual impact of policy outputs) can be achieved if the policy outputs are consistent with the statutory objectives; the target groups comply with those outputs; there is no serious subversion of policy outputs, and the statutes incorporate a valid causal theory linking behavioural change in target groups to the achievement of mandated goals. However, they indicated that there might be substantive impacts not envisaged in the statutory objectives due to changing socio-economic conditions or technologies. Hence, they divided actual impacts into intended and unintended impacts.

Lastly, Sabatier and Mazmanian identified perceived impacts as the fourth variable. While actual impacts are defined as those which conform to statutory objectives, perceived impacts are those which conform to both the statutory objectives and the values of relevant political elites.

Other authors further elaborated several of the factors identified by Sabatier and Mazmanian. For instance, Hogwood and Gunn (1984) suggested that the intractable nature of new problems might be the reason why these were not on the political agenda. They maintained that the effect of creating new demands without providing the necessary resources for corresponding solutions might create additional strains on the political system. Using the political approach to

implementation, Hogwood and Gunn (1984) described the term political to include not only party politics but also patterns of power and influence between and within organisations. They explained that even if one government body is subordinate to another they are often interdependent because in any pair of public organisations each is likely to want something from the other. Hence, each is likely to have at least some discretion over implementation and some bargaining power in its relationship with the other. Where more than two organisations are involved the scope for discretion may be higher.

However, Rhodes cited in Hogwood and Dunn (1984) argued that interdependence does not mean that all organisations have similar resources or are equally powerful. The notion of interdependence is compatible with asymmetry in the resources available to the organisations. For instance, central government clearly has access to legislative resources not available to local authorities and can use these not only in relation to the implementation of a particular policy but to change the 'rules of the game'. Nonetheless, the normal condition of mutual interdependence means that where there are actual or potential differences of view, the government body wishing to promote the implementation of a policy will have to exercise political judgement as to which strategy is most likely to improve the chances of implementation.

Barrett and Hill (1984) reiterated the importance of politics in influencing implementation. They considered the political process as one where policy is mediated, negotiated and modified during its formulation, and legitimised, and does not stop when initial policy decisions have been made. The political process continues to influence policy through the behaviour of those responsible for its implementation and those who are affected by the policy and act to protect and

enhance their own interests. They concluded that the process of implementation is essentially a political process characterised by negotiation, bargaining and compromise between those groups seeking to influence (or change) the actions of others, and those upon whom influence is being brought to bear. The elements of policy making, implementation and politics were linked together by Jordan (1998). He suggested that policy making and implementation are interconnected through politics. He believed that the implementation process involves political interaction between those who frame the policy and those charged with implementing it.

Within the context of international environmental co-operation, the implementation of multilateral environmental agreements is the process of putting in place laws, activities, and institutions to meet obligations of the agreements. The MEAs contain formal policy agreements of many different nations on global environment and the MEAs require country Parties to implement the policy agreements by translating them into national policies, legislation and plans of action. As stated earlier in the chapter, the implementation analysis pursued by this study, is to identify and analyse the factors that affect the implementation process. The study is concern on the manner these factors affect the implementation process. Hence, the study does not proceed to analyse the enforcement elements especially the enforcement of the legal instruments. Here again, within the perspective of the MEAs, enforcement is about sanctions and incentives to entice country Parties to comply to the MEAs whereas as stated earlier in the paragraph, implementation of MEAs is to put in place the various measures to meet the international obligations of Malaysia as a country Party. Furthermore, the three MEAs under study do not provide any enforcement provisions to ensure

that country Parties complied with the objectives of the Agreements.

1.7.4 Framework for the Analysis of the Implementation of a Multilateral Environmental Agreement

Foure (1988) believed that the implementation problems of MEAs have great similarity with the implementation of environmental policy. In addition, a multilateral environmental agreement can be regarded as a statute within its own right. A statute as defined by the Oxford Dictionary is a law passed by Parliament or a similar body. An MEA on the other hand, is negotiated and agreed by an intergovernmental committee consisting of representatives of sovereign nations. Once the Convention is adopted, the Conference of Parties (CoP) becomes the supreme body of the Convention, having the mandate to amend, and oversee its implementation. The CoP is made up of sovereign states. Hence, instead of a Parliament, it is an intergovernmental committee which `adopts ' the MEA. Later, its role will be taken over by the CoP which, as stated above, will pass any necessary revision or amendment of the MEA besides monitoring its implementation.

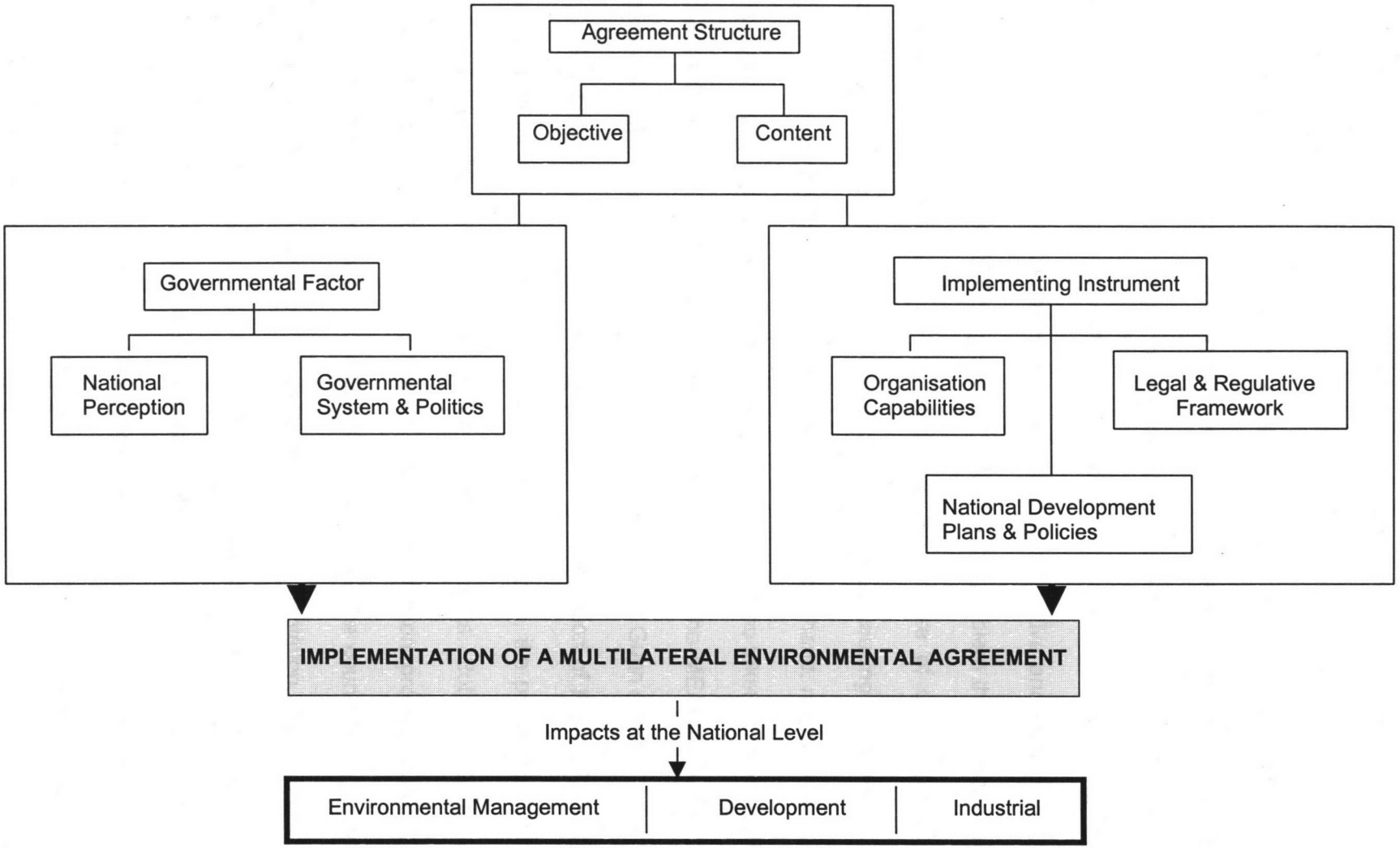
For all purposes and intentions the MEA is similar to a national environmental statute in that it addresses the problems, stipulates the objectives and structures the implementation process. However, it involves a two-tier approach to implementation. While a national environmental policy or act involves one level of implementation, a multilateral environmental agreement needs further construction of national policies and legal instruments to ensure its implementation. For instance, a national agricultural policy does not require another national policy to implement it. However, an MEA needs other policies and legislation to transpose it into a national framework. For example, the Convention on Biological Diversity needs a national

biological diversity policy to provide the direction for its domestic implementation and local laws and regulations to ensure its implementation.

This is supported by Wallace (1984) who described implementation of a MEA as its adoption within domestic law and an acute process of making it operatively effective. She puts forward 4 factors which are preconditions of implementation which enable an international agreement to be translated into actual inputs, namely: self interest; the role of the law; the reliance on negotiations by consensus; and encapsulation of co-operation within relatively closed groupings of policy makers. In another development, Collins and Earnshaw (1993) described the implementation of EC environmental legislation as comprising 3 stages, specifically: the transposition into national law by means of introducing and adapting national policies, legislation, and administrative mechanism to conform with the EC law; legal transposition should lead to practical and measurable impact; and the enforcement and monitoring mechanisms which should exist to ensure the implementation is accurate and complete. The description provided by Collin and Earnshaw was on EC environmental legislation but for the purpose of this study, EC environmental legislation is a multilateral environmental agreement within a smaller context (regional instead of global).

The framework for the analysis of the implementation of MEAs is constructed to put in place the factors identified to affect the implementation process, and to illustrate their linkages within the whole process. Using the various literatures on the implementation process, the present researcher puts forward a framework for the analysis of factors that affect the implementation of a multilateral environmental agreement as shown in **Figure 1.1** overleaf.

Figure 1.1: Framework for the Analysis of the Implementation of A Multilateral Environmental Agreement



The framework identifies seven variables that affect the implementation of MEAs. The variables are as follows: the objective and content of the agreement; national perception and the governmental system and politics; and organisation capabilities, legal and regulative framework, and national development plans and policies. The framework arranges all the variables within the three categories: the agreement structure, governmental factor and implementing instrument. The agreement structure is made up of two variables; the objective and content of the agreement. The objective of the agreement refers to the problem that it addresses. The problems in the context of this study are the release of ozone depleting substances, anthropogenic emissions of greenhouse gases causing global warming and the loss of biological diversity. The content on the other hand, refers to the text of the agreement, which specifies the measures that need to be taken. The versatility or complexity of the problem affects the implementation of the MEAs as explained earlier by Sabatier and Mazmanian (1981); and Hogwood and Gunn (1984).

The second factor believed to affect the implementation of the MEAs is the governmental factor. The factor is made up of two variables, the perception of the policy makers, and the system of government and politics. Both variables are expected to influence the early stage of the implementation process since the perceptions of the nation towards the MEAs will determine the country's negotiating mood and hence the subsequent progress of the implementation. The system of government and the politics of the subject are further expected to affect the implementation of the MEAs by erecting boundaries within which the implementation agencies are expected to operate. The influence of perception and politics on the implementation process was explained earlier by Jervis (1987), Hogwood and Gunn (1984) and Carrol (1988).

The third factor is the implementing instrument, which is made up of three variables: the legal framework, organisation capabilities and national development plans and policies. The national development plans and policies provide the direction, strategies and plans of actions to carry out the national commitment. The legal framework is responsible for transposing the legal requirements of the agreement into local laws and regulations, and the organisation capabilities ensure the strategies and plans of actions are successfully carried out.

The framework also lists the types of impacts the study also seeks to analyse. Sabatier and Mazmanian (1981) highlight both the actual and perceived impacts of the implementation. As stated previously, these are further divided into intended and unintended impacts. It is one of the main concerns of this study to analyse both the intended and unintended impacts of the implementation of MEAs on Malaysia's environmental management, industrial growth and overall national development.

The framework established for the analysis of the national implementation of the MEAs was structured to suit a top-down approach of implementation analysis. In this study, the analysis of the implementation of the MEAs in Malaysia is more of a top-down approach. It starts with policy decisions by the federal government and proceeds with questions such as to what extent were the factors affecting with the objectives of the policy decisions and how is the impact of the implementation affect the implementation process. The factors identified in the literature and subsequently organised into the framework are associated with federal government's mechanism to implement the MEAs. This framework will be refined in the concluding chapter after taking into consideration the findings of the study.

1.8 ORGANISATION OF THESIS

Chapter One introduces the study by firstly providing the background to the thesis. It illustrates local environmental problems which soon become transformed into global issues requiring the co-operation of the international community. Under the heading " statement of the problems", the chapter introduces the reasons for embarking on the study and subsequently the aim of the thesis is provided. The chapter also highlights the five research objectives and the research questions to investigate in-depth the implementation of the MEAs. Lastly, it describes the framework utilised in the study to analyse the implementation of the MEAs, identifying seven variables affecting their implementation and the intended and unintended impacts on environmental management, industrial growth and national development.

Chapter Two looks into existing literature on multilateral environmental co-operation. This chapter includes references to environmental policy, causes of environmental degradation, categories of environmental law, multilateral environmental agreements and perceptions of countries toward the various MEAs. The literature review reveals the various factors that influence multilateral co-operation. Consequently, the constraints and limitations faced by country Parties trying to implement the agreements will be identified.

Chapter Three discusses environmental management in Malaysia and provides the structural context for the study. It examines the structure of relevant organisations, the nature of the government system, the objectives of environmental policies and legislation related to environmental management. It also seeks to relate the framework referred to in an earlier chapter to the national management of local environmental issues and global environmental problems, identifying any existing

gap.

Chapter Four details the research methodology addressing the research strategy, sources and types of data collected, analysis procedure and limitations of the study. The research strategy provides reasons for the usage of the case study method and the criteria used to select the three MEAs. It outlines the strategy used in the interviews.

Chapters Five, Six and Seven concentrate on the three MEAs under investigation. Chapter Five focuses on the analysis of national implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer. Chapter Six analyses the national implementation of the United Nations Framework Convention on Climate Change; and Chapter Seven analyses the national implementation of the Convention on Biological Diversity. The analytical procedure utilises the various variables identified in the implementation framework described in Chapter One. Hence, all three chapters follow a similar format allowing for a systematic and consistent mode of analysis.

Chapter Eight compares the implementation of the three MEAs in the light of the variables identified in the framework analysis in Chapter One. The chapter further compares the findings against those in the literature review on environmental co-operation and seeks to provide explanations for them. The chapter also looks into the combined impacts of the MEAs on the nation's development searching for any linkages between the three MEAs.

Chapter 9 summarises, discusses and concludes the findings of the study. It further discusses and compares theoretical aspects of implementation and co-operation with the findings. The chapter also assesses the country's commitment to the international community. Finally, the chapter concludes with suggestions to

improve the implementation of MEAs in Malaysia and also recommends area for future research.

CHAPTER TWO

INTERNATIONAL ENVIRONMENTAL CO-OPERATION

2.1 INTRODUCTION

The subject of the study is the implementation of multilateral environmental agreements in Malaysia. The study aims to identify and analyse the factors that affect the implementation process of three multilateral environmental agreements and the impact of the implementation on the country. A study of the implementation process of the MEAs will reflect the country's commitment to, and involvement in, international environmental co-operation to address global environmental problems and the constraints that she encounters during the process.

Accordingly, the various aspects of international environmental co-operation are important in order to provide us with a macro picture of the implementation process. Hence, this chapter will devote itself to illustrating those relevant features of international environmental co-operation.

Firstly, the chapter will briefly introduce the formulation of environmental policy. Then it will establish the link between environmental policy and international co-operation. The causes of national environmental degradation that transcend boundaries and result in global environment change will also be identified. In doing so, the links between environmental problems and other factors such as trade and industrial development will also be shown. The chapter subsequently illustrates the globalisation of environmental problems and the need for international co-operation to mitigate the problems.

Following on from this, the chapter outlines the different forms of global actions to protect the environment and then moves on to describe the different categories of environmental law that are used to promote and solicit co-operation

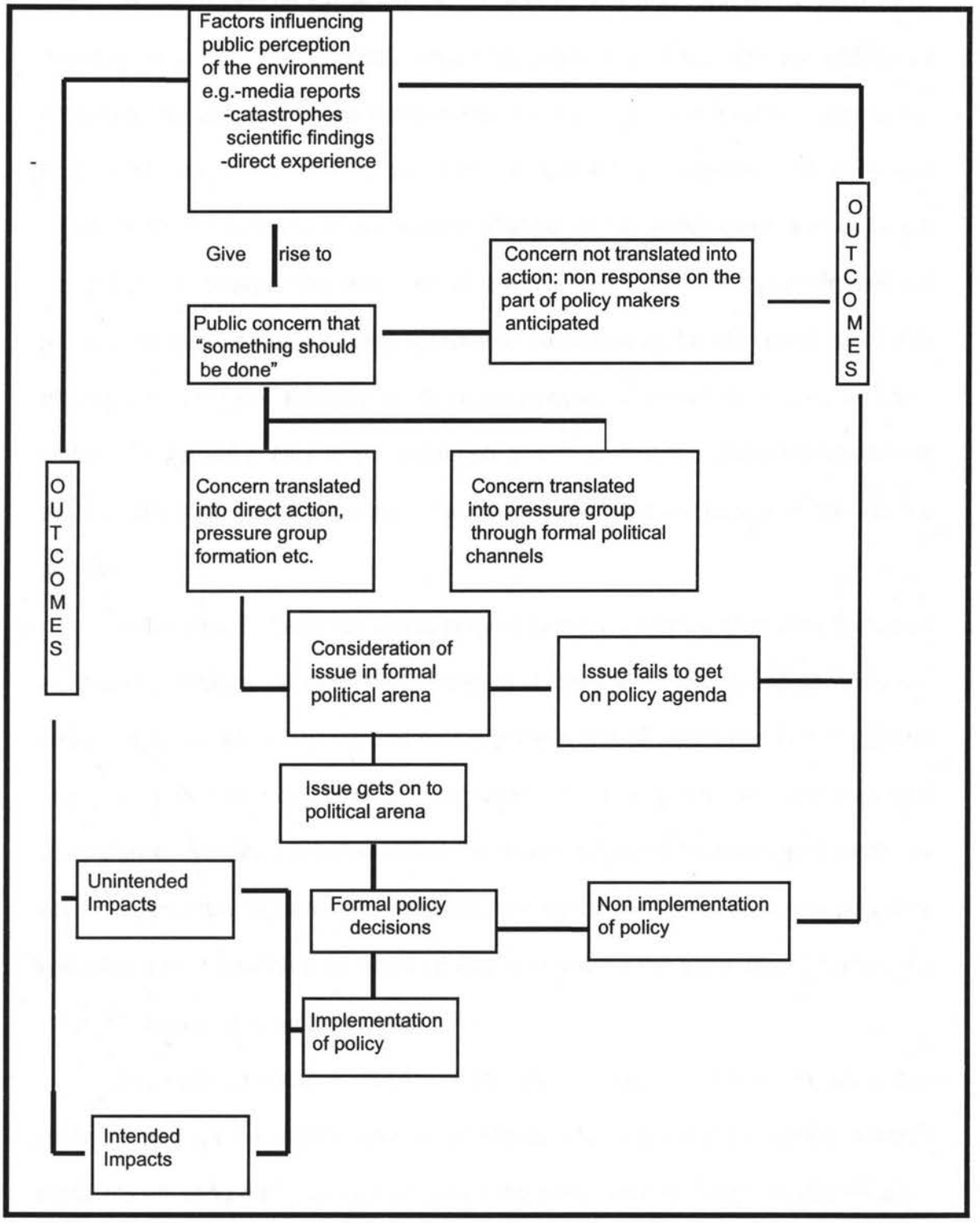
among nations. As a major instrument in environmental co-operation, it is important that there is a clear understanding of the different types of environmental law upon which international environmental co-operation is based. The chapter then concentrates on the multilateral environment agreement (MEA) which is the main tool of international co-operation. Different aspects of MEAs will be discussed, including their formulation process, their effectiveness, and implementation constraints. Finally, the chapter will examine several countries' perceptions of the three MEAs under study.

2.2 FORMULATION OF ENVIRONMENTAL POLICY

Environmental policy covers not only conservation issues but also the abatement, control and prevention of pollution. Each of these issues generates a different reaction from governments toward the formulation and implementation of the policy. Some governments put greater emphasis on conservation measures than pollution control. Others, on the other hand, devote substantial financial resources and technological development towards the mitigation of pollution from the industrial sectors and pay less attention to conservation measures. Regarding this, Zysman cited in Vogel (1986) noted that a government's ability to act in one policy area may be very different from its ability to act in another. The ability to act in one policy area or on one issue instead of another is dependent on the priorities and interest the country has on in the one matter compared to the other.

Harrison (1997) argued that both environmental issues and conflicts would not bring about a formulation of policy unless these two factors got on to the political agenda. His model on environmental policy process was adapted to suit Malaysia's scenario as shown in **Figure 2.1** overleaf.

Figure 2.1: A Simplified Model of the Environmental Policy Process in Malaysia



Source: Adapted from Harrison, T. in Farthing, S. M., 1997

In the model, he explained the process by which environmental issues that manage to get on the political agenda proceed to enhance the formulation of environmental policy, whereas those issues that fail to get on the political agenda fail to generate any policy formulation. Harrison seemed to emphasise that politics is important for the formulation of environmental policy. He stated that the problem will not initiate or catalyse the formation of environmental policy if the environmental problem or issue is not politically acceptable. Nonetheless, he also pointed out that although the policy is established, its implementation is further dependent on other factors. Therefore, politics is important only to ensure that the environmental issues are translated into policy but politics itself does not ensure the implementation of the policy.

Buhrs and Bartlett (1993) also pointed to the importance of political factors in environmental policy. Weale (1992) suggested that the issues that come on to the political agenda will in part depend on the preferences of voters and in part depend upon the ability of politicians to manipulate issues according to their rhetorical competence. Hence, it is believed that the causes of global environmental problems will be addressed by domestic environmental policy only when they are politically acceptable to the national government and not because the international community is environmental susceptible to them.

Hogwood and Gunn (1984) nonetheless argued that access to the policy (political) agenda is currently unequal and there is a variation in the extent to which problems affecting particular groups get on the policy agenda. Nevertheless, Weale

(1992) questioned whether the distinction can still be maintained between international and domestic politics. She believed that the transboundary flow of pollution can no longer provide an exclusive sphere within which nations can pursue their own policies in the expectation that other nations will be willing not to interfere.

2.3 ENVIRONMENTAL POLICY AND INTERNATIONAL ENVIRONMENTAL CO-OPERATION

Environmental policy is crucial to ensure that the environmental problems faced by developed and developing countries are properly addressed. In fact, environmental policy sets the pace and prioritises government efforts in combating environmental degradation and the abatement, control and prevention of pollution. Caldwell (1990) indicated that the 1972 Stockholm Conference legitimised environmental policy as a universal concern among nations. Before the Stockholm Conference, environmental policy outcomes were determined primarily by actors within a single state. Boardman (1992) highlighted the importance of the international arena in formulation of environmental policy. He regarded the international level as a germination area for environmental policy ideas where international and domestic levels are connected insofar as each is a means to solve the problems of the other. Thus, international engagement helps promote domestic policy goals. In this respect, Wallace (1984) pointed out that although the policy process within states is often characterised by bargaining and compromise, internationally, the formulation of policy is far less coherent and consequently there are more chances of divergent and contradictory patterns of implementation.

In this regard, McCormick (1991), pointing to Britain's position on acid pollution, illustrated the importance of environment policy not only for domestic but

also for international effort towards mitigating environmental problems. He cited London as one of the first cities to respond successfully to smog problems. Yet, when acid pollution was finally recognised as an international problem, Britain hesitated to act although the Scandinavians and the West Germans had begun curbing acid pollution. It was only in 1988 that Britain took certain measures, long after all their European partners had agreed to reduce acid pollution. One of the reasons for the delayed action was that the environment as a policy area had been misunderstood by the British Government. It had also been particularly prone to the kind of ad-hoc improvisational and piecemeal responses that characterise the policy process in Britain. This leads to lack of direction in environmental policy making and left Britain with a confused and confusing medley of institutions and laws.

Haas *et al.* (1994) believed that it is national decisions that affect environmental quality although international measures might be necessary to overcome national reluctance to act and to reach harmonised national measures. The implementation of environmental policies is seldom simply a matter of compliance with legally binding standards imposed on government by international institutions. Rather, it involves a combination of binding international law and public exposure of non-compliance, normative persuasion, scientific argument, technical assistance and investment. Kiss (1992) suggested that it is policy decisions that decide what degree of international certainty is required before taking certain kinds of action. Hence, domestic policy decides whether the argument and evidences tabled at international fora are satisfactory enough to require the implementation of local programmes or plans of action to combat environmental degradation. It is also believed that adherence to international standards, co-operation in environmental matters and changes in management in sympathy with trends in international

opinion, although not central, are nevertheless elements in the foreign policy of any country (Brookfield, 1993). Most recently, the Malaysian Foreign Minister iterated that both external developments and internal factors would influence Malaysia's international direction in the next century. Hence, Malaysia would continue to be active at the multilateral level as the country participated in these fora to promote the interests of developing countries (NST, 13/8/1999). In this regard, Bartelmus (1994) stated that the purpose of policy frameworks is to assist decision-makers in the formulation and implementation of consistent policies, strategies, programmes and projects.

The importance of national environmental policies on international co-operation is ambiguous. On the one hand, national environmental policies are said to determine the very existence of international co-operation on environmental issues because these policies determine whether a country should or should not co-operate with other nations to protect the global environment, yet, on the other hand, formulation of the policies is said to be determined by international trade and economic arrangements, international environment conventions or protocol as well as domestic political considerations (Camilleri and Falk cited in Glasbergen and Blowers, 1995). Wallace (1984) observed that much national policy implementation has become constrained by international co-operation and negotiation. She added that policy making at the international level is not embedded in stable structures because although the international system has become highly organised, its structures are largely those of `concertation' (a process of gradually concerting or aligning views by mutual persuasion) and consensus rather than of authority and majority rule. Hence, when a government anticipates problems in implementing a proposal under international negotiation, it will rarely give its consent. However,

Wallace believed that success often lies in the gradual and often painful learning process through which national practices and attitudes are marginally adjusted to take account of external influences.

2.4 GLOBALISATION OF ENVIRONMENTAL PROBLEMS

The transboundary character of pollution signifies that environmental problems are not simply a matter for domestic policies but also involve foreign policies, transnational policies and international organisations. These environmental issues exhibit the mutual dependency that is inherent in globalisation, which is further shown in the relationship between developed and developing countries. For example, the developed countries insist that developing countries protect their forests to reduce global warming and to provide genetic resources for their biotechnology industries, whereas the developing countries perceive environmental problems as issues of poverty, underdevelopment and sustainable local production, and insist that these problems are addressed internationally with financial and technical assistance before yielding on common issues and conservationist policies. Such mutual dependency is displayed more clearly with the classification of biological resources in sovereign nations and the oceans as `common concerns of mankind'.

Laferriere (1994) argued that the globalisation of environmental problems also stems from both the very transboundary nature of pollution and depletion problems and reliance on co-operative mechanisms for problem solving. As such, globalisation of environmental problems has a major repercussion on the ability of developing countries to take remedial action. Bryant and Bailey (1997) contended that globalisation has resulted in a greater general erosion of the ability of states in

the Third World to dictate the pace and nature of economic development, and by extension, environmental conservation.

It is obvious that the emerging global environmental crisis affects the world as a whole but affected countries exhibit different types of responses. It has been suggested that the effect of globalisation of environmental problems, leads to three different types of attitude: concern, defiance and indifference (Finger, 1993). Bangladesh and the Maldives are identified as countries concerned with global environmental problems because they are affected by global degradation. Malaysia, China, Japan and India are classified as defiant because they are singled out as major contributors to global degradation. Lastly, are the indifferent countries who are not accused of contributing to, nor feel threatened by the global environmental crisis. Hurrell *et al.* (1992) and Benedick (1991) stated that developing countries have come to accept that environmental degradation within states is a matter of legitimate interest to the outside world, being both of international concern and of common concern to humankind. Many originally regional or local environmental problems have grown in scale and are threatening broader international repercussions. The growth in scale undermines the economic base and social fabric of weak and poor states and thus exacerbates intra or inter-state tensions and conflicts. This can however, be effectively managed with the co-operation of all countries.

Lohani (1986) classified environmental problems as global, regional or local based on their magnitude. He further divided global problems into 2 broad types depending on the remedy required. The first type involves deforestation and desertification, which are of global concern but must be addressed by countries individually, whereas the second type such as acid rain and ozone layer depletion demand a concerted effort from all countries. He believed that regional problems, which result from biophysical linkages among a group of countries, have little bearing and effect beyond the group of countries, such as river basin development. According to Lohani, regional issues are more significant and are accorded greater consideration in the context of developing countries.

2.5 INTERNATIONAL CO-OPERATION

As illustrated in the previous chapter, environmental degradation at the local level has been occurring for centuries, whereas global environmental problems surfaced at the turn of the century. However, international co-operation among nations to abate and mitigate the global environmental problem was unheard of until recently. Even now, the result is far from satisfactory, although the record of organised international co-operation to protect the environment is superficially impressive. Tangible results of international environmental co-operation, although significant, fall far behind the destructive advance of deforestation, environmental contamination, the loss of species and unique ecosystems, and the seemingly inexorable demands of human populations upon the capabilities of the environment for self-renewal (Caldwell, 1990). Nonetheless, what is unique and mystifying, is the ability of nations to co-operate to protect the global environment whilst it may complicate their domestic environmental management, may erode their sovereignty,

diminish their financial funds and drain their personnel resources.

Caldwell (1988) stated that disposition and ability of national governments to make and honour agreements are fundamental for international co-operation. This is an important issue since she believed that governments are being asked to co-operate in the implementation of international agreements in which national interests may be regarded as unclear or as adversely affected by a proposal. Hence, she said that perceived differences in national interests are the primary obstacle to all international co-operation.

As Barret (1991) indicated, co-operation does indeed take place and is often codified in international agreements. Although some of these are woefully ineffective such as the International Convention for the Regulation of Whaling (1946), others such as the Montreal Protocol on Substances that Deplete the Ozone Layer 1987 have achieved quite impressive results.

Wallace (1984) stated that international co-operation is qualitatively different from policy-making within states. She stressed that the persisting sovereignty of states means that power rests largely with national governments and the implementation of international agreements is primarily dependent on national agencies. However, it has been suggested that by consenting to the provisions in the agreements and ratifying the agreements, individual country Parties actually release part of their sovereignty to the international community. Nonetheless, Johnston cited in Bryant and Bailey (1997) reiterated the fact that the general unwillingness of states to surrender sovereignty remains a perennial obstacle to conflict resolution of environmental management issues on a global scale.

According to Wallace (1984), international co-operation is characterised by heterogeneity where the participants are diverse culturally, politically and

economically. Because of their diverse backgrounds, negotiators often interpret agreements differently from others and hold different opinions of their implementation based on their own capabilities to implement. Hence, Wallace concluded that the participants' expectations of what is desirable or possible as the product of agreement differ markedly from their interpretations of their commitment to implement. Most environmental agreements seem to provide for such diversity by displaying some form of flexibility. As a result, the implementing measures are not strictly dictated by the agreement but often left to the initiatives of the national governments who are given the flexibility to devise according to their own technological and financial capability.

In some cases, it is the lack of capabilities to implement the agreement that becomes the reason for a government to co-operate. Here, the country might want to stall the implementation through negotiation by highlighting her shortfalls. For instance, in the implementation of Montreal Protocol (MP), the developing countries succeeded in achieving a 10 year grace period in the ODSs phase out. This situation was observed by Keohane and Nye in Wallace (984) who believed that governments sometimes engage in international co-operation on specific policy issues because they wish to change what other governments do. They hope to mould the international environment in a particular way. Sometimes their co-operation is seen as a defensive reaction to international developments, which they neither control nor fully understand.

2.6 THE NEED FOR INTERNATIONAL CO-OPERATION

Localised environmental problems, if not addressed at an early stage, will eventually grow into regional and global problems. Individually, deforestation activity may not harm the international community. However, collectively it might release substantial amounts of carbon dioxide into the atmosphere and consequently contribute to the overall warming of the earth. On the other hand, pollution transboundary in nature, such as acid rain, will without doubt have an impact on neighbouring countries. According to Carroll (1988), a transboundary environmental problem arises when all or more of the benefits of any pollution-emitting activity accrue to one nation, while all or most of the costs of that activity accrue to the nation across the border. He further added that international environmental diplomacy represents an attempt to resolve such transboundary or transnational environmental problems to the satisfaction of the governments concerned.

Carroll's view is supported by the case known as the Trail Smelter Arbitration between Canada and the USA in 1938. The case was brought by the USA which claimed compensation for the fumes (pollution) from copper smelter factories in Canada. This demonstrated the effect of the transboundary nature of pollution on the economy and health of countries affected by it. On a wider scale, forest fires in Indonesia in 1994, 1997 and 1998 created so much haze that shrouded not only the local area but also areas in neighbouring Malaysia, Singapore, Thailand and Brunei, causing grave economic and health problems. These environmental problems drew international attention but on a smaller scale than global warming, ozone layer depletion and loss of biological diversity which have a greater impact globally. For instance, a high incidence of skin cancer is associated with the depletion in the ozone layer whereas rising sea levels and increase in drought affected areas are

associated with global warming. The extinction of biological resources has an impact on the development of medicine and production of food. Troubled by these, the international community pursues co-operation at the international level, since these environmental problems are no longer confined within the domains of national boundaries.

National laws and regulations are said to be inadequate for solving environmental problems of a global magnitude. It is also believed that at the local level, the creation of environmental agencies does not seem to be much help either. This is because the actual responsibility for environmental management is often widely dispersed among ministries and agencies, and their primary goals are not centrally concerned with the environment, nor are they legally or administratively obliged to accept direction from environmental ministries (Brookfield, 1993). Hence, Bryant and Bailey (1997) believed that the creation of environmental departments and agencies specifically dedicated to promoting environment conservation would only add a new dimension to intra-state conflict. For instance, a department or agency intent on managing and protecting the environment as an integrated entity is pitted against traditional resource departments, which are keen to maintain an existing compartmentalised approach. Hence, the authors are of the opinion that it is of utmost importance to seek international co-operation for resolution of environmental problems of a global magnitude that render states incapable of managing them on their own. While Bryant and Bailey addressed intra-state conflict arising from the creation of environmental agencies, Young cited in Bryant and Bailey (1997) focused on inter-state conflict. According to him, various international agreements or regimes have been devised to end or prevent inter-state conflict and over-use of resources.

Charnovitz (1994) pointed out that it had long been recognised that international co-operation is essential to solve many environmental problems. This is because many environmental problems cross national boundaries or involve areas beyond the regulatory authority of any one country. The identification of global environmental problems has not only increased the urgency for nations to act concertedly because they are potentially serious, but it has also been recognised that they are problems that can only be dealt with by global co-operation (Garner, 1996).

2.7 GLOBAL ACTIONS ON ENVIRONMENTAL PROTECTION

Some countries on their own accord have acted through bilateral relationships, to co-operate with neighbouring countries to combat environmental pollution common to both. However, environmental problems on a global scale need more formal mechanisms and the involvement of a larger number of countries to ensure the effectiveness of co-operation. Due to the urgent need to combat global environmental problems, the United Nations finally put environmental issues high on their agenda of discussion. On 28 October 1982, the United Nations General Assembly Resolution 37/77 was embodied as the World Charter for Nature, firmly convinced of the need for appropriate measures, at the national and international level to protect nature and promote international environmental co-operation. Finally, on 22 December 1989, the United Nations General Assembly called for a global meeting to increase national and international efforts to devise strategies to halt and reverse the effects of environmental degradation. Responding to the call, the international community held the United Nations Conference on Environment and Development (UNCED) in Rio, 1992. UNCED was hailed as the world's largest

international conference and it endorsed the roles of environmental law in guiding all nations toward the integration of environment and development.

The Conference saw the birth of two international legally binding agreements, the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change. Although UNCED witnessed the birth of only two multilateral environmental agreements (MEAs), other MEAs had already been in existence well before 1992. For example, the Convention for the Protection of Birds Useful for Agriculture (Paris) 1902; the Convention on Wetlands of International Importance 1971 (Ramsar Convention); the Vienna Convention on the Protection of the Ozone Layer; and the Montreal Protocol on Substances that Deplete the Ozone layer (1987). At the regional level, ASEAN Agreement on Nature Conservation (1984) was signed in Kuala Lumpur in 1984. It requires ASEAN member countries to take measures to protect and conserve their natural resources and to introduce pollution control.

According to the UNEP Register of International Treaties and other Agreements in the field of the Environment 1993, there were about 170 Conventions and Treaties related to the environment. At the regional level, the European Community's Fifth Environmental Action Programme on Environmental Problems was a response to the call for mitigation of environmental problems in Europe (Mackenzie, 1994). It stated that no single nation alone, nor group of nations can provide effective solutions to these problems. Instead, it is essential to secure a high degree of international co-operation and mutual understanding between nations and groups of nations. In fact, as early as 1987, the European Economic Community had already established international environmental co-operation through the Single European Act 1987 that introduced a specific chapter on environment into the Treaty

of Rome (1957).

Instruments such as declarations, resolutions, treaties, conventions and global plans of action are examples of international tools to combat environmental degradation and pollution at a global level. Technically these are international environmental laws, which are meant to bind nations together or induce nations to co-operate to alleviate environmental degradation and mitigate known environmental pollution. Although they belong to the term international environmental law, they are actually different in their formulation and their effect on international co-operation. Hence, it is significant to elaborate on the different categories of international law to help in the understanding of international environmental co-operation.

2.8 INTERNATIONAL ENVIRONMENTAL LAW

Environmental law has been used as an instrument to guide international co-operation to protect the environment, to abate and prevent pollution. It has been stated by the United Nations Environmental Programme (UNEP) that environmental law plays a critical role in promoting environmental protection through the sustainable use of natural resources, pollution prevention and the integration of environment and development. It provides an important framework for regulating social behaviour and transforming sustainable development policies into enforceable norms. At the international level, environmental law assists governments to adhere to international regimes. It also helps to build national capacities to address major global, regional and national environmental issues and problems.

Boehmer-Christiansen and Skea (1991) provided three legal solutions to address transboundary environmental problems (pollution). Firstly, they proposed the creation of a liability regime to compensate the victims of pollution. Secondly, to

provide equal right of access to foreign pollution victims to the polluting country's national decision-making and litigation procedure. Lastly, to establish international treaties, which incorporate general abatement requirements. According to the authors, of the three proposals, treaty, convention or protocol has been the primary method by which countries have tried to establish intergovernmental regimes to alleviate pollution. Nevertheless, it is only recently that environmental law has come to the forefront of international environmental protection and pollution control.

There are various definitions of environmental law. For instance, Tolentino (1986) described environmental law as a set of legal rules that have the power to affect the quality of the environment, whether natural or man-made, and to address specifically these activities. He believed that in managing the environment in developing countries in particular, environmental law should be conceived as part of a comprehensive process of management of all resources and progressively integrated with economic development planning. Brownlie cited in Vicuna (1992) pointed out that international law has been broadening the definition of pollution to include large ecosystems and environmental processes where the emphasis has clearly been put on the development of preventive measures.

McEldowney and MacEldowney (1996) provided two approaches to describe environmental law. The first approach describes environmental law as a term that is used to include the various laws that are applied to the environment. The second approach sees the law as concentrating on the harm caused to the environment by human activity. The second approach argues that since pollution by humans may harm the environment, then the focus of the pollution law would be to limit or prevent human activities that might be deleterious to the environment.

According to Kiss and Shelton (1991), international law first envisaged environmental protection as a problem of bilateral conflict resulting from transfrontier pollution. Later, it was realised that environmental problems transcend local issues and to approach environmental protection through rules developed in a bilateral context provides only limited solutions. Thus, environmental law is used to coerce co-operation whether at the local level, regional level or at the international arena. Ball and Bell (1991) argued that international law has no direct effect on domestic law or on individuals. However, it often has an indirect effect. For example, international law can make states change their law and practices by highlighting particular issue or by laying down generally accepted standards or by imposing political pressure on states.

Szasz (1992) stated that there are several sources of environmental law such as multilateral agreement, customary law and soft law. Article 38(1) Statute of the International Court of Justice, described three primary sources of international law: treaties, customs and general principles of law. Resolutions and declarations according to Birnie and Boyle (1992) are not separate sources but may become part of the customary law whereas treaties bind only those states which have formally agreed to be bound by them.

2.8.1 Customary law

Szasz (1992) believed that customary law can be furthered through the adoption of multilateral law making treaties where non parties can adopt standards that arise from such treaties. According to Szasz, customary law unlike conventional law is generally applied to all states and not only to the parties of a particular instrument. Solemn legislative declaration may catalyse the creation of customary

law by expressing in normative terms certain principles whose general acceptance is already in the air, thereby making it easier and more likely for states to conform their conduct to them.

Although customary law holds an important position in protecting the environment, it has a few weaknesses. Hughes (1988) argued that customary international law although relevant in environmental issues has been weak in its impact because it recognises the principle of state or territorial sovereignty, i.e. the right of states to carry out their activities and to use their resources for their own benefit. In this regard, Birnie and Boyle (1992) also stated that customary international law recognises the territorial law of the state and the sovereignty of the state through its territorial jurisdiction. Furthermore, the authors agreed that environmental law, which is based on international customary law, appears weak because the sovereignty of each state and the incompatible interests of each department/agency do not facilitate the resolution of an environmental problem. However, Beyerlin and Marauhn (1997) argued that customary law formed an important pillar of international environmental law. This is because its rules can be applied in cases of *lacunae* in treaty regulations, as well as in the relationship of states which are not bound by treaty law.

2.8.2 Soft law

Soft law comes in the form of resolutions, declarations, codes of conduct and guidelines such as the Stockholm Declaration 1972, the Rio Declaration 1992, Agenda 21 and Principles on Forests. According to Beyerlin and Marauhn (1997), it is `unfortunate' to characterise these as soft law as they are in no way a new source of international law with a lower quality than `hard law'. In fact, Birnie and Boyle

(1992) regarded soft law as having many advantages over hard law because it allows states to tackle a problem collectively at a time when they do not want too strictly to shackle their freedom of action. Such flexibility becomes more important when dealing with environmental matters because scientific evidence is not conclusive or complete, moreover, a cautionary attitude is required because economic costs may be uncertain or over-burdensome.

According to Szasz (1992), soft laws are not binding because they are observed. The fact that the norms are articulated by consensus suggests that even if Governments are not willing to bind themselves, in practice they normally follow them. As Weiss (1992) reiterated, soft international environmental law which includes codes of guidelines, resolutions and declarations enables states to adopt a collective flexible approach to an environmental problem when, for instance, scientific knowledge points generally in the direction of caution but is otherwise inconclusive.

2.8.3 Hard law (Multilateral Environmental Agreement)

International environmental `hard law' is commonly known as a convention, treaty or protocol. They are also called multilateral environmental agreements (MEAs) to distinguish them from the bilateral arrangement made between two countries to address a common transboundary problem. The formation of conventions/treaties/protocols has been seen as one of the popular ways to combat the degradation of the environment at the global level. Birnie and Boyle (1992) indicated that the multilateral treaty is important for three reasons:

i) In many cases, it gives some practical content to existing rules of customary law and enables the primary obligations of states to be identified with greater clarity and developed in a more flexible way through diplomatic conferences and intergovernmental commissions;

ii) The treaties afford a basis for international supervision of standards of environmental protection and sustainable development, which customary law alone could not provide; and

iii) The treaties protect community interests not merely those of states inter se.

This opinion was reaffirmed by Beyerlin and Marauhn (1997). They stated that international treaties, in particular the multilateral ones (MEAs), are nowadays without doubt the most important legal instruments for the shaping of international environmental relations. A MEA usually addresses a specific issue but sometimes it overlaps with the objectives of other MEAs.

The emergence of the MEA is seen as an ad-hoc means to address global environmental problems in a piecemeal fashion. This situation arises because the UN as an international body is not empowered by its members with the authority to formulate or come up with legislation binding countries in environmental co-operation. As reported by Werksman (1996), while many United Nations institutions have been encouraged to search for greener agendas, their member states have denied any of them the authority to legislate with binding force or to adjudicate disputes compulsorily. Instead, the bulk of international environmental issues are

being addressed one at a time, by a series of negotiations that lead to self-contained, legally binding treaties or MEAs. These MEAs establish independent intergovernmental bodies known as Conference of Parties (CoP) with the potential to develop powers over states that may exceed those of more informally established institutions. The CoP establish other organs such as Subsidiary Bodies on Scientific Technology and Technical Assistance (SBSTTA) to assist the country Parties to make complex trade off decision between scientific uncertainty and political judgement.

Weiss (1996) indicated that the treaties are in many forms. Some are with basic general provision such as the Vienna Convention on the Protection of the Ozone Layer while the Montreal Protocol is one with highly specified technical standards. Other MEAs take the form of a framework creating no more than a generalised obligation on states to take some unspecified action, which can be done later in protocol, for example, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. Okidi (1994) stated that a framework convention provides broad and comprehensive provisions allowing for a specific and detailed protocol to prescribe strategies and a timetable for implementation. Such a convention allows states to adopt detailed regional agreements for implementation at an appropriate pace. The Convention on Biological Diversity is a framework agreement through the adoption of protocols as indicated by Article 28 of the Convention. MEAs like the Vienna and Climate Change Convention are regarded as convention-protocol approaches that encourage a step-by-step process. Here a convention is signed at the outset even if there is no agreement on the specific actions that ought to be taken.

The MEAs adapted as empty frameworks are to be filled by substantive obligations as soon as the scientific evidence of potential impacts and responses matures. These MEAs anticipate that individual parties' substantive commitments will change over time in response to scientific advice, new evidence and the development of domestic policies. Although the convention-protocol approach allows a greater number of nations to become party to the convention, it has several weaknesses. The signing of the Convention creates a momentum that propels subsequent action. However, the signing may take the heat off political leaders allowing symbolic but empty promises to substitute for real improvements. Furthermore, it also allows the lowest common denominator to appeal to the largest number of signatory states (List and Rittberger, 1992). For example, the Basel Convention that regulates the movements of hazardous waste between signatory countries also allows separate bilateral agreements between signatory and non-signatory countries. This contradicts the proviso that signatory countries cannot ship hazardous waste to non-signatory countries. Thus, the bilateral agreement could be considered a compromise of the overall agreement.

Beyerlin and Marauhn (1997) referred to MEAs in terms of two approaches, the `piecemeal approach' and the `framework convention-protocol approach'. According to them, the piecemeal approach is taken to address particular environmental problems, which have been singled out for individual treatment in a separate ad hoc negotiating context. The authors emphasised that this approach should be used when a particular need for regulation must be urgently met. An example of such a MEA is the Convention for the Prohibition of Fishing with Long Drift Net in South Pacific, 1989 and the two subsequent protocols. However, such an approach is hardly suited to producing integrated, cross-media solutions to complex

global environment problems.

The framework-protocol approach, on the other hand, deals with complex environmental problems in a comprehensive but step by step way. There are two kinds of framework. The first, like the UNFCCC, does not place concrete obligations on treaty parties. It merely asserts that the Conference of Parties may at any ordinary session, adopt protocols to the Convention without even imposing a general procedural obligation to act on the parties. The other framework is more concrete, such as the Vienna Convention for the Protection of the Ozone Layer, which requires contracting parties to co-operate in the formulation of agreed measures, procedures and standards for the implementation of the Convention. It is believed that filling an abstract framework convention with later protocols is a more suitable method of creating a comprehensive multilateral agreement than firming up a framework convention through a subsequent amendment. This is because if the amendment has not been agreed by all parties there will be a splintered treaty. In contrast, if a subsequent protocol is not agreed by all, the main convention remains intact.

However, as asserted by Barret (1991), international environmental agreements are self-enforcing. According to him, self-enforcement is essential in any model of international environmental agreements because nation states cannot be forced to perform their legal obligations. A country could be taken to the International Court of Justice for failing to comply with the terms of a treaty but only with the defendant's permission. Even, then, the disputing countries cannot be forced to comply with the Court's decision (Lyster cited in Barret, 1991).

2.9 FORMULATION PROCESS OF MULTILATERAL ENVIRONMENTAL AGREEMENTS

Before any MEAs can be formulated, it is of the utmost importance that countries that experience environmental crisis meet and discuss together to identify whether they are faced with the same or a common problem or issues. A MEA cannot be negotiated effectively unless it is acknowledged and affirmed that each of the countries concerned has a common interest at stake. This is the precondition for the co-operation to take place. Axelford (1984) who looked into the factors that enhance co-operation stated that only by understanding the conditions that allow co-operation to emerge, can appropriate actions be taken to foster the development of co-operation in a specific setting. Hence, without understanding and agreeing to the cause of the environmental degradation, the international community will not be able to co-operate to formulate the MEA.

In fact, such conditionality exists in almost all co-operation between nations whether in trade, economics or the environment. Garner (1996) recognised such constraint when he stated that before a treaty or convention is signed, it is necessary for a problem to be identified and acknowledged by the nations who can do most to tackle it. For a country to be persuaded to protect the global environment, empirical evidence needs to be presented since, once committed, a country needs to put aside substantial resources of man power, institutional capability and, most important, financial resources. This situation was affirmed by the Prime Minister of Malaysia at a United Nations Assembly.

> "Next year the nations of the world are expected to meet in Rio de Janeiro to discuss the environment. If we are to meet there, we need to know whether it is going to be a constructive meeting or a finger-pointing, third-world-bashing session. If that conference is to be productive, we shall have to face the facts and deal with them. Unless we accept the truth regarding the sources and the causes of environmental pollution, rising temperatures and ozone depletion we are not going to get anywhere in our efforts to reverse the process. If we go to Rio, let us go there to discuss and agree on a common course of action on the environment and development" (Mahathir, 1991).

Empirical evidence to convince all present of the existence of environmental problems came from no other than the scientific community. It is in the protection of the environment that the role of the international scientific community is crucially important (Weale, 1992a). The importance of scientific evidence is best shown in the formulation of the Montreal Protocol. Scientific debate on ozone depletion was initiated as early as 1974. However, it was only recently that nations finally agreed on a treaty to protect the ozone layer and a protocol to control and ban the usage of substances that will destroy the ozone layer. The same situation happened in the negotiation of UNFCCC. Over several years, the Intergovernmental Panel on Climate Change (IPCC) played a crucial role in providing scientific and technical assessments to support the negotiation for the Convention before it was finally agreed.

While Weale (1992a) advocated the importance of science in shaping environmental co-operation, others have contended that it is politics that usually has the upper hand. For instance, Hurlbut (1993) showed the different roles of science and politics in the negotiation of different treaties. According to him, although science initiated policy debate about ozone depletion in 1974, it was the reverse for the

conservation of biological diversity. In the ozone protection agreement, science preceded diplomacy and it was the physicists, chemists and atmospheric researchers who were in the forefront of discovering and defining the problem, its causes and the probable damage due to inaction. In the Convention on Biological Diversity, politics rather than science defined the biological diversity issues. Here scientists were called upon to justify the political concern retrospectively. At the same time they were told that lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise a threat of significant reduction or loss of biological diversity.

Parson (1994) also believed that it was not science but bargaining power that determined the decisions adopted in Montreal to protect the ozone layer. He contended that if CFCs were not causing the Antarctic hole, then the WMO report (1986) which reflected the prevailing science, should justify at most a CFC production freeze. If CFCs were causing the hole, then much more stringent controls than a 50% cut were justified. The 50% cuts adopted according to Parson was a bargained outcome between the EC's proposed freeze and the United States' 95% cuts. Therefore, it seems that science alone without political commitment cannot ensure the protection of the environment. Political choice is required to translate the findings of environmental science into viable policies.

Nevertheless, it has been suggested that political decision is most important and much needed when science cannot offer the answer, as reflected during the CoP3 meeting. Dreifuss (1996) the chairperson of the Ministerial Round Table at the CoP3 of the UNFCCC stated, "*we should not ask the IPCC[1] to answer questions,*

[1] The IPCC was established in 1988 by the WMO and UNEP to assess the available scientific, technical, and socio-economic information in the field of climate change. It developed methodologies (e.g. national greenhouse gas inventories) for use by Parties to the Climate Change Convention.

which are not of a scientific, but of a political nature. For instance, an answer to the question seeking to determine the critical level of greenhouse gas concentrations in the atmosphere above when a dangerous anthropogenic interference with the climate system will occur". Dreifuss's statement was supported by Bolin, the emeritus Chairman of IPCC in Barrett, *et al.* (1998) who said that scientific issues were not much discussed at Kyoto. Instead, the focus was on political and technical issues. Nevertheless, others have argued that politics flourishes on scientific evidence. For instance, Elliot cited in Barret and Chambers (1998) believes science has been politicised when political and economic interests appropriate the research findings.

Although scientific research has been undertaken on certain environmental problems, it is not usually tailored to the needs of policy makers. Instead, it is used to test some scientific hypotheses, which are not in a form usable by policy makers. Even if there are data for such problems, it is inaccessible to interested parties. Glowka *et al.* (1994) iterated that most of the information on biodiversity and research capacity is in developed countries whereas the greater part of biodiversity is in developing countries. Hence, decision making is made even more difficult with a lack of important scientific information.

Once enough nations are convinced, negotiations can begin on the formulation of the convention or treaty or protocol. The importance of this situation is indicated by Macneill *et al.* (1991). He stated that the essential condition for the participation of any developing nation in an international convention is no different from that for an industrialised nation, i.e. it has to be convinced that the convention is in its best interest.

In the negotiation and formulation of an MEA, Haas *et al.* (1994) referred to the attitude of countries that have made progress in environmental measures and those that have not. He stated that the dynamics of bargaining often involved leader states, which had already developed relatively stringent and forward looking measures; and laggard states which had relatively meagre environmental protection measures. The laggard states often avoid international agreements, which involve stringent measures, for example, the negotiation to formulate international standards to control the marine pollution from land-based activities. Here, most developing countries, which have low standards for the emission of effluent into coastal water, will try to avoid the conclusion of treaties that use standards or measures taken from developed countries. High standards limiting the emission of effluents require the adoption of modern manufacturing technology, which developing countries do not have. Hence, it is obvious that developing countries will resist the high standards because the endorsement of strict standards will affect the economic and social development of these countries. Developed nations, on the other hand, will go for higher standards because for them compliancy to a higher standard will not cost them any extra expenditure since they have no need to upgrade their already modern technology.

The complexity of the negotiation is further reflected in the long process that extends over many years through numerous meetings. Since most international decisions are taken by consensus, governments always have the option of choosing not to participate in an agreement if they cannot accept the emerging consensus. Thus, they protect their interests. Once the negotiators have agreed to the general provisions of the draft agreement, it is then ready to be signed.

To sign an agreement is to acknowledge that a government has agreed with the intention of the agreement. There is no legal obligation to ratify or comply with the treaty's terms on the state's part. However, there is a strong moral obligation and an expectation between signatories that none will frustrate the objectives of the treaty. There are instances where a Head of Government or a representative has signed a treaty with reservations or conditions. On this matter, Articles 10 and 18 of the Vienna Convention on the Law of Treaties, 1969 stipulates:

> "Where the signature is subject to ratification, acceptance or approval, the signature does not establish the consent to be bound. However, it is a means of authentication and expresses the willingness of the signatory state to continue the treaty-making process. The signature qualifies the signatory state to proceed to ratification, acceptance or approval. It also creates an obligation to refrain, in good faith, from acts that would defeat the object and the purpose of the treaty."

The next step to be taken is for the state to ratify the agreement and become a contracting party. The Vienna Convention on the Law of Treaties 1969 defines ratification as the international act whereby a state indicates its consent to be bound to a treaty. Usually the instrument of ratification by the Foreign Minister or representative is deposited with the Depository. For example, the depository for the UNFCCC is the Secretary General of the United Nations. The institution of ratification grants the states with the necessary timeframe to seek the required approval for the treaty on the domestic level and to enact the necessary legislation to give domestic effect to that treaty. Ratification can be straightforward without any preconditions attached to it as in the case of the UNFCCC and the Convention on Biological Diversity. However, some treaties or agreements have preconditions

before a country can ratify a treaty and become a party to it. For instance, the 1972 Ramsar Convention for the Conservation of Wetland of International Importance specifically required a country to designate an area as a Ramsar Site before she could become a party to the Convention.

Once the ratification process is over, a country needs to implement the provision of the agreement. For most countries, the international commitment must be translated into a local agenda before it can be carried out. Therefore, what will be enforced within the state is the domestic legislation. Hughes (1986) claimed that it was known for a treaty to have been formally implemented by legislation but not actually applied in practice. This is because of defects in the implementing legislation or because the legislation is not properly given affect to.

2.10 IMPLEMENTATION OF THE MULTILATERAL ENVIRONMENTAL AGREEMENT

Regarding international agreement, Wallace (1984), suggested that policy making is shared between the international and national levels, while policy execution [implementation] is in practice primarily concentrated at the national or even sub-national level. Therefore, the implementation of the agreement is carried out by country Parties, which in practical terms is implementation by national agencies. Rosendal (1994) referring to the Convention on Biological Diversity defined the concept of implementation as parties' activities in relation to what is spelled out in the convention text. She pointed to the steps of action needed to provide a basis for successful implementation of the Convention. These are ratification of the agreement and fulfilment of the respective obligations. In addition, she described the obligations as providing financial and technological transfers on

the one hand, and on the other making genetic resources available on mutually agreed terms.

Provisions for the implementation of the MEAs are provided clearly in some agreements while, in others, scattered under different articles of the agreements. For instance, the Convention on Biological Diversity provides for the general measures for conservation and sustainable use under Article 6, whereas Article 7 requires for identification and monitoring of biological components. On the other hand, Articles 8 and 9 outline specific measures to be taken for in-situ and ex-situ conservation.

The UNFCCC is more definite in providing for its implementation. Under Article 4 referring to commitments, there are various provisions for implementation. For example, Article 4(1)(b) states that all parties shall implement programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by "sinks" of all greenhouse gases. Article 10 provides provision for the establishment of a subsidiary body for implementation, which is to assist the CoP in the assessment and review of the effective implementation of the Convention. The UNFCCC goes further in providing an avenue for the resolution of questions regarding implementation of the Convention as stated in Article 3.

Countries that become parties to the MEAs often experience difficulties in trying to implement the obligations to which they have agreed. The difficulties range from conforming to the least difficult obligation, such as making a status report to the Secretariat of the Convention, to enforcing certain legal provisions of the treaties. Somsen (1996) reported that half of the reports by country Parties to the Montreal Protocol were incomplete. In enforcing legal provisions of the treaties, Wapner (1995) reported that compliance is far from perfect and violations abound. He quoted

Iceland's and Norway's violation of the International Whaling Commission Moratorium and of the Cayman Islands exportation of endangered species of turtle skins to CITES signatories England, France and Australia.

2.10.1 Effectiveness of a Multilateral Environmental Agreement

A good MEA is one that is implementable. For it to be implementable, it must take into consideration the needs and capabilities of the developing countries and the interests of developed nations. MacNeill *et al.* (1991) emphasised the importance of development in the context of environmental protection. He believed that for international agreements to be successfully negotiated and implemented, Western nations must assure developing countries that their legitimate imperatives for rapid growth and more sustainable forms of development will not be blocked. Therefore, it can be seen that environmental agreement is built upon the capability of developing nations to enforce such treaties. As such, obligations contained in each agreement are often differentiated according to the stage of economic development of the parties concerned, and consequently contain varying levels of substantive commitments (Werksman, 1996). In fact, the importance of taking into consideration the economic development of parties was pointed out by the Executive Director of UNEP in 1994. She stressed that the effective implementation of international environmental accords not only requires effective implementation mechanisms but also the consideration of a wide range of political, economic and social factors. Improved implementation mechanisms can promote compliance but to do so they must reflect and address the reasons why compliance is an issue at all (Dowdeswell, 1994).

Birnie and Boyle (1992) commented that the effectiveness of international environmental law is largely determined by the nature of the problem at which the solution is directed. The more complex the problem, the harder it will be to carry out implementation of the environmental law. For instance, a comparison of the measures taken to avoid further depletion of the ozone layer and activities to attain a set percentage of sulphur emissions reveals that avoiding further depletion of the ozone layer may prove to be more difficult than setting a target for the emission of sulphur, and consequently will affect the effectiveness of the agreement. In contrast, Weiss (1992) pointed out that the success of a MEA to protect the global environment will be determined by the ability of its institution, through political and legal means, to resolve points of difference and to induce consent. Therefore, Weiss emphasised the credibility of institutions rather than the complexity of the problem for the effectiveness of an agreement.

Garner (1996) attributed the effectiveness of an environmental agreement to several factors. Firstly, the scope of the agreement where there is a need to identify what and who should be included in it. Since an environmental problem is multi-causal, there are many factors to be considered. The more factors there are, the more difficult it is to reach agreement. Secondly, there is the question of sacrifices to be considered. Garner (1996) used the phasing out of CFC and global warming as examples. Connolly and Norris in Garner (1996) stated that the phasing out of CFCs did not raise question marks against continued economic growth in the West and economic development in the Third World because there are alternatives to CFCs and the West is willing to give financial assistance to developing countries to adjust to CFCs' alternatives. However, for the mitigation of global warming, there are considerable sacrifices to be made and profound financial implications. Here,

Beckerman (1992) commented that the prospects of China or India making sacrifice of current standards of living or immediate growth prospects in order to improve the standard of living of the entire world in 100 years time are virtually non-existent.

2.10.2 Implementation Constraints

Once the treaty a state has ratified enters into force, the state usually needs to develop, adopt or modify relevant national legislation or give effect to national policies, programmes or strategies by administrative or other means. Although these measures are taken voluntarily without being explicitly asked to do so, sometimes a convention expresses such requirements in its provision to ensure contracting parties take the necessary steps. Caldwell (1988) pointed out that some treaties expressly require parties to take appropriate measures to ensure compliance, although compliance at the national level tends to be a matter for the public authorities of each state. Whether it is just a matter of simple reporting or the enforcement of legal provision, contracting parties seem to be lacking in compliance with such responsibility. The non-compliance of states with treaties has to be looked at from a wider perspective. Non-compliance is not a matter of simple violation. Instead, it has repercussions on the nature of co-operation between states that will affect trade, the economy and environmental protection strategies of contracting parties. For instance, if a party does not comply with the agreement, it could be perceived as gaining an `unfair' advantage over other parties, for example, countries which comply with the agreement might incur additional cost during the production of certain products whereas those which do not comply do not. Hence, this may influence other country parties not to comply too.

Sands (1996) indicated that states' compliance with their international environmental obligations has become an even more critical issue in international affairs than before. He pointed to three factors that underline this concern. Firstly, the growing demand and need of the state for access to, and use of, national resources coupled with a finite, and perhaps ever shrinking, resource base. Secondly, states that do not comply with their environmental obligations are perceived to gain unfair competitive economic advantages over other states. Lastly, the nature and extent of international environmental obligations have been transformed in recent years as states assume greater environmental treaty commitments.

Non-compliance among the contracting parties has raised many questions, primarily why does a state not comply with her own commitment and promises made at international level? If she cannot abide to such a commitment, why does she go into the treaty in the first place. Caldwell (1988) suggested several reasons for the government's failure to implement their obligations. Firstly, the officials and agencies that negotiate the agreements are not always those authorised to implement them. Secondly, the government may never have been sincere in its apparent commitments. Its intentions regarding implementation may never have been serious, it may have been responding to current fashion in international politics or may have endorsed a policy primarily to demonstrate solidarity with allied nations. Thirdly, its intentions may have been genuine but its administrative capabilities insufficient to carry out its obligations. Lastly, the negotiating government may fall from power and its successor may be unwilling or unable to honour its commitments. Regarding the misrepresentation of officers in negotiation and implementation activities, Szasz (1992) suggested that representatives who participated on the international panel

might have been impatient to achieve the formulation and adoption of a treaty, whilst the domestic actors who must approve the ratification, may have at best different priorities and at worst different substantive objectives.

Fouere (1988) also commented that the problem of implementating MEAs is acute in developing countries where there is a lack of environmental, legal and institutional frameworks, not to mention the expertise required to implement the various agreements. He further believed that the problems of implementing agreements have great similarity with the problems of implementing environmental policy.

Drawing on the resemblance Fouere made between environmental policy implementation and the implementation of MEAs, Weale (1992) asserted that there was widespread failure in the implementation of environmental policy. However, he reiterated that the failure should not be looked upon as the failure to put into effect the policy intention but as the failure to address adequately a significant problem. He suggested that the failure occurred because of reluctant policy commitments by government, limitation of means, asymmetries of information, the psychology of enforcement and mistaken assumptions as to the cause and effect of the environmental problem. He further remarked that policy implementation takes place within the constraints of constitutional propriety, political acceptability and administrative feasibility. These limitations indicate that the design of the administrative institution does not match the holistic nature of environmental problems.

McCormick (1989) argued that most international treaties, especially multilateral agreements, are undermined by three major weaknesses. Firstly, the problem of enforcement. When the objectives of a treaty become more complex,

their contents become less precise, and consequently their effectiveness becomes less predictable. Secondly, the problem of transforming a treaty's principle into national law and, lastly, the actual implementation of the national law.

In fact, UNDP in 1992 reported that many environmental laws had been passed but their implementation was frequently frustrated by lack of effective instrumentation and institutional support. On this matter, Bartelmus (1994) insisted that the means of implementation require legislation and regulations, project and programme appraisal, science and technology, institutional building, supportive measures of environmental data development and awareness building, and financing.

Sjoberg (1996) further commented on the effect of administrative incapability on the implementation of MEAs. He believed that environmental ministries are most appropriate when it comes to developing environmental conventions. However, their expertise does not necessarily extend to the management of large-scale financial resources. Such expertise is required because the environmental agency is frequently allocated huge financial resources to implement action plans and strategies for conservation measures and pollution control. Without well-trained financial managers in the field of environmental management, plans and strategies cannot be executed effectively and often go astray. There are also environmental measures that require the execution of economic and financial instruments, in which environmental officers are often not well versed.

While the aforementioned authors pointed to the incapability of contracting Parties, other writers such as Somsen (1996) placed the reason for non-compliance on the treaty itself. He suggested that the treaty standard itself might not deal effectively with the problem it was supposed to deal with, even if all parties were to

fulfil their commitments. In such a case, the problem is not with implementation, but with the low level of ambition or ambiguity of the standard. In this circumstance insisting on full compliance is either completely pointless or will appear as an act of political power under technical disguise.

However, in spite of much effort taken to ensure compliance among contracting parties, some countries still seem to be against any attempt to develop a `non-compliance system'. These countries are concerned that such a system will interfere with their domestic policy, will affect their future obligation under the convention, and consider resources better spent on other priority issues. Furthermore, as Caldwell (1997) has argued, the problems of reconciling national policies with international agreements are exacerbated when international commitments and national policies conflict or have the potential to conflict. Nonetheless, as Mitchael (1996) asserted, whether a government undertakes or fails to undertake a given behaviour occurs simply because it furthers its interest to do so. Hence, as stated by Wallace (1984), in the implementation of international policy, the implementation phase almost invariably takes governments into the complexities of domestic political and policy processes.

2.11 COUNTRIES' PERCEPTIONS OF MULTILATERAL ENVIRONMENTAL AGREEMENTS

It is a misconception to simply consider countries' perceptions of MEAs as clearly divided between North and South or between developed and developing countries. Although each of these two groups of countries has its own stand toward certain MEAs, each country in the group might not agree with the opinion of others in the group about every provision of an agreement. They might even be divided into

smaller groups as the national, sub-regional or regional interest is threatened. For instance, the G77 and China "lost' their oil producing members which set up another small group to protect their interests during the CoP of the UNFCCC.

The perceptions of groups of countries towards environmental agreements depends on the manner in which the agreements are linked to development, economics and trade issues. Developing countries have always drawn attention to the issue of underdevelopment, poverty and economic growth during discussions of environmental agreements. The developing countries believe that if international environmental co-operation is to proceed, these issues must be given due importance. It is also a common perception among the developing nations that industrialised countries are responsible for most of the global environmental problems, and it is only right that these countries take the lead in `cleaning up' the environment.

According to Hurrel and Kingsbury (1992), countries in the South have demanded that the North take the first steps in tackling the global environmental threats. Hence, to persuade the South to take up the same responsibility, the North must provide assistance to cover costs of specific measures to tackle global environmental threats so that resources are not diverted from development. However, it is known that developing countries have frequently asked for assistance to deal with the many serious environmental problems within their countries that do not affect the North. Such `demands' have often been the thorny issues in the various agreements and declarations. Kiss and Shelton (1991) suggested that Third World preoccupation arose from their perception that industrialised countries considered development issues as less urgent than, and subordinate to, efforts to protect the global environment. What is worse, they saw the implementation of

stringent environmental safeguards across boundaries as creating new non-tariff barriers or at least imposing significant costs and constraints on production processes or products, resulting in a loss of competitive advantage.

2.11.1 Montreal Protocol on Substances that Deplete the Ozone Layer

The Montreal Protocol was adopted under Article 8 of the Vienna Convention for the Protection of the Ozone Layer. The objective of the Protocol is to formulate measures, procedures and standards for the control and reduction of emissions of substances that deplete the ozone layer. The Montreal Protocol was formulated as early as 1987 and came into force on 1 January 1989. The perceptions of developed and developing countries on this so-called environmental agreement related more to trade and economic concerns. Developing countries viewed the treaty as a hindrance to their industrial achievement and hence to their economic growth. Developed countries, on the other hand, viewed each other with suspicion, viewing others as taking advantage of their technology skills. In spite of this situation, the treaty is widely cited as the most successful example of international environmental co-operation. However, some have argued that CFCs would have been eliminated with or without an effective international institution because of the relative easy issue at hand, strong scientific evidence, lack of coherent industry opposition and the availability of alternatives (Parson, 1994.)

In the early negotiations of the Protocol, the USA, Canada, Finland, Norway and Sweden proposed a ban on the use of CFCs as an aerosol propellant but no limit on other uses of CFCs. According to these countries, this was the quickest way to reduce release of CFCs. The EC proposed production capacity limit because it maintained that an aerosol ban did nothing to prevent releases from the growing

non-aerosol uses. Because of these differences, negotiations broke down in 1985 and no protocol was in sight (Nigel, 1992). On the ozone issue, America seems to have taken a very positive attitude. As early as the 1970s, the US banned aerosol use of CFCs (Bramble and Porter, 1992). However, the British tended to perceive the Americans as overreacting to environmental dangers or using ecology to mask commercial motives. Britain held such an attitude because economics played a role in the British position since, as Benedick (1991) pointed out, CFCs were an important foreign exchange earner for Britain. One third of CFCs manufactured were exported and aerosol products accounted for over 80% of the country's domestic use of CFCs in 1974. Kauffman (1997) reported that the production of CFCs in the UK doubled between 1794-1986 (from 65,000 tonnes to 123,700 tonnes annually).

The perceptions of the USA and Europe toward the MP are influenced by their industrial sectors. The chemical industries in the USA and their European counterparts have different perspectives on the need for international regulations on CFCs. Although Du Pont (one of the largest producers of CFCs) had declared in 1975 that restrictions on CFCs `would cause tremendous economic dislocation', producers in the United States had moved to develop new propellants for spray even before the 1978 aerosol ban was introduced. US companies seemed more willing than their European counterparts to adapt to changing scientific knowledge and public perception. They also resented the fact that their European rivals had achieved a competitive advantage in the late 1970s by blocking meaningful EC regulations. Industries in the USA had repeatedly urged the EPA to maintain a "level playing field" and to avoid recurrence of unilateral regulatory action by the United States that was not binding on other major CFC- producing countries. Until 1986, American producers, like their European counterparts, steadfastly opposed

international regulations on CFCs. However, industries in the US later changed their stand and indicated that many companies favoured at least a freeze on CFCs' production. This change of standpoint resulted in a policy change in American negotiations. The US industries' endorsement of CFCs control was seen by the Europeans as a way to enter the profitable EC export markets with substitute products that they had secretly developed.

The USA was apprehensive that she would lose out in terms of trade if she continued to enforce measures to limit CFC production unilaterally. Hence, at the first Session of the Montreal Protocol Meeting, in Geneva, December 1986, she offered specific approaches to restrict trade in controlled substances with non-parties. Her objectives were to stimulate as many nations as possible to participate in the protocol, by preventing non parties from enjoying competitive advantages and by discouraging the movement of CFC production facilities to such countries. But, in April 1987 at the Geneva Session the EC and UK representatives blocked further discussion of trade until legal experts from the GATT secretariat could advise on the permissibility of such measures under existing international law (Benedick, 1991). However, in the later stages of implementation there seemed to be an agreement among the developed countries on measures to phase-out the production of CFCs and other ozone depleting substances.

The developing countries had a slow start in the negotiation process of this treaty. During the negotiations in 1987, they were merely the onlookers. The primary concern of the developing countries was merely to maintain maximum usage of CFCs for the longest possible grace period. However, there was a shift in their attitude when they found out that the industrialised countries were moving rather rapidly towards a phase-out of CFCs. Hence, it would be in their best interest not to

linger too long with CFCs but to move on to new technology. Two contentious issues shaped the perceptions of developing countries towards the Montreal Protocol. Firstly, the fear of being deprived of CFCs needed in the industrial sector and, secondly, the fear of having to pay more for alternatives and the new technologies. In addition, as current producers or prospective producers themselves, they were faced with the additional cost to refurbish existing CFCs facilities. Hence, in exchange for their participation in international co-operation, the developing countries insisted that they had access to adequate financial resources and technology transfer besides being given a grace period in the phase-out programme.

In a later development, developing countries at an Ozone Conference in London, 1989, demanded assurances that financial aid and technology transfer would be forthcoming. For their part, the industrialised countries now realised that the promises of Montreal would have to be translated into tangible assistance to enable developing countries to forego significantly expanded use of CFCs (Benedicks, 1991). At the 1989 Conference, the Indian Environment Minister declared that what haunted the developing countries was the prospect that substitutes would not become available soon enough to meet rising expectations, or that the alternatives would prove to be too expensive. During the London meeting in 1990 to amend the Montreal Protocol, the developing countries pushed forward their request for access to new technology. Maneka Gandhi, the Indian Minister, was sceptical of the claims by Western governments that they were unable to guarantee transfer of technology because the IPR were in private hands. She pointed out that governments intervened in the operations of markets all the time and *said "either you sell us the technology or you change your laws or you change your patent rights,"* (Benedick, 1991, p.189).

Other developing countries such as Brazil, China and Malaysia rallied behind India. Malaysia's Environment Minister went on to say that denying access to modern technology amounted to environmental colonialism (Benedick, 1991). His statement was echoed by Abu Bakar Jaafar, the leading Malaysian negotiator, who chastised the treaty as inequitable. He believed developing nations "had been had" at Montreal because they were unaware of the full socio-economic implications of the protocol. He stated that there had been insufficient time to review the lengthy and legalistic English-language protocol before it was rushed to the plenary session for signature. Abu Bakar criticised the protocol for allotting a lower per-capita consumption quota to developing countries than to industrialised countries. He also contended that the trade provisions of the treaty amounted to trade war by environmental decree. Hence, it can be seen that technology and financial resources had a profound effect on developing countries when it came to the ozone issue.

2.11.2 United Nations Framework Convention on Climate Change (UNFCCC)

The role the Convention plays in international environmental co-operation was highlighted during the opening of the First Conference of Parties in Berlin, 1995. Michael Zammit Cutajar, the Ex-Executive Secretary General of the Interim Secretariat for the Convention, remarked, "*the Convention is an opportunity to fashion a new culture of international co-operation with each member of the global community playing its part according to the principle of the Convention*" (UN, 1995). The Convention needed international co-operation to achieve the stabilisation of concentration of greenhouse gases in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The level should be achieved within a timeframe sufficient to allow the ecosystems to adapt naturally to

climate change, to ensure food production would not be threatened and to enable economic development to proceed sustainably.

The Convention categorically mentioned that the largest share of greenhouse gas (GHG) emissions originated from developed countries and per capita emissions in developing countries were still relatively low. Hence, the major debate at this Convention was the commitment of developed countries to reach a certain target on the timetable and level of emission of greenhouse gases.

During the early phase of the implementation of the UNFCCC, the disagreement among nations concentrated more on national economic interests than the environmental well being of the planet. The developed countries were reluctant to agree on the level of greenhouse gas emissions and the target date for fear of hurting their industries. The oil-producing developing countries took the view of the developed countries because they feared losing substantial revenue through less utilisation of petroleum and petroleum products. Most industrialised countries viewed a cut in carbon dioxide emissions to imply the upgrading of existing industrial facilities to more environmentally friendly technologies. This in turn tended to indicate increased industrial costs. Developing countries such as China perceived the reduction exercise to mean less utilisation of coal, which in turn would affect her national development.

Although some countries or groups of countries were seen to be very persistent with their original stand, some countries however did change their standpoint as a result of domestic and international pressure. For instance, the USA's stand on the climate change issue was very crucial because she is the largest emitter of greenhouse gases. She is responsible for 20% of the current carbon emission only yet has 4% of the world's population (Clinton, 1997a). Nonetheless, at

the UNCED negotiation Bush's administration threatened to torpedo the entire Earth Summit in order to prevent the adoption of targets and timetables for CO_2 reduction, even though her own studies showed that the USA could easily meet the most commonly debated goal (stabilisation of CO_2 emissions at 1990 levels by 2000) with purely voluntary non-binding measures (Gore, 1992). The hostility of the USA's position towards climate change negotiation reached a level where US delegates were issued the following guidelines: *"it is not beneficial to discuss whether there is or is not warming, or how much or how little warming. In the eyes of the public, we will lose this debate. A better approach is to raise the many uncertainties that need to be understood in this issues,"* (Hilyard, 1993, p. 29).

Before the Earth Summit, almost all the industrialised countries were willing to set a binding target for reducing and stabilising carbon dioxide emission. Nevertheless, the USA's decision to pull out of the Earth Summit forced every other industrial nation to agree to Bush's position (Gore, 1992). The USA's `hostility' towards global co-operation on climate at that time was so obvious that she only became a party on March 1994, just before the First Conference of Parties (CoP) in 1995.

Nevertheless, the world saw a shift in the USA's position during CoP2 (1996). During the close of CoP2, the USA endorsed the Geneva Ministerial Declaration which called for parties to negotiate a legally binding protocol to reduce GHG emission and to move forward using new and compelling scientific evidence. The shift in the USA's position could be attributed to the Clinton-Gore presidency, both are more "environmentally friendly" than Bush. However, Paterson (1996) was doubtful whether the Clinton-Gore presidency would have enough domestic political influence to sanction the large amounts of financial and technology transfer required

especially with the US's presidential budget deficit. The resources are necessary to enable developing countries, especially large and semi-industrialised countries such as China and India, to tunnel through to efficient energy.

Clinton faced criticism from other industrialised nations for not doing enough. During the United Nations Special Session, 1997 he pledged US$1 billion in assistance over the next five years to help developing nations reduce emissions of greenhouse gases (Clinton, 1997). Clinton also gave his assurance that the USA would go for a legally binding agreement at the Kyoto meeting, if the developing countries participated meaningfully to address the climate change issue. However, at CoP3 in Kyoto (1997) such pledges to a legally binding agreement faced strong objections from several American policy makers. For instance, Senator Chuck Hagel[2] asserted that *"there is no way the vote in the US Senate will even be close. We will kill this bill".* The bill, which the Senator referred to, was getting Congress approval for the Kyoto Protocol (Sajoo, 1997).

The objections came from the nature of the commitments sought from the country Parties. According to Sajoo (1997), the Meeting in Kyoto was different from the Rio Summit. At Rio, there were only voluntary pledges to stabilise emissions at 1990 levels by 2000. However, in Kyoto, the CoP was seeking to secure a legally binding agreement: the Kyoto Protocol. Sajoo believed that Congress seized upon Kyoto's focus on developed economies and argued that the regime was inequitable, thereby keeping the industry lobby satisfied.

[2] Hagel co-sponsored the Hagel-Byrd Resolution. The resolution, which was passed by the Senate, stated that the United States' Senate would not ratify any treaty that exempted the 130 developing nations from legally binding mandates or that would cause serious economic harm to the United States.

Before the Kyoto Meeting, the EU saw the change in attitude as a good omen. The EU has always staunchly supported efforts to reduce GHG emissions. The EU and Japan had tried to persuade the USA to set a quantified target for GHG reduction during the early stage of the Convention negotiations. In the end they only managed to prise out the wording in the Convention that included mention of dates but was sufficiently ambiguous to make claims that it was a binding commitment (Paterson, 1996). The Prime Minister of Japan, just like Clinton, was optimistic during his speech at UNGASS in 1997. He proposed an initiative called the Comprehensive Strategy for the Prevention of Global Warming or Green Initiative which consisted of two pillars: Green Technology and Green Aid. Under the Green Aid initiatives Japan would utilise overseas development agencies and private financial resources to cope with the issues of energy and global warming and promote co-operation with developing countries through the development of human resources (Hashimoto, 1997).

If the world witnessed an apparent change from a negative to a positive attitude on the part of the USA towards co-operation to abate warming of the earth, Australia was the reverse. During CoP2, Australia firmed up against any further commitment of developed countries. She emphasised that there was a need to await further scientific certainty before undertaking further obligation, despite the fact that she had previously accepted the scientific consensus on climate change (Newell and Paterson, 1996). Hence, together with New Zealand, Australia declared her reservation concerning the language in legally binding targets in the Ministerial Declaration made in Geneva.

While Australia made a roundabout turn, the oil-producing countries (most of them in the G77 and China) did not change their perception with time. Ever since Rio, they tried as much as possible to avoid any association of oil with climate change. During CoP1, Kuwait, Saudi Arabia and Venezuela formally registered their reservations toward the `Berlin Mandate' stating that full consideration had not been given to meet the specific needs and concerns of their countries. The Berlin Mandate, the decision of CoP1, aimed to elaborate policies and measures and to set quantified limitation and reduction objectives for Annex I Parties (developed country Parties). The Mandate established an open-ended ad hoc working group to carry out the process of elaborating the policies and measures required under the Mandate. The oil-producing countries feared that such a process would reduce the demand for their oil and oil products and thus affect their economic growth. During CoP2, 15 oil and coal-producing nations refused to sign the Ministerial Declaration. The Chairperson of the Ministerial Level Meeting highlighted their fears and voiced the concern of the oil-exporting countries regarding the measures taken by Annex I Parties (developed country Parties) to reduce consumption of fossil fuels that might adversely affect their economies (Dreifuss, 1996).

If the developed countries were undecided on the target and timetable of GHGs' emission reduction, the developing countries had concerns about other issues. Their focus of attention regarding the Convention was more on financial support. MacNeill *et al.* (1991) pointed out that although the positions of the developing countries varied greatly they were united on financial issues. The larger countries such as Brazil, China and India reiterated their essential position that any international agreement must address their basic concerns regarding equity. They would not accept legally binding commitments to reduce economic activities which

release GHGs unless they had a clear indication that they would receive support to finance the major up-front investments needed for such action. They also wanted guarantees concerning the transfer of alternative technologies on a preferential and non-commercial basis. The remarks made by these developing countries were nothing new since they echoed provisions provided in the Convention itself and promises made during UNCED.

Porras (1992) drew the line much longer when she said that the transfer of resources from developed to developing countries was an obligation rather than aid or assistance. She supported the argument of developing countries by her remark about the principle of common but differentiated responsibilities. According to her, this principle justified the different environmental standards and indicated that the existence of different environmental standards in the EC was also due to the different environmental situations of its member states.

2.11.3 Convention on Biological Diversity (CBD)

Biological diversity is an issue totally different from the ozone layer and climate change. While the problems associated with all three issues are global in nature none is so closely linked to the issue of sovereignty than biological diversity. The tendency to associate biodiversity with forests does not make the issue much clearer. Developing countries are known to be host to most of the forests in the world, and their sovereignties over such natural resources are often questioned and scrutinised.

The magnitude of biological resources found in the developing countries is so huge that Australia is the only developed country of the 12[3] that are known as mega biological diversity countries. A country is called a mega diversity country when she has an abundant number of different species of animals and plants.

However, such thriving habitat is now on the verge of disappearance as shown by many reports. According to Macneill *et al.* (1991) since 1850, the forest cover of the earth has been reduced from 6 billion to 4 billion hectares. During the past four decades, the rate of deforestation has accelerated sharply, especially in developing (mostly tropical) countries, where about 60% of the remaining forests is found. In 1988, it was estimated that tropical forests disappeared at an estimated rate of over 20 million hectares a year. It was also documented that many of the 24 advanced industrialised nations of Western Europe, Northern America and Austral-Asia (Japan, Australia and New Zealand) are experiencing net forest lost through a combination of over-cutting, bad forest management, and damage from acid rain.

The UNFCCC drew attention to the developed countries because they are the major sources of GHGs emissions. However, the CBD placed the focus on developing countries because they are the sources of most of the biological resources. This Convention was another contentious treaty that again saw conflict between the North and the South. The issue beneath the conflict revolved around differences in perception of the role and importance of biological diversity to the international community and the manner in which the Convention addressed this issue. Chatterjee and Finger (1994) stated that the Convention raised the issue of ownership and control over biological diversity. In the case of the North and the USA,

[3] The twelve megadiversity countries are Australia, Brazil, China, Colombia, Ecuador, India, Indonesia, Madagascar, Malaysia, Mexico, Peru and Zaire.

in particular, the major concern was to protect pharmaceutical industries and biotechnology industries that obtain their raw material from forests. The concern of the South was mostly to ensure that governments and industries could continue to exploit their own natural resources. For the industrialised countries, the best way to ensure the free-flow of biological resources to their industries was to advance their claim to acquire resources owned by other states. The importance of these raw materials to the industries was highlighted by Myers (1992). He estimated that one of four products sold by pharmacies, whether medicinal or pharmaceutical, is manufactured from materials taken from tropical forest plants. The commercial value of these products is at least US$20 billion per year worldwide.

The importance of these biological resources to her industries was so great that the USA refused to sign the Convention during UNCED (she later signed the Convention on 4th June, 1993 but until now has not become a Party.). In fact, Bush declared that the Convention posed a threat to biotechnology industries with its restrictive regulatory agenda for gene manipulated products and failure to protect intellectual property rights that would put jobs at risks (Grubb *et al.*, 1993). Boyle (1994) also suggested that the USA opposed the CBD because of the provision on technology transfer, financing and access to resources which, Bush claimed, would retard her biotechnology development and undermine the protection of ideas. Hence, during negotiation of the Convention, the main priority of US negotiators was to block any measures that might harm the interests of biotechnology companies or undermine the patenting of intellectual property rights (Hildyard 1993). Nonetheless, Tim Wirth (US Under Secretary) warned that germplasm, which is the very foundation of agricultural research, is at risk as long as the USA does not ratify the CBD. Agricultural research in the USA is dependent on the exchange of

germplasms. It was also reported that officials in India said to the US negotiator, *" if you don't honour the biodiversity treaty why should we honour your IPR"* (Diversity, 1997).

However, the EC did not share the same view as the USA on the transfer of technology and access to biotechnology. Such a situation was of no surprise because of the fierce competition between the USA, Europe and Japan in the biotechnology race. It was believed that the reason behind the USA's objection was the fact that US firms were losing billions of dollars due to private copying of American inventions. Jacques Delor of France indicated the EC's stance by declaring that the EC regarded the CBD as too timid. Meanwhile, Mostafa Tolba (UNEP Ex Director) stated that the negotiation had resulted in the minimum on which the international community could agree (Grubb *et al.*, 1993).

If previous authors have centred their observations on USA protection of its biotechnology industries, Rosendel (1994) referred also to other issues. He stated that in addition to the biotechnology issue, the US also objected to the funding of conservation projects in developing countries. The USA was of the opinion that the CBD did not provide donors with sufficient control over their own donations. The USA's view on the funding issue was shared by several other developed countries. Grubb *et al.* (1993) indicated that important developed countries might delay or refuse to ratify the Convention primarily because of concerns over control of funding. They were uneasy about the power given to the CoP over funding requirements.

Thus it is apparent that, on the one hand, the developed countries' concerns are mostly with those issues that affect the biotechnology industries, such as intellectual property rights and transfer of technology, while, on the other hand,

developing countries are more concerned with protecting and utilising their precious resources and are only willingly to part with them if adequate `compensation' is promised. MacNeill *et al.* (1991) pointed to the fact that developing countries, led by Brazil, China and India, indicated they would withhold their participation in the Convention if it did not include measures to provide them with access to the biotechnology they needed to exploit their own biological resources. They insisted that these technologies would have to be provided on terms that were preferential and non-commercial. Their suspicions regarding the motives of developed countries were compounded when the USA did not sign the CBD during UNCED but, instead, pushed for a Forest Convention. The developing countries used the USA's negative attitude towards climate change negotiation to abandon their willingness to negotiate an international treaty to protect endangered rain forests and other fragile ecosystems lying within their national territories.

Chaterjee and Finger (1994) argued that the forest is a new symbol of the North-South divide. The North sees the forest as common property whereas the South expects to be compensated for abandoning the exploitation of its forests. Nonetheless, factors such as trade and politics do sometimes restrain developed countries' zeal for conservation. For instance, the USA which is the world's largest importer of finished tropical hardwood products is unwilling to put herself at odds with producing states with whom she has close military-political ties such as Malaysia and Indonesia. She is reluctant to be too aggressive regarding primary forests in developing countries while the issue remains unresolved in the US (Bramble and Porter, 1992).

2.12 CONCLUSION

This chapter has briefly reviewed various literatures on international co-operation and the instruments used to implement the co-operation. It has also focused on and expanded some of the literature referred to in Chapter One especially that relating to co-operation and implementation. The literature review has also highlighted the obstacles that hinder co-operation. In addition to the element of self-interest and limited resources as described in Chapter One, other obstacles derive from countries' persistent attempts to protect their sovereignty and the heterogeneity of the participants involved in the negotiations. Several reasons have been provided to show the importance of co-operation to mitigate global environmental problems. In spite of the various obstacles faced by the international community, environmental co-operation has been forthcoming by the existence of about 170 conventions and treaties.

The chapter has also listed three instruments of international environmental law used to pursue international environmental co-operation, namely, customary law, soft law and hard law. However, the present study is primarily interested in hard law, usually called multilateral environmental agreements (MEAs) and also commonly known as conventions and treaties.

Science is shown to play an important part in shaping environmental co-operation and consequently the formulation of MEAs. However, in spite of its great importance, science has always come second to politics. It was shown that political choice is required to translate scientific findings into policies.

Factors that are highlighted to affect the implementation of the MEAs include the status of negotiators, government insincerity, administrative capabilities, complexity of agreement, transformation into national law and lack of legal and

institutional frameworks.

Countries viewed the Montreal Protocol, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity from many differing standpoints. It seems their perceptions were largely controlled by the economic significance of these agreements. The economic value either attached to the agreements accelerated their willingness to become a Party and implement the agreement or stopped them from doing so. This was reflected in the USA's positive response to the MP and her negative attitude to the CBD. Finally, and most importantly, the literature highlighted in this chapter will be helpful in the later analysis of the implementation of these MEAs in Malaysia.

CHAPTER THREE

THE CONTEXT OF ENVIRONMENTAL MANAGEMENT IN MALAYSIA

3.1 INTRODUCTION

Multilateral environmental agreements are negotiated and conceived in the international arena. Nevertheless, the implementation of MEAs is carried out by individual countries using their national resources. The national resources which are utilised to pursue the implementation of MEAs are believed to be the same resources used to address local environmental problems. Accordingly, the factors that affect the implementation of MEAs are postulated to be similar to those factors that affect the implementation of measures to address local environmental problems. Hence, an examination of the environmental management framework will enable this study to identify the relevant factors.

Therefore, this chapter aims to provide the setting or context for the analysis of the implementation of MEAs in Malaysia through a detailed explanation of the national environmental management framework.

This chapter starts with a brief description of the policy framework to enable the reader to understand the position of environmental policy within the overall national policy framework. It then describes the organisational framework identifying the various agencies involved in environmental management and consequently in the development planning process. The description of the development planning process is intended to illustrate the decision making processes and the linkages between the various agencies and committees.

The description of the system of government and legislative framework is intended to show the statutory constraints encountered in the management of the

environment in Malaysia which ultimately affect the implementation of the MEAs. A short account of various other environmental legislation and formulation processes provides the reader with a general idea of the complexity of implementing MEAs.

Finally, the chapter will relate the factors identified in the management of the environment in Malaysia with those variables identified in the framework for the analysis of the implementation of MEA.

3.2 BACKGROUND INFORMATION ON MALAYSIA

Malaysia has made great advances in her socio-economic development since Independence in 1957. From an agricultural-based economy, she has transformed into a diversified economy with the manufacturing sector dominating GDP growth. The manufacturing sector share of GDP increased from 19.7 % in 1985 to 27% in 1990 and further to 32.4% in 1995, while the agriculture and forestry sector decreased from 20.8% in 1985 to 18.7% in 1990, and further to 15.5% in 1995 (6th Malaysia Plan). Manufacturing sectors are significant sources of environmental pollution especially water and air pollution. In 1997 there were 754 industrial projects approved with a capital investment of RM25 billion. It was estimated that RM3 million would be spent on pollution control and RM135 million on pollution protection measures (DoE, 1997, p. 63). The emissions of greenhouse gases from the manufacturing sector grew from 914,140 tonnes in 1990 to 1,689,680 tonnes in 1995 and was forecast to grow to 28,942,060 tonnes in 2000 (EPU, 1996). The rapid growth of the industrial sector has not only contributed to the emissions of greenhouse gases but also to the degradation of biological resources. Large areas of forest have been converted into industrial land use and effluents from the industries have polluted 25 of the 117 rivers monitored by the DoE (DoE, 1997, p. 2).

Another sector, which` is important to development, is the energy sector. The expansion of the energy sector to catalyse the development process has also contributed to the degradation of the environment. The greenhouse gases emitted from the oil/gas industry increased from 12,783,200 tonnes in 1990 to 14,318,200 in 1995 (EPU, 1996).

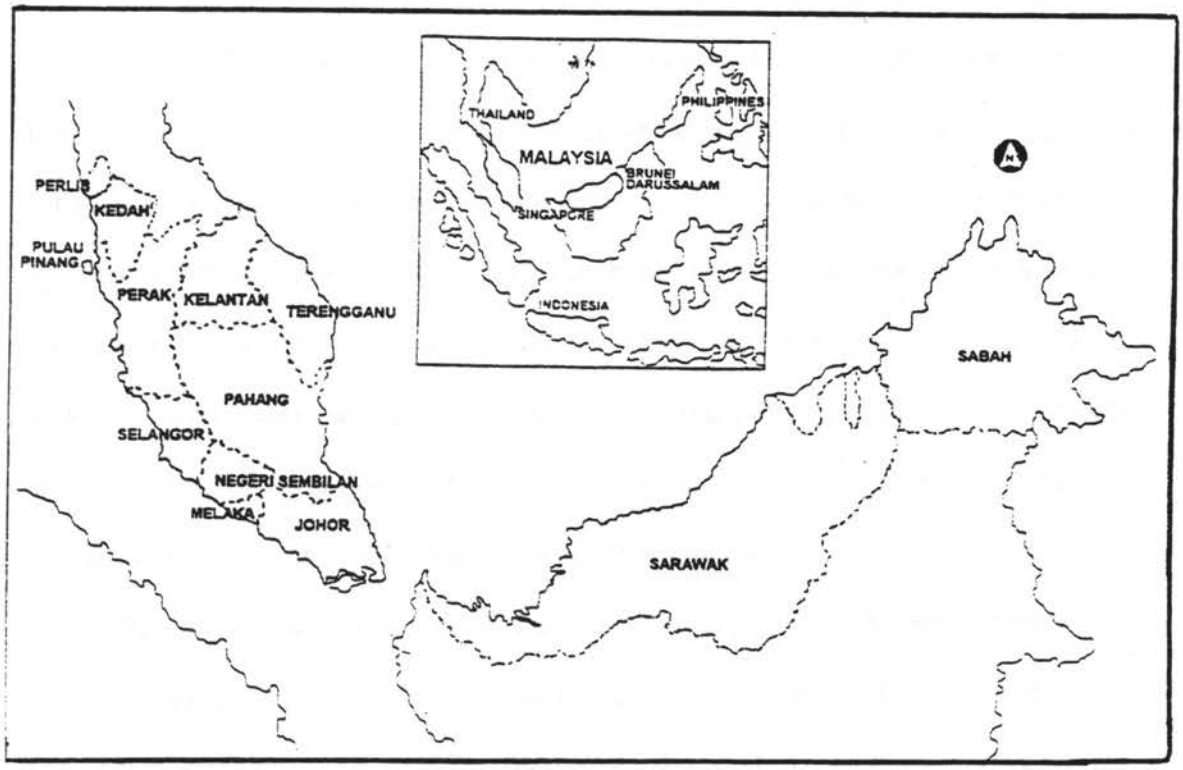
The number of vehicles also grew as the country developed. The total number of registered vehicles increased 2 million between 1992-1996 with a yearly average increase of 540,000 vehicles (EPU, 1996). The DoE recognised vehicular emission as a major source of air pollution especially in urban areas. A total of 8.5 million registered vehicles in 1997 accounted for emissions of 1.9 million metric tonnes of carbon monoxide, 224,000 metric tonnes of oxides of nitrogen, 101,000 metric tonnes of hydrocarbons, 36,000 metric tonnes of sulphur dioxide and 16,000 metric tonnes of particulate matter into the atmosphere (DoE, 1997, p. 2).

3.3 GEOGRAPHICAL BACKGROUND OF MALAYSIA

Malaysia is made up of 13 states and 2 federal territories (Kuala Lumpur and Labuan.). The South China Sea separates two of the states (Sabah and Sarawak) which are on the island of Borneo, from the Peninsular (see **Figure 3.1** overleaf). The land area of Malaysia is about 330,000 square km with territorial waters of 549,500 square km. The coastline is about 4,800 km long and made up of 51% sandy beach, 42% mangroves (mud), and 6% rocky beach and 1% is man-made (Nathan and McAlister cited in ADB, 1994). Natural forest covers 58% of the land area while tree cover is 72%. There is no distinct season and the temperature varies very little, ranging from 21 to 32 degrees C. Mean annual temperature is 27^0 C and

the mean annual rainfall for the Peninsular is 2,540 mm. Relative humidity is between 85-95%.

Figure 3.1: Map of Malaysia



3.4 POLICY FRAMEWORK

Vision 2020 is the overarching national development policy objective and given effect by the policy framework in Malaysia. This policy framework can be categorised into three broad categories: firstly, the national development plans such as the Outline Perspective Plans and the Malaysia Development Plans which set out the broad policy objectives for the overall development of the country; second, macro or cross-sectoral policies, which address cross cutting issues. This category includes the National Environmental Policy and the National Policy on Biological Diversity. The National Environmental Policy is still in draft form; and third, the various sectoral policies, which address very specific subjects such as the National Forestry Policy and the Agricultural Policy.

The achievement of effective environmental management in Malaysia is inevitably linked to the achievement of the overall economic goals. This is illustrated by the Second Outline Perspective Plan (1991-2000). The Plan which provides the framework for the attainment of balanced development looks at the environment in the context of achieving economic development that is ecologically sustainable and balanced. This is because the Plan recognises that natural resource consumption and economic dependence on primary commodities is unsustainable. For instance, new areas for timber production are getting scarce. However, stringent measures to promote conservation measures without strong and pro-active policies to promote and encourage investment in industrial sector will be counter productive economically, socially and consequently environmentally.

Although Malaysia has yet to have a national policy on the environment, the various development Plans have contained policy statements on the environment. The Third Malaysia Plan (1976-1980) was the first to seriously address the environment in the context of development. This seriousness coincided with the establishment of MOSTE and DoE during period of the Plan. However, the national development Plans were not consistent in their emphasis on the environment whereby the next development Plan (Fourth Malaysia, 1981-1985) was very tame in addressing environmental issues with no chapter specifically laid aside to deal with the environment. Nonetheless, subsequent Plans do focus on the environment as a component of the development process.

3.5 ORGANISATIONAL FRAMEWORK

The organisational framework in Malaysia is established on a sectoral basis. The administration of natural resources and environmental protection is dealt with

sector by sector, by many agencies in various ministries. At the federal level alone there are about 20 agencies said to have some environmental related functions or responsibilities as shown in **Appendix 2**. The presence of a large number of agencies, both at federal and state level within the organisational framework, complicates environmental planning and management.

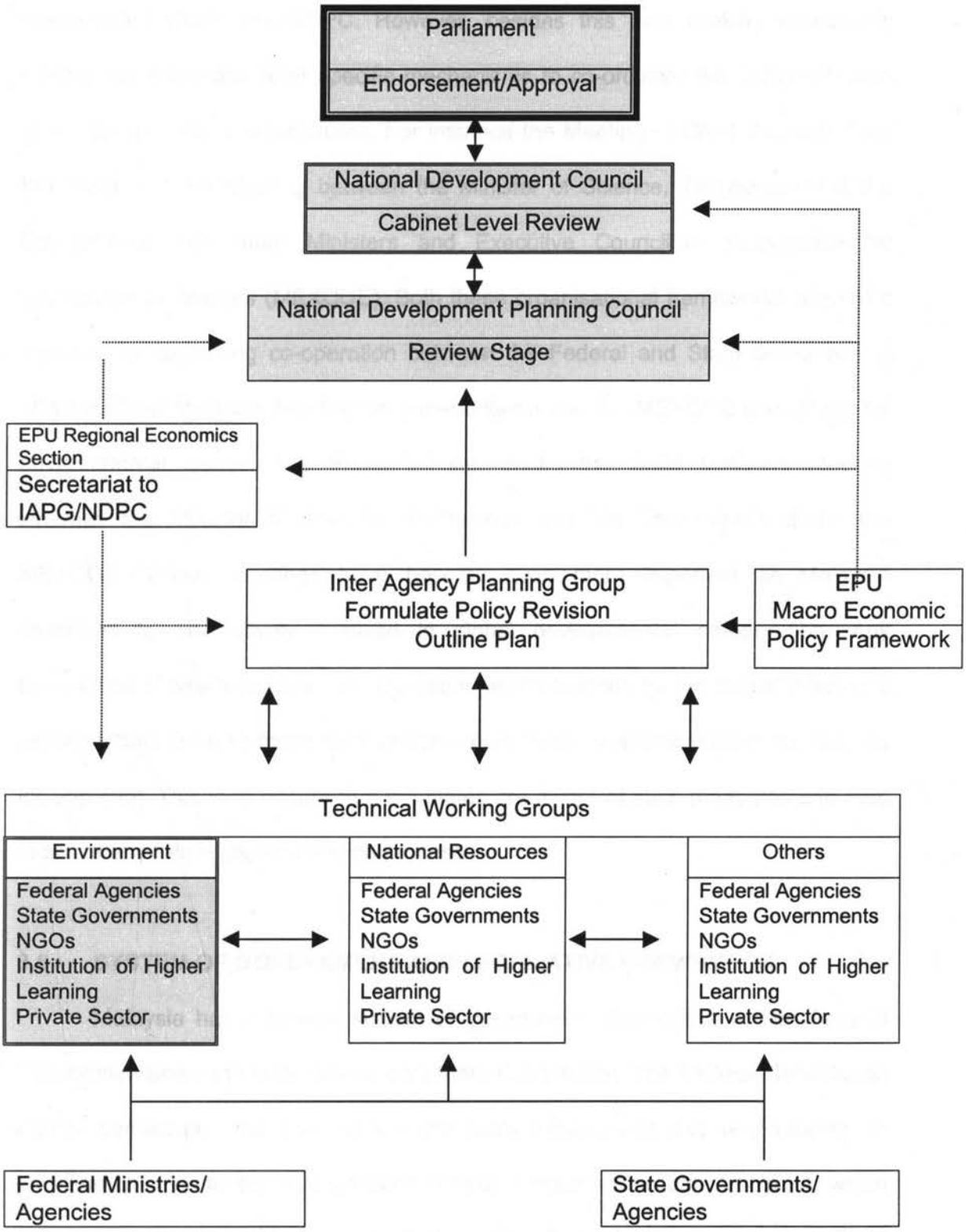
The Economic Planning Unit in Prime Minister's Department plays the central planning and co-ordinating role. It is responsible for co-ordinating the formulation and development of the 5 year Malaysia Plans. It can be regarded as the essential macro policy and planning agency within the administrative structure. The policies and plans emanating from the EPU are then translated into sectoral policies and implemented accordingly by the relevant ministries or agencies. For instance, the Ministry of Primary Industries is responsible for the formulation and implementation of policies on natural commodities such as forest policy.

It is argued that the Ministry of Science, Technology and the Environment (MOSTE) is an exception to the strict sectoral demarcation because it addresses general environmental management. This aspect is necessarily cross-sectoral and is reflected in MOSTE's approach towards the formulation of the national environmental policy and the national policy on biological diversity. It is believed that environmental management in Malaysia took a formalised and structured form with the formation of the Department of the Environment in 1976. The DoE administered and enforced the Environmental Quality Act in 1974 and Part IV (Protection and Preservation of the Marine Environment) of the Economic Exclusive Zone Act, 1984. The DoE was initially established as a division under MOSTE. It was later upgraded into a department and is one of the several departments under MOSTE (see **Appendix 3**). In fact, MOSTE itself was also established in 1976. It was formerly

known as the Ministry of Technology, Research and Local Government, established in 1973.

Environmental management has been at the periphery of the Malaysian development planning process. It was only recently that it was given recognition by the Sixth Malaysia Plan. The Plan suggested the setting up of the National Council for the Environment (NCE) to be chaired by the Prime Minister. Its purpose was to co-ordinate the functioning of all agencies, consider strategies and programmes which have implications for the environment, and to advise the Government on policies geared towards a more holistic approach to environmental management. However, the proposal did not materialise. It was believed that the government turned down the proposal because there were already too many committees chaired by the Prime Minister. Instead, the membership of the National Development Council (NDC) was expanded to include the Minister of Science, Technology and the Environment whereas the National Development Planning Council (NDPC) was extended to include the Director General of the DoE. Both these structures are part of the organisational mechanism to ensure the systematic adoption of environmental criteria into the development planning process (see **Figure 3.2** overleaf). Furthermore, incorporating environmental management into the existing NDC, not only reduces the amount of red tape but also enables the environment to be considered within the overall development perspective. Nonetheless there are many who believe the NDC is not a suitable organisational body for managing environmental matters because the NDC is heavily inclined to other development issues such as economic and social issues. Hence, those proponents of the NCE would prefer an entirely new or different body to oversee environmental concerns.

Figure 3.2: Development Planning Process



Source: ADB/Government of Malaysia (1995)

The Prime Minister chairs the NDC while the Chief Secretary to the Government chairs the NDPC. However, besides this high ranking institutional mechanism there are other specific mechanisms to co-ordinate the implementation of various policies and measures. For instance the Meeting of Chief Ministers from the State and the Meeting between the Minister of Science, Technology and the Environment with State Ministers and Executive Councillors responsible for Environmental Matters (MEXCOE). Both these organisational frameworks provide a platform for facilitating co-operation between the Federal and State Governments with the Chief Ministers Meeting on general items and the MEXCOE specifically for environmental issues. The Prime Minister chairs the Chief Ministers Meeting whereas the Minister of Science, Technology and the Environment chairs the MEXCOE. These meetings have become even more important as Malaysia continues to be actively involved in global environmental co-operation. Any formulation of new legislation and regulation which touches on the states' interest is usually tabled at these meeting for endorsement before it is forwarded to the Cabinet for approval. This is to ensure that the states are aware of such measures and thus facilitate any future implementation process.

3.6 SYSTEM OF GOVERNMENT AND LEGISLATIVE FRAMEWORK

Malaysia has a federal system of government. She has a written Federal Constitution and each state has its own State Constitution. The Federal Constitution clearly demarcates the Federal Government's involvement and responsibility in environmental protection and pollution control. It does so through Article 74, which establishes the Federal, Concurrent (both the Federal Government and State

Governments have jurisdiction over the same matter) and State Lists as per the Ninth Schedule (see **Box 3.1**).

BOX 3.1: NINTH SCHEDULE OF THE FEDERAL CONSTITUTION

Federal List

1.External affairs , including-

Treaties, agreement and conventions with other countries and all matters which bring the Federation into relations with any other country;

Implementation of treaties, agreements and conventions with other countries;

8. Trade, commerce and industry, including-

(b) Imports into, and exports from the federation;

(i) Industries; regulation of industrial undertaking;

(k) factories, boilers and machinery

(9) Shipping, navigation and fisheries, including-

(c) maritime and estuarine fishing and fisheries, excluding turtles;

11 Federal works and power, including-

(c) Electricity; gas and gas works; and other works for the production and distribution of power and energy.

State List

2 Land -

3.Agriculture and forestry,

6. Water including water supplies, rivers and canals, control of silt

12. Turtles and riverine fishing

Concurrent List

3.Protection of wild animals and wild birds; National Parks

5.Town and Country Planning

7. Public Health, sanitation and the prevention of diseases

(Adapted from the Federal Constitution)

Under the Schedule, each individual state has legislative power over land, rivers, forests, local governments and town and country planning except in the federal territories. The distinct demarcation of jurisdiction is a fundamental determinant of the effectiveness of environmental management practices in Malaysia and has been at times a source of tension between State and Federal authorities.

Beside the three lists, Article 77 on residual power provides for state legislatures to make law on subjects, which are not enumerated in any of the lists. It is under this provision that environment in general and biological diversity in particular has been assigned to the states. Nevertheless, it has been argued that the Federal and State Governments have concurrent jurisdiction over environmental matters because neither retains exclusive authority in matters pertaining to the environment in general. Effective policy-making and implementation of environmental controls are often impeded by debates on the respective role of federal and state governments in the control of industrial pollution and management of natural resources. Hence, in the Malaysian context, the legislative framework for environmental management is made even more complex by the federal system and by the structure of responsibility for land resources.

Despite the restrictive nature of the Constitution to protect the State and Federal interests, it also provides for a better management of the environment especially those related to forest issues. The Constitution in ensuring that there is good management of natural resources, provides an important provision for good environmental management. Here Article 94 of the Constitution, among other considerations, requires state agriculture and forestry officers to accept professional advice from their federal counterpart. This enhances the quality of services given by

the officers belonging to the states' service because the states' human resources often lack expertise.

However, state laws on land and land related matters, such as forestry, often lack uniformity because of the diverse origins of much of the state legislation. Some have been based on Federated Malay States' (4 states: Perak, Pahang, Negri Sembilan and Selangor formed the Federated Malay States in 1895) enactment, others on the Straits Settlements' (3 states: Penang, Malacca and Singapore formed the Straits Settlements in 1824) Ordinance and some are an amalgam of the two. Hence, to ensure uniformity, Article 76 of the Constitution allows the Federal Government to enact law to this effect (see **Box 3.2** below). For instance, the Land Conservation Act 1960 and Forestry Act 1984 were introduced in an attempt to standardise pre-existing state legislation. Nonetheless, federal legislation of this nature does not become operative in a state until it is adopted by a law introduced by the state legislature that is a state law. Such law may be amended or repealed at a later stage without reference to the federal government.

Box 3.2: FEDERAL CONSTITUTION: Article 76

76. Power of Parliament to legislate for States in certain cases

(1) Parliament may make laws with respect to any matter enumerated in the State List, but only as follows, that is to say:

(a) for the purpose of implementing any treaty, agreement or convention between the Federation and any other country [..], or

(b) for the purpose of promoting uniformity of the laws of two or more states; or

(c) if so requested by the Legislative Assembly of any State.

(Adapted from the Federal Constitution)

Another important aspect of the Federal Constitution in relation to this study is the jurisdiction over international treaties. The Ninth Schedule of the Constitution provides power for the Federal Government to be involved in the legislation and implementation of international treaties, agreement and convention. If by chance the implementation of the international treaties touches on the state list, the Constitution also provides power for the Federal government to make law to that effect as indicated in Article 76.

3.7 NATIONAL ENVIRONMENTAL POLICY

There are various policy statements on the environment in the development plans, but there is no national policy on the environment. Efforts to introduce a national policy on the environment in 1997 came to nought when the government did not endorse the draft policy submitted by MOSTE to the Cabinet. Nonetheless, the Seventh Malaysia Plan has categorically stated that environmental and natural resource management under the Plan period will be guided by the National Policy on the Environment. It seems therefore that the Development Plan has agreed to the objectives and the principles of the Draft Policy. Hence, it can only be assumed that it was the detailed strategies and plan of action that were not endorsed by the Government.

3.8 ENVIRONMENTAL LEGISLATION

In historical terms, the formulation and adoption of specific pieces of environmental legislation reflect the major phases in the development process of the country. Legislation was drafted in response to obvious environmental deterioration caused by specific activities or forms of development. Hence, legislation relating to

matters such as the pollution of waterways from tin mining activities and soil erosion caused by agricultural activities has a long history, whereas those concerned with the discharge of industrial waste are relatively recent. For instance, the legislation to control silt from agricultural activities was already in place in 1917 and the waterways were protected from pollution from mining activities as early as 1895 (Ooi in Aiken *et al.*, 1982). However, the regulation to control industrial effluents only came into force in 1979. National legislation to implement international commitments is much more recent. For example, the Customs Act 1984 was amended in 1989 to fulfil the country's obligation to control importation of ODSs. It is believed there are at least 40 environmental related pieces of federal legislation (**Appendix 4).**

The mechanism to formulate the various legislation follows the same pattern whether it is an environment-related legislation or not. An in-house consultation will start the process, which will include the legal officer and the agency's staff. The draft regulation is then subjected to further discussion with related agencies. Once the draft is agreed by all, the draft regulation will be presented to the Cabinet for approval. However, before the submission to the Cabinet, the Ministry concerned will circulate the draft to all the relevant Ministries in the form of a Cabinet Paper during which the Ministries will officially support or disagree with the draft. The Cabinet will make a decision based on the comments of the relevant ministries.

3.9 INSTITUTIONAL CULTURE

In Malaysia, ministries are ranked higher than departments where a department is answerable to the ministry in policy-making decisions although there are instances where the Director General of a department is at a higher grade than the Secretary General of a Ministry. The process undertaken in policy-making

decisions, to formulate the various policies and legislation is not straight forward as indicated above. The policy makers within MOSTE and other relevant institutions operated within a particular bureaucratic system, which is greatly influenced by the institutional culture that they inherited. In the context of multilateral environmental agreements, Boehmer-Christiansen and Skea, 1991, provided a definition of culture when explaining the national implementation of the agreements. Culture as defined by them is a vague term with many dimensions. It can encompass popular culture, as well as attitudes and styles, which characterise corporate enterprise, economic management, political relationships and regulations. This section is concerned with the attitudes and styles of the policy makers within the realm of environmental management in Malaysia.

The policy makers within the Ministry of Science, Technology and the Environment and the other environmental related Ministries such as the Ministry of Primary Industries, Ministry of Energy, Communications and Multimedia, Ministry of Agriculture, Ministry of Transport, Economic Planning Unit, Prime Minister's Department, the Ministry of International Trade and Industry, and the Ministry of Foreign Affairs belong to the scheme of service known as the Administrative and Diplomatic Service. The total number of these officers all over Malaysia is about 3,900. Nonetheless, only about 30 of these officers are directly involved in the implementation of the three MEAs under study. For this reason, although they serve different institutions, these policy makers are often held together by the sense of belonging to the same service and they often know each other very well. Furthermore, the small number of these officers that are involved in the implementation of the MEAS brought them even more closer. This situation influences the style of managing the environment in Malaysia especially when it

comes to the decision-making process. The close bond that these officers have with one another enables them to communicate and come to some agreements without having to go through formal discussions or meetings. The results of some formal meetings are sometimes the endorsement of decisions, which have taken place through informal telephone conversations among the interested parties. This arrangement has often saved precious time, reduced the bureaucratic procedure and also avoided unnecessary long and often high-tension meetings.

In occasions where MOSTE is about to submit a Paper for the approval of the Cabinet, which is sensitive and affected the jurisdiction of other ministries, subtle and informal discussions often precede the formal meetings and discussions. Here, through their good rapport, policy makers in MOSTE will try to influence their colleagues in other Ministries to support their arguments. These informal discussions are often very effective to ensure that in the official and formal meetings, discussions will proceed smoothly and produce the intended results. Hence, the Ministers in charge of the respective Ministries are often spared the lengthy discussion to try to sort things out during Cabinet meetings. However, there are some instances that the policy makers from the different Ministries are unable to compromise due to personal visions and interests. In these instances, the Minister of Science, Technology and the Environment is left with the tough job of trying to get other Ministers in the Cabinet to support him.

However, in the management of the environment in Malaysia, these administrative and diplomatic service officers are not the only ones who could influence decision-making process. They often have to rely on the officers from others services especially those from technical departments such as the Department of Forestry, Department of Agriculture, and the Department of Environment. The

views and advice from these technical officers on issues such as pollution and environmental degradation are highly valued and respected. Hence, besides having to influence their 'brother officers' from other ministries, these administrative and diplomatic officers also have to convince the officers from these services to support them, which are easier said than done. It has been known that officers from the technical services often looked at the administrative and diplomatic service officers with envy because it was perceived that the administrative and diplomatic officers received a better scheme of service than they did. Furthermore, the policy makers from the administrative and diplomatic service officers are often seen as trying to dominate and intimidate the officers from other services through their positions in the Ministries.

Such situation sometimes made these technical officers to be "unco-operative" and resulted in unnecessary delay in the policy decision-making process and hence affected the implementation of the MEAs. However, this situation is often overcome through the combination of tact and official directives. In this regard, the co-operation is sought by establishing good contacts and rapport with certain technical officers who share the same interests and views. Otherwise, "co-operation" is secured by giving time limits for the technical departments to provide their views and comments.

3.10 CONCLUSION

The chapter has provided a detailed explanation of the framework of the three factors that are important in the management of the environment in Malaysia. The three factors are policy, organisational structure, and system of government and legislative framework. The policy framework illustrates the linkages between the

development plans, which provide the broad policy objective, the macro policies, which address the crosscutting issues, and the micro policies, which focus on very specific subjects. It has been demonstrated that there is no specific policy to address environmental issues. Nonetheless, environmental issues are fragmentally addressed in various policy statements in the national development plans.

The organisational framework demonstrates the linkages and the role of the various organisations in the development planning process. Most important, the framework provides insight into those organisations which are involved in the management of the environment.

Both the systems of government and legislative framework are guided by the Constitution, which provides the source of authority and power for the government to operate and to enact the legislation. The Constitution and legislative framework also illustrated the role of federal government in the implementation of international agreements.

The factors described in the chapter which play an important role in the management of the environment in Malaysia are considered to be similar to the variables identified in the framework for the analysis of implementation framework for MEAs formulated in Chapter One. The framework also lists national perception and politics as other variables affecting the implementation of MEAs but these are not mentioned in this chapter. The absence of the two variables in the discussion does not mean they are not important in the management of the environment and hence in the implementation of MEAs. Their omission is obvious because both politics and perceptions are subjective and therefore, do not exist within the formal frameworks discussed earlier. Their presence is highlighted in later chapters as the analysis progresses to looking into various official minutes, proceedings, memoranda,

interviews and opinions of policy makers and implementors. In fact, the influence of both perceptions and politics on the implementation of MEAs cannot be ignored because they set the context for the country's continual involvement in international environmental co-operation.

CHAPTER FOUR
METHODOLOGY

4.1 INTRODUCTION

This study on the implementation of multilateral environmental agreements is construed as policy research. Majchrzak (1984) defined policy research as the process of conducting research on, or analysis, of a fundamental social problem in order to provide policy makers with pragmatic, action-oriented recommendations for alleviating the problem. Policy research plays a crucial role in framing the problem and analysing policy responses, bridging science and policymaking, stimulating, applying global analyses to local conditions and providing analyses for policy implementation (Global Biodiversity Forum, 1997). The intensity of the difficulty facing policy researchers is reflected in the apprehension to find the methodology best suited for such research. In this regard, Smith and Robbins cited in Marjchrzak, (1984, p.45) stated: *"...because policy research [...] addresses the sometimes ambitious questions of decision-makers rather than of academicians [...] policy researchers frequently find themselves at the fringes of existing social sciences methodology - adapting, combining, and improvising as they go".* Coleman cited in Marchrzak (1984) added that there was no single comprehensive methodology of undertaking a technical analysis of policy research. Technical analysis refers to the examination of factors that may cause the social problem.

In light of the above, this chapter aims to illustrate the methodology the present researcher will pursue to analyse the implementation process of MEAs in Malaysia. First, the section on research strategy provides reasons for choosing a case study approach.

Second, the chapter will highlight the sources and types of data and information collected for use in the study. It will also provide a detailed account of interviewees and interview strategy, research strategy yields and the links between research strategy, environmental policy and implementation literature.

Third, the chapter will illustrate the procedure used for analysing the information and data collected from the primary and secondary sources.

Fourth, it will indicate several limitations to the study and finally will introduce the next three analytical chapters by forwarding the criteria used to select the three multilateral environment agreements as case study material.

4.2 RESEARCH STRATEGY

Cropper (1982) described research strategies as ways in which empirical information may be ordered and organised so as to relate theory to the empirical world or vice versa. They are methods of developing or testing explanations of the social world. Cropper added that each strategy is a distinctive way of organising and using empirical information. Despite the many strategies to choose from, it is important to utilise the most relevant strategy. Here, Yin (1989) believed that the first important step to differentiate among the various research strategies and therefore choose the relevant strategy was identification of the type of research questions asked. According to him, exploratory, descriptive and explanatory research employing `what', `how' and `why' type questions will likely favour the case study approach. Choice of research strategy will further depend on the extent of control the investigator has over actual behavioural events and also the degree of focus on contemporary events as opposed to historical ones.

Yin (1989) argued that a case study is not confined to the study of an individual but can also include an analysis of an event. For example, case studies have been conducted on decisions, programmes, implementation processes and organisational change. Yin (1989) defended his preference for the case study as a research strategy by stating that a case study's unique strength lies in its ability to deal with a full variety of evidence, documents, interviews and observations. Furthermore he maintained that empirical results from case study research can be used to compare against previously developed theory, which is used as a template. His view corresponded with what Cropper (1982) had previously said about relating theory to the empirical world. However, Cropper did not share Yin's view that the contemporaneity of an event should be one of the conditions for using the case study as a research strategy. Cropper argued that contemporaneous need should not overcast historical event.

Based on the various factors stated above, the present researcher believed a case study approach to be most suitable for analysing the implementation of the three multilateral environmental agreements chosen. In this regard, each of the agreements entails a single case study, hence, within this thesis there are three case studies. The case study approach will allow a more in-depth analysis of the implementation of each of the MEAs. Moreover, this study is also interested in the differences and/or similarities between the three MEAs and to proceed to generalisations later. Hence, after analysing each individual MEA in detail the study will follow with a comparative analysis of all the MEAs. The comparative method used in this study is what Arend (1972) regarded as a method of discovering empirical relationships among variables and not a method of measurement. He iterated that the comparative method should be resorted to when the number of

cases available for analysis is so small as to permit partial correlation; for which statistical method is made use of. Arend (1972) provided a crucial link between the case study and the comparative method. He suggested that the case study method can and should be closely connected with the comparative method and certain case studies even considered implicit parts of the comparative method.

4.2.1 Research Strategy Yields

Adopting the case study approach as the research strategy allows for the testing of the implementation framework for multilateral environmental agreements against the available empirical evidence of the implementation of the MP, UNFCCC and CBD. The research strategy in the current study is able to utilise administrative records, newspaper and press releases, and interviews, but most importantly, the case study approach allows the analysis to focus attention on the sequences that take place over time. As the researcher is fully aware, the implementation of the three MEAs is still ongoing and evidences are being continuously elicited even at the present moment in time. Meetings, proceedings, minutes, press releases and newspapers continually provide the necessary evidences which other methods of research strategy, such as the sample-survey are unable to provide, therefore the case study approach is able to accommodate the contemporaneous nature of the implementation of the MEAs.

The single-case studies of the three MEAs also yield data for a comparative analysis to be undertaken at the end of the study. Although each case study is of a different MEA the units of analysis are the same, namely the government and implementation instruments, allowing for a consistent analysis to be performed.

4.3 TYPES AND SOURCES OF INFORMATION

4.3.1 Administrative Records

Studies on the implementation of multilateral environmental agreements in Malaysia are very few, resulting in an acute shortage of literature written on this subject. Hence, information from secondary sources is scarce and therefore, the study will rely heavily on primary sources. The information needed for the study must be able to answer the research questions listed in Chapter One. Since the implementation of the chosen MEAs rests exclusively on the government, particularly on the environmental and environmental-related agencies, the sources of this information are largely in the domain of government institutions. The information is to be found documented in country programmes and projects, official documents, memoranda, reports, speeches and minutes of meetings. The minutes from the National Steering Committee and the Technical Committees contain important information from all sectors including both the private and public sectors. Documents from the UN agencies such as the secretariats of the MEAs relating to the Conference of Parties and its various subsidiary bodies, are also important sources of information. In addition to these `official documents', press releases and newspapers are further sources of important information.

Regarding the sources of information referred to above, Yin (1989) stated that evidence for case studies comes from six sources: documentation, archival records, the interview, direct observation, participation observation and physical artefacts. He described documentation as letters, memoranda, administrative documents, agenda and news clippings. Their usefulness, according to him is not their necessary accuracy or lack of bias but their ability to corroborate and augment evidence from the other sources.

Hakim (1993) defined administrative records as collections of documents containing mainly factual information compiled in a variety of ways and used by organisations to record the development and implementation of decisions and activities that are central to their functions. These administrative records can provide the basis for longitudinal studies, area-based studies, international comparisons, studies of organisations and the policy process. According to Duncan and Mathiowetz cited in Hakim (1993), administrative records provide more reliable information than the interview on some topics. In the present study, retrieval of information from administrative records is the best possible choice. This is because the implementation of MEAs is in the domain of the Federal Government which has more up to date information than the state governments, agencies or organisations. Hence, by accessing the records and official files in the related agencies, the study is able to analyse the factors that influence the implementation of the agreements, the constraints facing decision makers and the impact on the development and others sectors in the country.

The information retrieved through minutes of meetings and secondary sources is in various forms including statements, data and figures. Although the data is in numbers and figures, it is interpreted qualitatively rather than quantitatively to explain its meaning. Dey (1993) interpreted qualitative data as data which deals with meanings and meanings are mediated mainly through language and action.

4.3.2 Interviews

The administrative documents serve very well as sources of information for the measures taken by the country, factors that affect the implementation process, impacts of the agreements on environmental management, and the status of the

development of the agreements. Nonetheless, the study also embarked on interviews as another source of information. The interviews carried out in this study sought to elicit the views and perceptions of policy makers on the country's involvement in international environmental co-operation, the implementation of MEAs and the future direction likely to be taken on these issues. Interviews were conducted because perceptions and views are subjective elements, which cannot be identified by relying on administrative records or on questionnaires, which are rigid. Moreover, the subtle behaviour of the policy makers and implementors can be observed during interviews. Interviews were also used to clarify and confirm certain measures or policies. Hence interviews with policy makers provided insights and accurate details of the environmental policy-making processes and implementation procedure of MEAs not otherwise available in administrative records.

After elaborating on the reasons for undertaking the interviews, the study will now embark on an explanation of the selection of interviewees. The present researcher selected certain policy makers and individuals who had been publicly identified as being involved in the implementation of the three agreements. Although the subjects addressed by the MEAs, are considered multisectoral, the implementation of a MEA is itself is a very specific matter. It involves very few policy makers and takes place in an elite setting. Adapting the terminology of Fitz and Halpin (1994), elite setting means an institutional location in which national environmental or environment-related policies are devised and translated into directives. Therefore only specific people within specific organisations were interviewed.

As regards the implementation of the Montreal Protocol, interviews were conducted with officers from the Department of the Environment and the CETEC[1]. Regarding the implementation of the UNFCCC, interviews were carried out with officers from the DoE, the Ministry of Energy, Telecommunications and Multimedia, the Ministry of Primary Industries and the Meteorological Service Department. These departments are affected both directly and indirectly by the implementation of the Convention. In respect of the Convention on Biological Diversity, interviews were carried out with the former Ambassador to Rome and the FAO, and the Deputy Vice Chancellor of Universiti Kebangsaan Malaysia, both of whom were at the forefront of the CBD negotiation and involved in almost every CoP. Officers from the Ministry of Primary Industries and the DoE were also interviewed. Lastly, the Director General of the DoE was also interviewed. As head of the agency with technical expertise and force of law in environmental protection, she provided valuable insightful information and views on the three agreements.

Yin (1989) suggested an open-ended type of interview for a research strategy, which uses the case study approach. Nachmias and Nachmias, (1984) suggested a non-schedule-structured type of interview if the respondents were known to have been involved in a particular experience. The interviewees in the current research study were specialists in issues pertaining to environmental policy and multilateral environmental agreements. Taking into consideration both suggestions, the present researcher decided to ask open-ended, semi-structured questions which meant that all interviewees were asked the same type of question

1 CETEC (Centre for Environmental Technologies) is a company whose activities are related to environment, such as giving consultative advice and carrying out studies on environmental issues. Its role in the implementation of the MP is as a local implementing agent for World Bank in the phase-out projects involving 16 enterprises. Hence, the CETEC is able to provide first hand information on constraints faced in the field.

referring to their departmental interests regarding the Convention in order to elicit their views on Malaysia's involvement in the agreements, the implementation of the agreements and the future direction likely to be taken on these issues.

4.4 ANALYSIS PROCEDURE

The study's analytical approach is one of qualitative analysis. The core of qualitative analysis lies in the related process of describing phenomena, classifying it, and seeing how the concepts are interconnected (Dey, 1993). Dey added that the classification of the actions or events through the development of a conceptual framework renders the actions or events under study more intelligible. In the current study, the constraints and influences are classified under government factor, implementing instrument and agreement structure, which are further sub-divided into seven variables. The classification of these variables ensures that a systematic analysis is carried out.

The analysis which the study undertakes is not intented to measure whether the implementation of the agreement has achieved its objective or not. Thereupon, it is important to understand that in this study success of implementation connotes the ability to translate the agreement into local agenda, it does not mean that the objective of the Convention is achieved. The study avoids assessing the achievement of the objectives of the MEAs because of the obscurity of trying to identify the meaning of successful implementation of environmental agreements. Furthermore, all three MEAs have long term objectives to mitigate environmental problems, which will span many years. Therefore, how is success going to be measured? In the case of the UNFCCC, is it going to be against the target date meant for the developed countries to reduce their GHG emission? In this instance,

this will not be applicable to Malaysia which is a developing country. Or is it when Malaysia is no longer importing or utilising CFCs as in the case of the Montreal Protocol? As for the Convention on Biological Diversity, the measurement of success against its objective is even more obscure, since there is no target date but only general objectives of conservation of biological diversity, sustainable use of its components and fair and equitable sharing of benefits.

Taking all the above considerations into account, the present study's procedure of analysis is as follows:

(i) to identify the measures which have been undertaken, it is necessary to compare what is required of a country Party (Malaysia) by the agreement and the measures taken to effect such requirement. Hence, primarily, there is a need to find out about the policies, programmes and action plans that have been formulated at the national level as required by the agreements. Naturally, each agreement and every relevant decision of the Conference of Parties (CoP) must be analysed to ascertain the provisions or articles of the agreements that require the transposition. Having done that, the research must then look into official documents to substantiate which measures have been implemented. By comparing the measures taken by the government with the provision of the agreement and the decision of the CoP, it is possible to identify the extent of the implementation process in Malaysia;

(ii) new legislation, agencies and committees established as the result of the implementation measures will be identified through a comparison of events before and after becoming a party to the conventions;

(iii) the implementation of the policies, programmes and plans will be traced and cases of difficulties identified, using the conceptual framework, and reasons for the constraints forwarded;

(iv) the identification of impact follows the same track as the identification of constraints. The intended and unintended impacts, either negative or positive, are identified and the probable causes discussed with the aim of forwarding remedies or alternative measures;

(v) the information derived from the interviews will be analysed against the information taken from the administrative records;

(vi) the agreements and the implementation measures taken will be analysed against the Malaysia Plan and other national plans, e.g. Industrial Master Plan to identify the link with the country's overall development strategy,

(vii) the framework for the analysis of the implementation process of MEAs will be continuously assessed to see whether it conforms to actual events; and

(viii) the implementation processes of the different agreements will be compared to find any differences and similarities between them.

4.5 LIMITATIONS OF THE STUDY

The aim of this study is to identify and analyse the factors that affect the implementation of multilateral environmental agreements in Malaysia and their

impacts on the country. However, not all the environmental agreements to which Malaysia is a party will be examined because of the diversity of issues that are involved and time constraints. This study will therefore be confined to the three agreements mentioned earlier, i.e. the Montreal Protocol, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. Consequently, the study will focus on agencies such as the Ministry of Science, Technology and the Environment, the Department of the Environment and the Department of Meteorological Services for official documentation. However, certain agencies such the Ministry of Primary Industries and the Ministry of Energy, Telecommunications and Multimedia will also be approached. Interviews with several members of the Malaysian delegation who attended the CoP of these Conventions and other government officials in the relevant agencies will be conducted.

However, access to and analyses of the administrative record, especially in the domain of the government is hindered by the *Official Secrets Act*. This Act prohibits the disclosure of sensitive information found in official documents, especially information related to Cabinet's decision. Nevertheless, there is sufficient information that is not classified and available for public consumption that enables this study to proceed with assurance. Hence, this study will draw most of its information and data from the administrative records (official documents and memoranda; minutes of meetings; country's programmes; and Meeting/Conference of Parties' proceedings and reports) and interviews. Secondary sources are also used in instances where they provide the missing link between national data and the international situation.

The analysis of the implementation process of these agreements will span the time period from the negotiation phase until the present day. This will make it

possible for the researcher to assess any changes in the country's perceptions at the international negotiation level and perceptions when actually implementing the measures at the national level. It may be that during the negotiation of the agreement Malaysia was against some provisions but had to concede to the majority view. If such was the case, then it is important to know whether some preconceived ideas may have been transformed into an obstacle during the implementation process. It may also be the case that the initial reluctance was a sign that the government was wary of the impact of the implementation on the country's development. These views were held by Barrett and Hill (1984) who believed that the same factors that give rise to compromise in policymaking continue to influence and shape its implementation.

Despite the limitations outlined above, this study has greatly benefited from the present researcher's personal experiences working in the Conservation and Environmental Management Division of MOSTE. Furthermore, he was directly involved in the formulation of the policy decisions relating to the three multilateral environmental agreements. Moreover, the position held by the author allowed easy access to most interviewees and helped promote the study's progress.

Finally, the study has also benefited from the first hand experience of the present researcher in the implementation process of the MEAs. The researcher was part of the Malaysian delegation at the Second Meeting of the Intergovernmental Committee on the Convention on Biological Diversity (Nairobi, Kenya) June 1994; at the 2nd and 3rd Meetings of Conferences of Parties of the Convention on Biological Diversity in 1996 and 1997 (Jakarta, Indonesia and Buenos Aires, Argentina), and the 1st CoP of the United Nations Framework Convention on Climate Change in 1995 (Berlin, Germany).

4.6 SELECTION CRITERIA FOR THE MEAs

The study selected the MEA as a tool to assess international environmental co-operation instead of other instruments such as resolutions, declarations and guidelines (for instance Agenda 21) because the MEA is identified as the most important instrument in international environmental co-operation. In addition, the MEA provides clear objectives, tangible timetables and standards to be achieved through legalised commitments whereas declarations and resolutions are voluntary measures without definite objectives, timetables and standards to be targeted, which does not allow for a concrete analysis to be undertaken. In this regard, the selection of the MEA instead of other instruments also allows the analytical framework in Chapter One to be used to analyse the factors identified to affect policy implementation process because the formalisation of international policy is initiated in the MEA.

Although Malaysia is party to many international environmental agreements, this study identifies only three agreements as case study material. The agreements are the Montreal Protocol on Substances that Deplete the Ozone Layer (MP) 1987; the United Nations Framework Convention on Climate Change (UNFCCC) 1992, and the Convention on Biological Diversity (CBD) 1992. The selection of each of these Agreements is based on several factors detailed below.

Firstly, the Montreal Protocol is the first international agreement where the Department of the Environment is the lead agency. Although the DoE had been involved in much earlier international agreements such as the United Nations Law of the Sea, its involvement then was as a supporting role to the Prime Minister's Department, which anchored the negotiations. In the case of the Montreal Protocol, the DoE is the lead agency providing direction and implementing the agreement. In

addition, the national implementation of the MP has a profound effect on many industries especially the electronics, electrical and car industries. These industries heavily use ODSs in the manufacturing process and as a product component. As a major exporter of electronic products but a net importer of ODSs, the phasing out of ODSs will seriously affect the industrial and economic activities of the country.

Secondly, the selection of the United Nations Framework Convention on Climate Change (UNFCCC) as a case study is based on the fact that it has great impact on the country. While the MP has great impact on the industrial sector, the UNFCCC affects both the industrial sector and conservation of the environment. Nonetheless, UNFCCC requires the developed countries to take the lead in combating climate change and not developing countries. Hence, it will be interesting to see how the implementation of the agreement will take place in Malaysia, which by definition is a developing nation. The lead agency for the UNFCCC is the Meteorological Service Department (MSD).

Thirdly, the selection of the CBD was based on the priority that the country gives to the management of biological diversity, particularly when biologically resources such as timber, rubber, oil palm and rattan are important export products for Malaysia. In addition, Malaysia is recognised by the international community as one of the twelve megadiversity sites in the world. Obviously, this makes it important to find out how the implementation of the Convention on Biological Diversity will be carried out and the impact on the country's development. In contrast to the other two agreements, the negotiation and implementation of the Convention on Biological Diversity is led by the MOSTE itself.

Fourthly, all the three agreements address different subjects but are inter-related. For instance, the effect of HCFCs which are ozone depleting substances

and also agents for global warming. As regards the global warming issue, the forest is an important sink for carbon dioxide absorption and an important source for biological resources, an issue highlighted in the Convention on Biological Diversity. Hence, it is important to examine how they differ or are similar in the constraints they face during the implementation process and their impact on the country.

Fifthly, all three agreements are under the jurisdiction of the MOSTE. However, the secretariat to the three MEAs is allocated to different departments. The MP is with the DoE, the UNFCCC is with the MSD and the CBD with the CEMD. Hence, it is interesting to analyse the role of both technical agencies (the DoE and the MSD) in regard to the implementation of the agreements compared to the CEMD. The CEMD is a division within the MOSTE whereas the DoE and the MSD are departments under the jurisdiction of the MOSTE.

Lastly, the three agreements are chosen because the agreements fit the five years time frame. It has been suggested that the minimum period for the implementation of policies to reveal their intended and unintended consequences is five years (Sabatier, 1986). In this regard, Malaysia has been a Party to the MP for more than five years and a Party to the UNFCCC and the CBD for nearly five years. The Montreal Protocol came into force in the country on 27 November 1989, while the UNFCCC came into force on 11 October 1994 and the CBD on 22 September 1994. In addition, the study looks into the evolutionary model of the implementation process and the five years time period is significant to enable the evolutionary model to be analysed.

CHAPTER FIVE

ANALYSIS OF THE NATIONAL IMPLEMENTATION OF THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER

5.1 INTRODUCTION

This chapter aims to analyse the factors that affect the national implementation of the Montreal Protocol (MP) and the impact of its implementation on the country. The Protocol at its conception required all country Parties to reduce their ODSs' consumption and production. The Protocol has different target dates for different ODSs. Malaysia was given a ten years grace period[1] to phase out her CFCs. Since Malaysia is a total importer of ODSs her focus is on the reduction of consumption.

The analysis process will follow the implementation framework of a multilateral environment agreement as illustrated in Figure 1.1 in Chapter One. The analysis focuses on the factors that affect the implementation of the MP, the constraints faced during the implementation of the various measures, and the impacts of the implementation measures on the national management of ODSs, economic growth and Malaysia's overall development.

Hence, to conform to the analysis process described above, the chapter starts with background details to the Montreal Protocol to lay the foundation for this chapter. It then proceeds to analyse the perceptions Malaysia had for the Convention; the position that she took during the negotiations in the Meeting of Parties (MoP); and the decisions of the MoP that will affect Malaysia.

[1] Developed countries are given until 2000 to phase out CFCs, developing countries until 2010.

The analysis of the perceptions and the position that Malaysia took is important to account for the policy and strategies undertaken by the country. Later in the chapter there will be a description and analysis of other factors that have been identified to affect the implementation of the MP. The factors include policy formulation, organisational structuring, legislation and the various projects implemented using the funds from the Montreal Protocol Multilateral Fund. Finally, the chapter will investigate the impacts of the implementation of the MP on the national consumption of ODSs, the economy and overall development of the country.

5.2 BACKGROUND

This section starts with a brief account of the Montreal Protocol. It describes the creation of the Protocol and its objectives together with some important decisions of its MoP. Later it describes Malaysia's position as a party to the Protocol.

5.2.1 The Montreal Protocol on Substances that Deplete the Ozone Layer (MP)

The Montreal Protocol (MP) was established in pursuance of Article 8 of the Vienna Convention for the Protection of the Ozone Layer 1985. Article 8 of the Vienna Convention provides for the adoption of protocols to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer. The First Conference of Parties of the Vienna Convention decided that the MP was the appropriate instrument for achieving the harmonisation of policies, strategies and measures for minimising the release of substances causing or likely to cause modifications to the ozone layer (between 10-50km in the stratosphere).

The main objective of the MP is to control and reduce ozone-depleting substances (ODSs) by establishing a schedule for their phase-out. However, by virtue of its evolving nature, the MP is continuously being discussed and sometimes amended during each Meeting of Parties (MoP). To date, the MoP has taken place ten times with the last meeting in Egypt on September 1998. The next one will take place in November 1999 in China. In fact, the Protocol has been amended four times, i.e. at the 2nd, 4th, 7th and 9th MoP, namely London Amendment (1990), Copenhagen Amendment (1992), Vienna Amendment (1995) and Montreal Amendment (1997). The amendments expand the list of controlled substances, which are identified for phase-out and to accelerate the phase-out period. Nonetheless, this does not indicate that all country Parties will agree and ratify these amendments. Some of the important decisions taken by the MoPs are detailed in the following paragraphs.

5.2.2. Meeting of Parties (MoP)

The First MoP (1989) approved the Helsinki Declaration on the Protection of the Ozone Layer. The Declaration declared that the production and consumption of CFCs should be phased out as soon as possible but not later than the year 2000. With regard to Halons, it decided that the control and reduction should be phased out as soon as possible. At the Second MoP (1990), the London Amendment added 12 new chemicals to the list of controlled substances. The new substances included 10 new CFCs, Carbon Tetrachloride and Methyl Chloroform. HCFCs were added as transitional substances that require notification of usage. The Second MoP also saw the creation of an Interim Implementation Committee (Decision II/V) for the purpose of monitoring compliance. The objective of the Implementation Committee is to receive, consider and report on any submission of reservations made by one or more Parties on another Party's implementation of its obligations under the Protocol.

However, the Implementation Committee does give the Party whose implementation measures are being scrutinised reasonable opportunity to reply. An interim financial mechanism which included a Multilateral Fund was also established (DecisionII/8). The Mechanism is to provide financial and technical co-operation to the Article 5 Countries (developing countries).

The Third MoP (1991) saw the adoption of an Annex that detailed the list of products containing CFCs and Halons. The Fourth MoP (1992) was responsible for the Copenhagen Amendments that hastened the phase out period of controlled substances; 3 years ahead of the schedule anticipated by the London Amendment. The Fourth MoP confirmed the Multilateral Fund as a permanent financial mechanism and agreed to freeze the production of methyl bromide by developed countries.

The Fifth MoP (1993) decided not to ban or restrict imports of products produced with, but not containing, controlled substances in Annex A. The reason for this was that they are difficult to identify and there are no acceptable sampling and testing protocols to detect such residues. The Sixth MoP (1994) decided there is no need to fix any level of production or consumption necessary for the essential usage of Halons in Parties not operating under paragraph 1 of Article 5 of the Protocol.

The Seventh MoP (1996) made further amendments to the phase-out schedule of controlled substances. However, the Eighth MoP (1997) did not make any more amendments to the phase-out schedule nor add new chemicals to the list. The Ninth MoP, on the other hand, continued to make more amendments and adjustments to the schedule of phase-out and list of controlled substances. It also requires all Parties to implement an import and export licensing system to counter the illegal imports and exports of controlled substances. A summary of the amended phase-out schedule for the ODSs made during the 2nd, 4th, 7th and 9th MoP is shown in **Table 5.1** overleaf.

Table 5.1: Phase-out Schedule for the Montreal Protocol in % of Base Year Production and Consumption (as per all amendments)

Compound	CFCs[a]	Halons	CFC 13[b]	CCl_4	Methyl Chloroform	HCFCs	HBFCs	CH_3Br
Base Year	1986	1986	1989	1989	1989	1989		1991
Year								
1992	150%	100%	100%	N.C	N.C	N.C.	N.C.	N.C.
1993	150%	100%	80%		100%			
1994	25%	0%	25%		50%			
1995	25%		25%	15%	50%			100%
1996	0%		0%	0%	0%	Freeze at Cap*	0%	
1999						Cap*		75%
2000						Cap*		75%
2001								50%
2003								30%
2004						65%		30%
2005								0%
2010						35%		
2015						10%		
2020						0.5%		
2030						0%		

Source: Text of the Montreal Protocol

Note:
N.C. No control -only listed
* HCFC Cap: (2.8% of Grp I Annex A CFC consumption in 1989 + HCFC consumption in 1989)- developed country only

CFCs[a] = CFC11, CFC12, CFC113, CFC114 and CFC115

CFC13[b] other CFCs

Each MoP saw an increase in the number of country Parties. The number of country Parties increased from 31 at the First MoP to 166 as at 21 August 1998.

5.2.3 Malaysia as a Country Party

Malaysia acceded to the MP on the 27 November 1989 and to the subsequent London and Copenhagen amendments on 16 June 1993 and 5 August 1993. Although Malaysia utilises substantial amounts of ODSs in the relevant industries such as air conditioning, refrigeration, foam, aerosol, solvent cleaning and

fire extinguishers, she is a non-producer. She imports all her ODSs mainly from the USA, the UK, Germany, Japan and India. However, some ODSs do leave the country as refrigerants in export items such as air-conditioners and refrigerators.

As a party, Malaysia is operating as an Article 5 Paragraph 1 Country. This Article provides for a special situation given to a developing country whose annual consumption of the controlled substances is less than 0.3 kg per capita on the date of entry into force of the Protocol in the particular country. Under this special situation, Malaysia is given a ten years' grace period (until 2010) to phase out the use of CFCs. The 10 years' grace period is to enable Malaysia to meet, her `basic domestic needs'. This exemption is to allow local industries and public sector enterprises that still require the controlled substances to continue operating without losing their production capacity and revenue. In the meantime, these industries will initiate the conversion process from ODSs technology into ODSs-free technology.

In the original text of the MP, the controlled substances are CFCs and Halons (Annex A). Nevertheless after the subsequent amendments, controlled substances are now defined to include those substances under Annex A, Annex B, Annex C or Annex E of the MP. However, for the purpose of classifying developing countries as Article 5 para 1 countries, the controlled substances still remain as those listed under Annex A. (See **Appendix 5** for the substances classified as Annex A, B, C and E.)

Although Malaysia was not actively involved in the early drafting of the Protocol, nevertheless she later transformed to become an active country Party. To this effect, Malaysia was elected as Vice President of the 3rd and 5th MoP (1991 and 1993), and in 1994 as Chairman of the Executive Committee (Excom) of the Multilateral Fund. Malaysia also received recognition from the international community for her commitments. In 1997, she received several awards such as the Ozone Award and the Outstanding National Ozone Unit Award from UNEP, and the

Best-of-the-Best Stratospheric Protection Awards and the Outstanding National Ozone Unit Award from the USEPA.

5.3 THE TYPES OF ODSs USER SECTORS IN MALAYSIA

There are 6 major applications or user sectors of ODSs in Malaysia. These sectors are solvent cleaning, foams, refrigeration (including car air-conditioning), aerosols, fire fighting and agriculture. It is important to highlight which sectors use what ODSs because different ODSs are subject to different phase out schedules. This information is important in order to understand why some sectors are more important than others in terms of the phase-out's impact on economic growth.

5.3.1 Solvent Cleaning Sector

This sector is associated with the electronics, semiconductor, electrical and metal industries, involving both multinationals and small-medium industries (SMIs). Two commonly used ODSs are CFC113 and methyl chloroform. The multinationals, especially the electronics manufacturers, have reduced their dependence on CFC 113, however, the SMIs have found it difficult to phase out CFCs due to limited funds and existing technological capabilities. Methyl chloroform is widely used in the correction fluids industry and in degreasing and metal cleaning. These industries are small and widely dispersed. Nonetheless, there are many alternatives in the market available to this sector, including some transitional substances such as HCFC123, HCFC141b and non-ozone depleting cleaning agents such as acetone, and alkali and biodegradable detergents. According to the survey undertaken by MITI (1995), of the 138 companies that reported they had changed to using alternatives, 21 of them were in the solvent cleaning sectors.

5.3.2 Foam Sector

This sector is associated with the manufacturing of foam products, e.g. flexible and rigid polyurethane, polystyrene and thermoplastic (packaging) foams. In 1995, it was estimated that 30 industries were directly involved in manufacturing flexible and rigid foam products such as cushions, furniture, mattresses, packaging, plastics and insulation. The main ozone depleting substance in this sector is CFC11, used as a blowing agent for flexible foam and for enhancing the insulation capability of rigid foam by its thermal conductivity property. The alternatives available for this sector are HCFC141b and methylene chloride. The MITI (1995) survey indicated that 27 out of the 138 companies that had switched to alternatives belong to this sector.

5.3.3 Refrigeration and Air-Conditioning Sector

This sector can be sub-divided into residential and small commercial air-conditioning; domestic and commercial refrigeration; and large commercial air conditioning and automobile air-conditioning. Each sub-sector is identified with specific ODSs. Generally, the residential, commercial air-conditioning and refrigeration sub-sectors utilise CFC11, CFC12 and HCFC22 as refrigerants while the automobile industry mainly uses CFC12. Eighty-eight per cent of the central chillers in large commercial air conditioning use CFC11, and only 10% use CFC12. An alternative substance for CFC11 is HCFC123 while HFC134a is a substitute for CFC12. This sector accounts for the largest percentage of CFC12 consumption in the country. The MITI (1995) survey reported that 87 out of the 138 companies that had switched to alternative substances belonged to this sector.

5.3.4 Fire-fighting Sector

This sector uses Halon in its fire fighting activities. Although Halon is consumed in small quantities specifically in the fire-fighting sector, it has high ozone depleting potential (ODP). In simple terms, this means that it has greater potential to erode the ozone layer than CFCs. There are two types of Halon used in Malaysia: Halon 1211 with an ODP of 3 and Halon 1301 with an ODP of 10, indicating that they are three and ten times more potent than CFCs, respectively. Most of this Halon is used in the Fire Service Department, and by Tenaga Nasional Berhad (an electricity utility company), Telekoms Malaysia, Petroleum Companies and the Ministry of Defence. The fire-fighting sector although also using other alternatives still continues to use Halon, either Halon still existing in the market and also recycled Halon, i.e. the recycled Halon collected by the Halon Bank. The Halon Bank is managed by Sukiada Engineering and supervised by the Fire Service Department and the Department of the Environment. Although its establishment was proposed for in 1991, the Halon Bank was only set up in 1996. Between then and 1998 it had managed to collect 27 tonnes of the estimated 350 tonnes present in the country (The Star, July 28 1998). Nevertheless, in addition to recycled Halon, there are various alternatives being used such as FM-200, Inergen, Argonite, carbon dioxide, water mist and Pyrogen. However, data on the amount of these substances is not available because they are not classified as controlled substances under the MP, hence, no efforts are made to collect the data.

5.3.5 Aerosol Sector

Products which belong to this sector include insect sprays, personal care products, household products, medical products, automotive products, spray paints and industrial products. The DoE (1995) estimated that 60% of aerosol

manufacturers, which manufactured insecticide products, had converted to hydrocarbons as substitutes. Although there are only about 20-30 small and medium scale enterprises still using ODSs, there is, however, concern that these enterprises might increase in number due to the competitive nature of the industry. The fear is further quantified by the MITI (1995) survey that indicated that only 2 out of 138 companies that switched to alternatives belonged to this sector.

5.3.6 Agriculture Sector

According to the data provided by the DoE (1995), the only ozone depleting substance used in this sector is Methyl Bromide. Methyl Bromide has four main uses, namely, soil fumigation (5%), structure treatment (36%), commodity treatment (55%) and quarantine treatment (4%). Although it is used in minute quantities to control pests in fields, it is used mainly in commodity treatments, especially in timber production.

5.4 NATIONAL CONSUMPTION OF ODSs

As an Article 5 country party, Malaysia is allowed to consume ODSs (CFCs and Halon) to a limit of less than 0.3kg per capita per year. If she exceeds this limit, her status can be revised and revoked upon recommendation by the Implementation Committee of the MP. Obviously revocation of status can lead to withdrawal of the grace period for compliance and this will badly affect the industrial sector. Therefore, it is important to maintain her yearly consumption at less then the stipulated level.

As mentioned earlier, Malaysia is a net importer of ODSs, hence, the data presented in this study are not of production but of consumption level. The data presented as consumption level are actually import figures made available to the DoE by the Customs and Excise Department, Statistics Department and the Ministry

of International Trade and Industry. These import data are considered the most reliable indicators of consumption pattern in the country. **Appendix 5** indicates the consumption of controlled substances. The import data for Annex A is particularly important to Malaysia as an Article 5 country because it substantiates Malaysia's commitments to abide by the quota set by the MP. Initially, the consumption per capita of Annex A substances showed an increasing trend, but soon after 1991 the data showed a decreasing trend except for a slight increase in 1997. Data for 1998 is not available yet, but from the estimates in **Table 5.2** below, it can be `safely' deduced that the consumption level is below 0.3kg per capita.

Table 5.2: Imports of CFCs, Malaysia (1994-1998)

Year	Quota Set (Metric tonnes)	Actual Import (Metric tonnes)
1994	5, 834.9	3236 (est.)
1995	6,328.8	3,441.76
1996	5,536.5	3,049.20
1997	3,916.2	3,389.53
1998	2,573.17	2,000.00 (est.)

Source: Department of the Environment, Malaysia

The data on consumption of ODSs in Appendix 5 provides only an overall picture of consumption of ODSs. However, it does not indicate which sector experiences an increase or decrease in consumption. Therefore, sector based data as represented in the next section will reflect a more accurate picture of the extent to which the industrial sector abides with the MP objectives.

5.4.1 Sectoral Distribution of the Controlled Substances

The sectoral distribution of the ODSs is shown in **Appendix 6.** The figures are represented in both metric tonnes and percentages. The figures in percentages allow for clearer interpretation of the data. In 1989, the solvent cleaning sector utilised the largest percentage of ODSs (methyl chloroform, CFC113 and CFC114), approximately 51% of the entire country's consumption. Methyl chloroform made up 31% of this sector. However, in 1997, this sector only consumed approximately 5% of the total ODSs in the country. Instead, the refrigeration sector, which consumed only 36% of ODSs (HCFCs and CFCs) in 1989, became the largest consumer of ODSs in 1997 (81%). While HCFCs only contributed to 17% of ODSs' consumption by the refrigeration sector in 1989, it dominated this sector with a contribution of 52% in 1997. The contents of Appendix 6 are shown briefly in **Table 5.3** below.

Table 5.3: ODSs' Consumption in Percentages According to User Sectors (1989-1997)

Year / Sector	1989 (%)	1990 (%)	1991 (%)	1992 (%)	1993 (%)	1994 (%)	1995 (%)	1996 (%)	1997 (%)
Solvent	50.8	52.31	41.42	41.59	32.55	30.87	6.24	6.14	5.11
Foam	7.91	8.46	9.48	12.47	14.80	13.29	11.63	13.40	12.14
Refrigeration	35.86	32.12	42.96	39.14	47.58	52.46	76.74	77.83	81.13
Aerosol	2.41	4.26	3.27	3.44	3.27	2.82	4.78	1.99	1.53
Fire-fighting	2.69	2.52	2.52	3.01	1.49	0.17	0.11	0	0
Agriculture	0.32	0.34	0.36	0.34	0.33	0.39	0.51	0.63	0.63
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Department of the Environment, Malaysia

The pattern of consumption by the solvent cleaning and refrigeration sectors reflected the pattern of consumption of the industrial sectors as a whole within the time period. The industries, which used ODSs for solvent cleaning, were mainly the electronics, semiconductor, electrical and metal industries which involved multinational companies (MNCs). As indicated earlier, methyl chloroform was the main component of the ODSs in this sector. Methyl chloroform is known to be carcinogenic and most industries no longer use this ozone depleting substance and have moved on to CFCs. As global players, these MNCs have their reputation to protect and therefore have moved away from using CFCs. In addition there are many alternatives on the market that are non-ozone depleting substances such as aqueous cleaning agent, acetone and HCFC123. Such considerations have caused the usage of ODSs in this sector to drop drastically. Hence, the reduction of consumption of ODSs in this sector does not indicate that the electronics, electrical and semiconductor industries are no longer dominating the manufacturing sector in Malaysia, instead, it is an indication that this sector has responded quite well to the national implementation of the MP and this good response is made easier by the presence of many alternatives to the ozone depleting solvents. The fact that the players in this sector are MNCs makes the transition to non-ozone depleting technology much smoother because they have the financial means to do so.

As for the refrigeration sector (including mobile air-conditioning), the increase in consumption was contributed by two major components: CFC12 and HCFC 22. The period 1995-1997 as shown in **Appendix 6** would seem to indicate there was no consumption of ODSs for car air-conditioning and residential air-conditioning. However, there were no consumption figures for these two categories in that period because, in the three year period the two sub-sectors were grouped together as refrigeration. In 1992, the DoE reported that 70% of CFC12 went into mobile air-

conditioning while 30% went into building application. According to the MITI (1995) survey, most CFC12 was for automobile air conditioning despite the fact that CFCs are now no longer used in new vehicles. It is anticipated that by the year 2000 CFCs will be entirely phased out. All locally manufactured/assembled cars such as the Proton Wira, Produa (Kancil), Toyota Corolla, Honda Accord, Volvo, Mercedes, BMW and Daihatsu Charade G202 were fitted by HFC134a (an alternative) from 1996 onwards.

Therefore why does the industry still import such large amounts of CFC12? Is the large amount of CFC12 being used to service existing cars and large commercial air-conditioning? Before we seek answers to these questions it should be borne in mind that the consumption of ODSs by the mobile air-conditioning sector is divided into two categories: the Original Equipment Market (OEM) and the Replacement Equipment Market (REM). OEM simply means new car air-conditioning whereas REM means the servicing of existing equipment. It was estimated by Du Pont that 20% of CFC12 consumption in the automobile industry went into OEM while the other 80% went into the service segment (REM), (DoE, 1993).

To answer the earlier question, it is necessary to look into the number of cars in the country. The DoE (1993) reported two million passenger cars in existence and most were pre-1977 models. Almost all of these cars were air-conditioned with CFC12. It was expected by 1995, that these 2.5 million cars would give rise to a CFC12 bank of 2.341 millions metric tonnes and a minimum 936 metric tonnes of CFC12 would be required for servicing, based on a 40% leakage rate as shown in **Table 5.4** oveleaf.

Table 5.4: Estimated CFC12 Bank in Malaysia (in metric tonnes)1992-1995

Year	Car Population with CFC12 System	Car Population with R134a	CFC Bank	Annual Service Consumption
1992	2,120,719	Negligible	2,120,719	857
1993	2,252,434	Negligible	2,252,434	900
1994	2,395,079	95,570	2,299,509	920
1995	2,545,718	204,522	2,341,196	936

Source: Department of the Environment, Malaysia, 1993

Note:*: 50% of new cars in 1994 would be charged with HFC134a (R134a). 100% of new cars in 1995 would be charged with R134a. ** Leakage rate at 40%

The DoE (1995) estimated that the retrofitting process of converting a car's air conditioning system to using the alternative substances would cost between RM600 and RM2000 per car, depending on the age and model of the car (1US$ = RM2.5 at the 1994 exchange rate). The cost of servicing after retrofitting would double. The cheapest new car air-conditioning could cost the consumer RM2000.

Hence, the high cost of both retrofitting and servicing, coupled with the large number of `old cars' were reasons for the large consumption of CFC12 as a refrigerant. Rosnani (1998) further pointed to the increase in motor vehicles and Proton cars still using CFC12 as reasons for increasing consumption of this specific ozone depleting substance. She added the imported cars were usually without an air-conditioning system and they were fitted with one in the country. With CFC12 still the cheapest refrigerant, it remains the industry's most popular choice. The Department, she explained is working out a mechanism to phase out CFC12 by introducing a combination scheme of recovery and getting rid of old air-conditioning and replacing them with ones subsidised through the multilateral funding.

The car industry is also using HCFC22 as an alternative. Besides the car industry, the buildings' chillers and the Light Rail Transit (newly introduced mode of transportation for Kuala Lumpur) are other users of HCFC22. Appendix 6 shows that in 1995, 46% of the ODSs used in the refrigeration sector were made up of HCFCs and, in 1997, HCFCs made up approximately 52% of the total ODSs in the sector, accounting for the large amounts of imports of the substance.

Nonetheless, by the year 2030, HCFC22 will also be totally phased out. Moreover, the DoE (1995) reported that Matsushita Industrial Corp. (M) Sdn. at Shah Alam, Selangor, the largest producer of residential and small air-conditioning, indicated that its parent company in Japan is planning to phase out the use of HCFC22 by the year 2019. However, at the present time, the importation of HCFC22 does not seem to be abating, possibly because the phase-out schedule still has `quite a long way to go'. In addition, industries have committed quite a substantial amount of money to HCFC technology.

The other 4 sectors contribute to less than 10 % of the total ODSs' consumption in the country.

5.5 FACTORS AFFECTING IMPLEMENTATION MEASURES

In 1989, Malaysia's per capita consumption of CFCs and Halon was 0.29 kg while in 1997 the consumption was 0.15 kg per capita. The electronics industry will be able to phase out the use of CFCs in its manufacturing process by the year 2000 (NST, June 18,1998), and, overall, the country is optimistic that she can phase out all CFCs by the year 2000 (**Appendix 7**). However, because of the recent economic slowdown, the DoE fears that the phase out in some sectors will have to be delayed by two years (NST, 13/6/1999). This situation is in stark contrast to the views put forward by Abu Bakar, then Director General of the DoE, in 1987 (Benedict, 1991),

and Sham Sani (1993). They contended that Malaysia would not be able to limit its consumption to below 0.3 kg per capita even in 1990.

The phasing out of ODSs in Malaysia is done through continual reductions in the importation of ODSs, converting ozone depleting-manufacturing technology into ozone depletion-free manufacturing technology, or retrofitting the equipment. The conversion process includes the usage of alternatives (substitutes and transitional substances). Retrofitting, on the other hand, continues using existing ODSs' installations that are still economically viable with minimal adaptations. The reduction of imports and the conversion of technology is executed through organisational structuring, legislative framework, and financial and technical assistance. The first two efforts require an almost national effort while the last undertaken with the help of the Multilateral Fund of the Montreal Protocol. This section will now analyse the factors the affect the implementation of the MP.

5.5.1 Governmental Factors

5.5.1.1 National Perception

In the early drafting of the Montreal Protocol, Malaysia was not in the forefront. In fact, in the First MoP (1989) she attended in the capacity of an observer state. It was reported that most developing countries did not participate in the drawing up of the terms of the MP (Sham Sani, 1993). As a result of this exclusion, some provisions of the Protocol were perceived to be biased against developing countries. These provisions were thought to give industrialised country Parties unfair advantages in the trading of ODSs and deprive developing country Parties of their essential ODSs. Sham Sani (1993) argued that the limit 0.3kg per capita allocated to the developing countries was considered prejudicial and Malaysia would exceed that ceiling by about 1990, if not earlier. Incidentally, Sham Sani was reflecting what had

been said by Abu Bakar in 1987, the then Director General of DoE. Abu Bakar estimated that developing countries would continue to have an annual per capita production or consumption of about 1 kg per capita even by the year 1998. Malaysia regarded the limit as unfair treatment to developing countries and Abu Bakar declared that "we had been had" (Benedick, 1991). The MP seemed to be a first and bitter lesson to the Malaysian negotiators who began to see that there was more to environmental matters than mere international environmental fora. Hence after the MP, the Malaysian negotiators were more prepared and more thorough so as to be effective in future international negotiations (Sham Sani, 1993).

Malaysia believes in the international effort to protect the ozone layer. However, she always insists that any measures imposed by the MP must take into consideration her ability to react and the impact of this reaction on her development, especially industrial growth. Her ability to react in turn depends on how much the international community, especially the developed country Parties are willing to offer in terms of technology transfer and financial assistance. She views cautiously any introduction of new measures such as early phase-out other than the already agreed schedule and addition of new categories of ODSs. Such a cautious attitude continues to persist throughout every MoP. In fact, Malaysia has been seen to be a very stubborn negotiator when it comes to the phasing out of ODSs. In reality Malaysia seeks to ensure that the phasing out of ODSs does not affect her industries and does not reflect a bias against developing countries. Such perceptions were reflected in the statement made by the Deputy Minister of Science, Technology and the Environment at the Sixth MoP in October 1994:

"I am aware that some parties consider Malaysia to be a hard-liner on substances that destroy the ozone layer. [...]. We may be cautious and prudent in our approach since we believe more in action than in words and we do not make promises that we cannot keep...We have here the application of double standards in non-compliance procedures and collusion to condone such practice. On the one hand, where there was occurrence of incomplete reporting of data [...] Article 5 countries were pulled up and threatened with non-compliance procedures; indeed three years ago right here in Nairobi certain Non-article 5 countries insisted on proceeding against one Article 5 country. Yet, on the other hand, some Non-Article 5 countries, though blatantly disregarding Article 10 paragraph 6 [...] could enjoy all the benefits as a party, and it has even been suggested that the meeting of parties should not do anything about it. If this is not double standard, Mr President, please tell me what it is. To me it smacks of environmental colonialism or environmental exploitation," (Peter Chin, 1994).

The fast phase-out of all types of ODSs does not go down well with Malaysia. She supported the early phase-out of CFCs and Halons, but when it comes to the phasing out of methyl bromide and alternatives such as the HCFCs she is adamant that the measure is hurting her industry. ODSs such as HCFCs are vital components of her industries and hence the economy of the country, especially when the local industries have invested a substantial amount of money converting to hydrochlorofluorocarbon technology. In addition, early phase out of HCFCs in the developed countries will deprive local industries of this raw material. This position was clearly reflected in the statement made by Malaysia during the Seventh Meeting of Parties in 1995 as shown in **Box 5.1** overleaf.

Box 5.1: Statement by the Minister of Science, Technology and the Environment at the Seventh Meeting of Parties, 1995

The extremely fast pace of adjustment and amendment procedures disrupt the original phase-out planning and reduce our ability to respond to the existing schedule. Therefore Mr President, my government has placed a very high priority on seeing that the original programme is put in place rather than thinking too much about new proposed adjustments and amendments to the protocol.

On the proposal particularly to control the usage of HCFCs and methyl bromide for developing countries, my government has difficulty in supporting such a view. Our opinion is that such an accelerated phase-out date is arbitrary and does not take into account the real needs of the developing countries to sustain their industries that have limited resources and technical capacity to engage in a race to their doom. The industries of the developing countries have in the last five years used HCFCs as a replacement for CFCs. They must be given adequate time and support to plan and implement the reduction and phase out activities without using trade sanction as a weapon in this protocol. The special condition given to developing countries in this protocol is a promise of co-operation and not a contract to bind them to self-destruction...

My government believes that the proposal on accelerated phase out of HCFCs would upset many who have done careful planning and programmes to substitute HCFCs for CFCs. Just five years ago, industries in developing countries were led to believe that HCFCs were the best for yeas to come. Millions of dollars have been invested to substitute HCFCs for CFCs and most developing countries' trade and economies depend on HCFCs' investment and export of products that contain HCFCs. It is a very important tool in the economic development of Article 5(1) countries. My government would not be able to support any control measures that do not take into account these important factors. Let us first see the actual progress of CFCs phase out after 1996 before we make any new commitments..." (Law , 1995a)

Earlier, at the Fifth MoP, the Malaysian delegates reported attempts by certain countries to impose control measures on transitional substances such as the HCFCs and HFCs. They perceived these attempts as part of those countries' strategies to create markets for their own products (alternatives for CFCs). The Malaysian delegates believed that alternatives had not been adopted in many areas as quickly as possible despite the technical progress being made. In addition, they

viewed some alternatives as not energy efficient and therefore conversion to these alternatives would only increase the incremental cost.

At the 6th MoP, Malaysia in a joint declaration with other developing countries, urged parties to iterate the assurance that Article 5 countries (developing countries) engaged in the phasing out of ODSs do not suffer a loss of export revenue.

Malaysia has frequently insisted that for her to move forward with measures to phase-out ODSs, she requires modern technology and financial assistance. Malaysia sees any impediment towards the transfer of technology as a deliberate attempt by the industrialised countries to deprive developing countries of a "level playing field". She made her view known to the international community as early as 1990. The Minister of Science, Technology and Environment at a meeting to amend the Montreal Protocol in 1990, in London, likened the denial of access to modern technology as an act of "environmental colonialism" (Benedick, 1991). Beside the transfer of technology, Malaysia also believes that financial assistance is crucial if her manufacturing sector is to be coerced to convert to CFC-free technology.

At the Sixth MoP, Malaysia with other developing countries, made a declaration that urged Parties to consider the need to assure adequate financing from the multilateral fund for all projects. This should be done according to the respective industrial strategies and specific social, environmental and economic characteristics of Article 5 countries. Even more recently at the Eighth MoP (1997) Malaysia did not retreat from this issue. The Deputy Minister of Science, Technology and the Environment reiterated that *"...the issue of technology transfer and availability of fund should be looked upon as a package in any proposed control measure..." (Abu Bakar Daud, 1997).*

5.5.1.2. System of Government and Politics

The effort to phase out ODSs was given a political platform as soon as Malaysia decided to participate in the international effort to establish the Vienna Convention for the Protection of the Ozone Layer in 1985. Her political commitment gained more leverage in 1987 when the then DG of the DoE sceptically said, "we have been had" when developing countries agreed to the provisions in the Protocol. He believed that developing countries were unaware of the full socio-economic implications of the Protocol (Benedick 1991). The significance of such a statement signals the fact that policy for the phase-out of ODSs will be high on the political agenda, bearing in mind the realisation that the statement was made by the DG of the DoE and not by an officer from the MITI or any other industrial related department. The fact that an environmental department has cast doubt over the ability to conform to the level of consumption, indicates that the MITI which has greater interest in the consumption of ODSs will be seriously involved.

The MP seeks to address an environmental problem but the measures taken to implement it are mostly trade related which consequently affect the industrial activities of the country. Hence, beside the MITI there are two other Ministries that are affected by the implementation of the MP. These are the Ministry of Agriculture (Methyl Bromide) and the Ministry of Housing and Local Government (Halon in fire fighting equipment). The involvement of the MOSTE to protect the `global environment' and that of the MITI which seeks to protect local industries has sometimes led to a conflict of interests. Although the MOSTE is the lead agency in co-ordinating the implementation measures, the important question is who will have the final decision concerning industrial matters?

An observation was put forward by Tan Meng Leng the former Director General of the DoE (1996-1998), at a recent seminar when he contended that the DoE, does not have the influence to call any meeting for preparatory work before a MoP because of its "department" status (Tan, 1998). His argument can be traced to the fact that the DoE being a Department is usually considered lower `ranking' than a Ministry. In the organisational chart of any Ministry, in terms of hierarchy, a departmental head is answerable to the Secretary General of the Ministry. Hence, Tan believed that when the DoE called other Ministries for meetings, the DoE did not have the influence that the MOSTE had if it called a meeting. He elaborated further and stated that even within the same organisational structure there is a persistent hierarchy, citing the National Steering Committee (NSC) and the Technical Committee (TC) Meetings as examples. The NSC is chaired by the Secretary General of MOSTE while the TC is chaired by the Director General of the DoE. Tan commented that the attendance of officers from the MOSTE at the NSC meetings was more frequent than at the TC Meetings he chaired. Those officers who are involved in most policy making decisions are of a different service (the administrative and diplomatic service) to the DoE officers who are categorised as technical service personnel and mostly involved in routine enforcement activities.

Fortunately, such complications are not exaggerated further because of the absence of states' involvement. Malaysia is a Federation and there is a clear demarcation between the state and federal government jurisdiction. Under the Federal Constitution the implementation of an international agreement is under the Federal jurisdiction and industrial activities are also under the Federal List. Therefore, there is less interference from the state leaving only the federal agencies to sort out the implementation problems themselves.

5.5.1.3 Policy Formulation

The policy approach taken by Government, or the MOSTE to be exact, on the implementation of the MP is already predetermined by the commitment made to the Protocol. Operating as an Article 5 country, Malaysia was given a 10 years' grace period to comply with the control measures stipulated in the MP. However, the government has insisted on pursuing a policy to phase out ODSs before the grace period is over. And it is a policy decision, too, that any phase-out must take into consideration the ability of the industrial sector to undertake this without unnecessary loss of revenue which would be detrimental to the country's growth. This policy has always been made known ever since Malaysia became a party to the MP. The Deputy Minister of Science, Technology and the Environment, again reiterated at the Eighth MoP (15-17 September 1997) in Montreal, Canada, that *"the special condition given to the developing countries in this Protocol is a promise of co-operation and not a contract to bind them to self-destruction*". Henceforth, the government has geared itself to an early phase-out of CFCs and halons in the year 2000 instead of 2010 (the grace period given to Article 5 countries).

i. National Development Plans

Sixth and Seventh Malaysia Plans

The policy to phase out ODSs was made within the MOSTE's sphere of influence as the implementing agency of the MP. Nevertheless, this micro level policy must be seen in light of the overall national policy. Since Malaysia became a party to the MP in 1989, it was expected that the subject would be addressed at least in the Sixth Malaysia Plan (1991-1995). Nonetheless, there was only a short statement which said that in accordance with the Montreal Protocol, Malaysia agreed to a total phase-out of controlled substances, including CFCs and halons, by the year 2000.

This statement was half-correct in that Malaysia's strategy and action plan is tailored to phase out only CFCs, halons and methyl chloroform by the year 2000 and not other controlled substances such as methyl bromide and HCFCs.

The Seventh Malaysia Plan, in its review of the progress of the Sixth Malaysia Plan, reported on the control of CFCs through new environment-related legislation. Other than such reflection, there was no apparent measure to transpose such policy to the Seventh Malaysia Plan (1996-2000). For the next 5 years' planning (1996-2000) there was no mention at all of the CFCs issue, it was assumed to fall under the air quality section where the policy is for the industry to promote the use of clean air technology. Nevertheless, the Seventh Plan did conclude the chapter on the environment with an assurance that a combination of legislative and innovative economic instruments will be used to encourage the adoption and development of environmentally sound technologies and environment-friendly products.

Second Industrial Master Plan

In addition to the Sixth and Seventh Malaysia Plans, it is necessary to look into the policies in the Second Industrial Master Plan (IMP2)(1996-2005) because the ODSs are important components in several industries such as the electrical and electronics, transportation and chemical groups. Major electrical appliances, which include air-conditioners and household refrigerators, contain CFCs as refrigerants while in the manufacturing of semiconductors ODSs are used as cleaning agents. The value of exports and the number of workers in these industries indicate the importance of the sector. In 1995, the manufacturing sector contributed 33.1% of the country's GDP and the electrical and electronics industry employed 345,000 workers. In 1995, the export of consumer electronics was valued at RM21.4 million while the export of semiconductors was valued at RM32, 844 million. This accounted for 9.7%

of the total global export of semiconductors. Exported electrical goods, on the other hand, were valued at RM7.3 billion in 1995, with Malaysia a leading exporter of room air-conditioners with an export value in excess of RM2.6 billion. The latest figure indicates that electrical and electronic goods account for 60.5% (RM17.1 billion at US$1=RM3.80) of the total export earning in July 1999 (Bernama, 1/9/1999).

In the material sectors, CFCs are used in the manufacture of polystyrene and thermoplastics. The extent of ODSs' role in this sector is indicated by the amount of polystyrene Malaysia imports and exports as shown in **Table 5.5** below, indicating its importance.

In this regard, The Star (16/10/1998) reported that Petrochemical (M) Sdn Bhd the country's leading polystyrene producer had projected a turnover of RM570 Million in 1998. Hence, these industries' contribution to the economic growth of the country is readily apparent.

Table 5.5: Production, Import, Export and Consumption of Polystyrene (PS)* (in metric tonnes) 1993-1994.

Year	Production (a)	Import (b)	Export (c)	Consumption (a+b)-(c)
1993	77,493 (25.7%)	55,785	37,961	95,317 (13.3%)
1994	164,000 (28.3%)	56,250	111,674	108,576 (13%)
Total (93)[a]	301,243	537,021	118,243	720,021
Total (94)[b]	579,350	462,608	207,736	834,222

Source: Malaysian Plastics Manufacturers Association (1995) in 2nd Industrial Master Plan

Note

** Expandable PS, general purpose PS sheets, high impact PS sheets,*

(93)[a] & (94)[b] = total of all types of resins/polymers

Thermoplastics are used in various other sectors as shown in **Table 5.6** below. Hence, any policy towards the reduction of these CFCs will considerably affect the industries concerned which, in turn, will influence the phase-out programmes.

Table 5.6: Distribution of Plastics Usage (%) in Sub-sectors

Sub-sectors	Percentage (%)
Packaging	35
Electrical and electronic components	25
Household wares	10
Construction goods	10
Automotive parts	5
Others	10
Total	100%

Source: Malaysian Plastics Manufacturer Association, 1994, in 2nd Industrial Master Plan

As demonstrated in the previous section, the foam sector contributed approximately 12% to the total usage of ODSs in 1997 while the semiconductors and electronic industries accounted for 5% (the solvent cleaning sector). Although these industries have managed to reduce their consumption of ODSs, the fact that these industries contribute huge revenues to the country is not something to be taken lightly. On the other hand, the refrigeration sector, in particular the mobile air-conditioning category, still remains the largest user of ODSs (81%) and hence needs to be carefully monitored throughout the National Plans.

The IMP2 was formulated to transform the manufacturing sector into becoming more competitive globally. The Plan emphasises the importance of an improved requisite economic foundation as well as creating export oriented

Malaysian manufacturing companies which not only support the development of domestic industries but also nurture export-oriented ones. Hence, to increase competitiveness, the policy focuses on strengthening industrial linkages, both forward and backward, enhancing value-added activities and increasing the productivity of the manufacturing sector. In his forward message to the Second IMP the Prime Minister sent out the signal that while striving for excellence in quality of products, this should not ignore environmental concerns. Effort should also focus on developing environmentally friendly production processes and technologies. However, the signal is not translated into policy and programmes for the control of ODSs in the IMP2.

The Plan's closest reference to any impact on the environment came under the Agro-Based and Food Products industry group. The processing of livestock products was said to contribute to water pollution and solid waste: the preparation of livestock products leads to the generation of solid waste, the depletion of clear water resources and the deterioration of air quality. The closest acknowledgement of global environmental protection, came in the form of cleaner emission engines but nothing on ODSs-free technology. Here, the Plan indicated that safety and environmental standard had begun to converge globally and soon these standards would be adopted by most countries. Therefore, the Plan provided for the use of environment friendly materials which offer similar safety and durability standards as the conventional materials and the development of greater fuel efficiency and cleaner emission engines. The Plan nonetheless did not emphasise the promotion of ODSs-free technology nor did it provide the direction for research and development on alternatives (transitional substances and substitutes) for ODSs. Its focus on environmental protection is to provide facilities for toxic and solid waste disposal and to protect long-term needs of water supply, the direct impact of toxic waste disposal.

5.5.2 Implementing Instruments

5.5.2.1 Organisational Structures

i. National Committees

Malaysia's early response to the protection of the ozone layer led to the establishment of the National Steering Committee (NSC) on Ozone Layer Protection in 1985. The establishment of the NSC could be seen as a proactive step on the part of the Malaysian Government to mobilise its implementation machinery in anticipation of becoming a Party to the Vienna Convention on the Protection of the Ozone Layer. The Vienna Convention was opened for signatures on March 1985. The NSC's purpose is to formulate policy and strategy for the implementation of national commitment on ODSs phase-out. The structure of the NSC is shown in **Appendix 8.** By the time Malaysia became a party to the Vienna Convention and the Montreal Protocol in 1989, the NSC was already strengthened with the establishment of the ODSs' Technical Committee in 1986. The Industrial Working Group Committee and Ad-hoc Committees were established in 1990 and 1993 respectively.

The structure of the Committees is shown as in **Appendix 9.** Their function is a step further than just formulating policies and strategies. The purpose of the Technical Committee is to address implementation issues and the formulation of regulation and technical aspects, while the creation of the Industrial Working Groups is to gain the involvement of the industrial sector in the phase-out programmes. The Ad-hoc Committee, on the other hand, carries out public awareness programmes, formulates ODSs phase-out projects and makes information available on acceptable alternatives to ozone depleting substances to interested industries and the public.

It would seem that the development of the organisational structure has been in tandem with the progress of Malaysia's involvement in the MP. As was said in the earlier part of the Chapter, Malaysia did not participate actively in the formulation of

the MP and later contended that the MP was biased against her interest. It was against this background that the Technical Committee and Working Groups were established to ensure that the country is not `surprised' with the technicality of the subsequent negotiations.

Besides ensuring smooth implementation of the MP, they are also designed to protect the continual growth of the industrial sector. Malaysia having committed herself to the yearly consumption limit of 0.3kg per capita has no other option but to proceed cautiously. The responses from industries are crucial for a balanced policy on environment and development. In addition, the direct involvement of the seven industrial groups in policy-making decisions will ensure continual support of government's effort to phase out the ODSs. However, most important, by voluntarily involving themselves in the formal decision-making mechanism, they are able to `have a say' in moulding the decisions which are going to affect them.

ii. Ozone Protection Unit

The Department of the Environment is central to the implementation of the MP. It plays the role of Secretariat to the NSC and co-ordinates the implementation of the Action Plan. Besides an administrative role, it has to enforce regulations to ban the use of ODSs under the Environmental Quality Act 1974. Hence, it is crucial that the Department has a special unit to carry out this responsibility. Therefore, a special unit (Ozone Protection Unit) was consequently established whose primary function is to promote and facilitate effective and efficient phase-out of ODSs. This is done through the adaptation of policy, strategy, technological and monitoring procedures which include overseeing the implementation of projects and programmes that have been specified in the national strategy and action plan. The Ozone Protection Unit serves as the national focal point for co-ordinating, monitoring, and implementing and

as a one-stop agency for all Montreal Protocol activities pertaining to ODSs phase-out investment projects. It also promotes awareness among industries on ODSs' adverse effects and to encourage the reduction of ODSs consumption.

The Ozone Protection Unit was funded by the Multilateral Fund for two years (1995-1996) and granted an extension for another two years until 1998. After the initial support by the Multilateral Fund, it was later funded through the normal governmental yearly budget (the Public Service Department approved the set up of the Ozone Protection Unit on 1 January, 1997). It is hoped the Unit will be able to assist industries especially in formulating project documents for ODSs phase-out. However, it is very small compared to the task it is supposed to carry out. At present there is only one permanent officer handling the day-to-day operation of the Ozone Protection Unit.

iii. Policy Makers

The Malaysian delegation to the negotiation and MoP to the MP was seen to involve officials who were also implementing the Protocol. Besides those DoE officials who were involved in the negotiation processes and also the implementation of the MP, the delegation also consisted of officials from the MITI and relevant sectors of the industries concerned.

The formation of the National Steering Committee and its Technical Committee can be seen as an effort to ensure that policy formulation received the consensus of all policy makers and stakeholders. Since the implementation of the MP affects the industrial sector, various industrial groups are represented in the main committee. Representatives from relevant industries are even asked to chair the various working groups.

The involvement of policy makers from the MITI and Ministry of Finance in particular provides the NSC with greater influence to induce the relevant industries to participate in the phase-out programmes. The formation of the NSC removed a constraint in the form of institutional differences which arise from the exclusive spheres constructed by individual agencies. However, even with the involvement of these `well established Ministries' in the NSC, there is still doubt as to whether such organisational structure manages to do away with institutional ranking. The usual question is who will have the upper hand in making the decision regarding industrial matters, MOSTE or the MITI. It is common knowledge that meetings of the NSC often become a platform for the MITI to pit itself against MOSTE in some policy-making matters.

5.5.2.2 Legal and Regulative Framework

The formulation of the legal and regulative framework for the control of ODSs has gone through smoothly without much resistance from either the states or the industries. This is not surprising because the industrial sector has been brought into the main stream of decision-making. Furthermore, with the MITI being represented in the NSC there is no way the industrial sector can be considered a `sacrificial lamb' at the expense of the environment unless the impact on the industries is considered `negligible'. In fact, seen in the political context, it is doubtful if the MOSTE can outmanoeuvre the MITI which is "ranked much higher" than the MOSTE and is headed by a more Senior Minister. Nonetheless, the presence of the Cabinet which has the final decision on any policy matter means that each proposal to legislate any law will be given due consideration taking into account the overall welfare of the country.

It is also fortunate that national legislation pertaining to the implementation of the MP deals with industrial matters. This is because under the Ninth Schedule of the Federal Constitution, the item `industry' which includes `imports into and exports from the Federation' falls under the Federal List. This means it is not mandatory for the Federal Government to consult the states during the formulation of the legislation. The Federal Constitution clearly demarcates the jurisdiction of state and federal government through legislative lists. The fact that implementation of treaties, agreements and conventions with other countries is under the Federal jurisdiction does not make the implementation of the Montreal Protocol much easier. Nonetheless, the classification of industrial matters as under the Federal list does makes a lot of difference. This is because the country's commitment to the Montreal Protocol and the national implementation of the MP are both under the federal list. Hence, only the federal government is involved in the negotiation of the treaty and its implementation, thus avoiding the long process of consultation with the various states in the Federation.

i. Customs Act 1976

The first legislation to be put in place was the Customs Duty (Amendment) Order 1989. This Order was made under the Customs Act 1976. This piece of legislation is to monitor the import and the usage of CFCs and Halons which are the substances listed as Annex A of the Protocol. The date of enforcement was 14 December 1989. It can be seen that the Protocol came into force on the 27 November 1989, about three weeks earlier than the Customs Order. Obviously, this is not a co-incidence. Ideally, the Customs Duty Order should be in place before or as soon as Malaysia became a party to the MP since the main objective of the Order is to provide information to the Secretariat of the Montreal Protocol on the amount of

the country's ODSs' consumption. This is because as an Article 5 country, Malaysia is required to keep its yearly consumption of CFCs' level below 0.3kg per capita and the Order is the instrument used to monitor this development.

In 1994, the Customs Act was used again. This time the Customs Duty (Amendment) Order 1994 (Under Schedule II, Customs Act) was to monitor the import and use of ODSs in Annex C (HCFCs) and Annex E (Methyl Bromide) as well as trade with non-party countries.

It appears that the Customs Act 1976 already has provisions to control the import and export of items into and from the country. It is a normal trade regulation. Therefore in the legal context, the step taken to add specific ODSs as new items to the import or export control list does not present any difficulties or a constraint to the authority. This means that there is no requirement for creating a new Act, thus avoiding the long process involved in law formulation. Regarding this issue, there is no reason to delay the amendment of the Customs Act because the country's consumption is well below the required level of the MP.

ii. Trade Related Laws and Regulations

Malaysia continues to use trade instruments to implement the Protocol. To control the importation of these controlled substance, the Ministry of International Trade and Industry practises a licensing system (Application Permit System) for Annex A and Annex B substances. The system, which has been implemented since 7th April, 1994, limits the number of licenses given to importers and the amount each importer is allowed to bring into the country. In 1994-1998, the amount of CFCs allowed and the amount actually imported is shown in **Table 5.2** page 139. It would seem that the quota set by the authority was much higher than the actual need of the industries. The quota allocated under supervision of the MITI reduces between 10%-

15% per year for Annex A and Annex B substances. Hence, it can be assumed that the rate of phasing-out of ODSs is faster than the reduction in import quota.

In addition, the MIDA (under the MITI) issued an Administrative Order (8th December 1992) to prohibit the use of CFCs in new investment manufacturing sectors. Besides using trade instruments, Malaysia has also utilised fiscal tools as an impetus to accelerate the phasing out of ODSs as follows:

a. Import duty on CFCs increased from 2% to 10%;
b. Import duty on R134a abolished (HFC 134 an alternative to CFCs)
c. Import duty on refrigerators containing CFCs increased; and
d. Import duty on component equipment and raw materials for manufacturing non-CFC refrigerators reduced from 30% to 10%.

iii. Environmental Laws and Regulations

So far, the application of trade legislation and fiscal methods to control the consumption of controlled substances instead of environmental regulation has been discussed. Six years ago, there was only one environmental legislation used to implement the MP. The legislation made under the Environmental Quality Act 1974 was the Environmental Quality (Prohibition on the use of Chlorofluorocarbon and other gases as Propellants and Blowing Agents) Order 1993. This Order prohibits the use of CFCs in the aerosol and foam manufacturing sectors. However, more recently, the EQA 1974 has again been used to legislate two other pieces of legislation to control the usage of halon and refrigerants, the Environmental Quality (Halon Management) Regulations, 1999 and Environmental Quality (Refrigerants Management) Regulations, 1999. The Refrigerants Management regulation bans the usage of CFCs in newly installed buildings' air conditioners or chillers while the Halon

Management regulation bans the use of halon in new fire-extinguishing systems and equipment. Both regulations will take effect from 1st January 2000. However, the existing chillers and fire-fighting systems can still be used until they are phased out at a date to be decided later.

At present, there are three legislation which are formulated under the EQA, 1974. However, this does not signify that the EQA is not an important tool to control the consumption of ODSs. In fact, it is the tool to be used in handling the ODSs issue. This is because the EQA has provisions that cover extensive issues other than the control of imports and exports made under the Customs Act. The EQA 1974 provides regulation for the control of ODSs especially under Sections 30 or 51. Section 30 provides power for the Minister to prohibit use of any materials for any process, trade or industry. On the other hand, Section 51 provides power for the Minister to make regulation to prohibit the use of any equipment, facility. In 1996, these sections were further amended to include, among others, prescription of environmentally hazardous substance. The full text of the Sections is in **Appendix 10**.

For all the provisions that it has, the EQA 1974 has sometimes become an undue constraint to the effort to formulate domestic regulation to implement the MP. In 1996, for instance, the DoE proceeded to translate Decision VII/32 of the Seventh MoP into national law using the empowerment of the provisions in the EQA 1974. The Decision recommended country Parties to adopt legislative and administrative measures to regulate the export and import of products and equipment containing substances listed in Annex A and B and to ensure no obsolete technologies were being dumped in other the country Parties.

Two draft regulations were formulated to manage the use of refrigerants and Halon through the control of movement of CFCs and Halon stock to other countries and to stop obsolete ODSs technology from flooding the local market. However, the formulation of the regulations was held up before they could be submitted for the Cabinet's approval. The delay was attributed to the manner in which the process was being carried out. The draft regulations had gone through various consultations with the industrial sectors and public sectors and had been approved by the Technical Committee, NSC and the Environmental Quality Council [2](EQC). After going through such long a process of getting the regulations to the final stage, the DoE was frustrated to see their efforts come to nought when the Attorney General's Chamber did not agree to the draft regulations. A simple drafting exercise had become a mammoth task that saw almost 3 years' effort wasted. Since this was not the first time an environmental regulation has been formulated such an incidence should not have occurred.

The underlying causes constraining the smooth formulation of environmental legislation on ODSs phase-out were the absence of a structured process and the involvement of different types of experts such as lawyers, environmental scientists and enforcement officers and managers. Firstly, the process taken to formulate environmental regulation is based on usual practice and logical understanding. It is a logical step to get the legal officer involved in the early stages of the formulation process. Nevertheless, in certain cases, the legal expert is not involved until much later because the legal experts prefer the draft legislation to take shape before they comment on it. Probably, knowing little of technical requirements, they prefer it if the DoE can decide on overall structure of the regulation first. Hence, being experts in their fields, the environmental control officers drafted the regulation to take care of all

[2] The EQC was established under the EQA 1974 to advise the Minister on matters pertaining to the Act

the environmental issues. However, being non-legal expert, they do not know that certain aspects of the drafted provisions cannot be implemented because they are outside their jurisdiction and are encroaching on other agencies' functions. The legal experts on their part, though masters in their field are unable to grasp the technical issues that the DoE wishes to achieve. This has often led to misunderstanding and a long process of discussion. Therefore, even if a legal structure is already in place the drafting process will still become constrained if there is no co-ordination between agencies and a lack of understanding of the pertinent issues at hand on the part of the drafters.

The withholding of the regulations on the management of refrigerants and Halon has delayed the phase-out programme. For instance, it was reported that until June 1997, only 10 metric tonnes of Halon had been returned to the Halon Bank. Such a slow reaction was blamed on the lack of legislation to force the Halon user sectors to send their Halon to the bank. The same situation happened in the refrigeration sector when a large chemical company reported there were problems implementing the CFCs' substitution measures because consumers did not want to use the recycled refrigerant. This was further exacerbated by views that the recycled refrigerants were inefficient and difficult to obtain. The then DG of the DoE indicated that lack of specific legislation to control this sector was one cause of the problem as well as lack of training of the mechanics operating the refrigerant service sector. However, it will only be seen much later in the year 2000 whether the two new regulations have been able to achieve their objectives. In the mean time, there is already scepticism about the regulations. An editorial columnist of a leading newspaper questioned the time limit. They argued that while it is good that the country is attempting to conserve the ozone layer, the time limit seems too short to phase out CFCs when considering the hundreds of thousands of refrigerators and

the amount of fire-fighting equipment in existence (NST, 29/4/1999).

The lack of environmental legislation to implement the MP has been made up by the various guidelines generated by the DoE as detailed below:

a. Guidelines on the Control Measures for the Protection of the Ozone Layer (May 1994);
b. Guidelines for Pre-Qualifying and the Selection Criteria for Acceptable Alternatives to ODSS in Malaysia (1995); and
c. Training Manual for Mobile Air- Conditioning Recycling/Service Workshop Operators.

iv. Other Laws and Regulations

Other legislation and administrative orders have been made under other agencies such as:

a. Fire Service and Rescue Department, Ministry of Housing and Local Government: Administrative Order (1990) to prohibit the use of Halons in new installations;
b. Ministry of Works: Occupational Safety and Health Act 1994 to control and monitor the exposure limits of Carbon Tetrachloride;
c. Ministry of Health: Hydrogen Cyanide (Fumigation) Act 1953 (Revised 1981) Act 260 to regulate fumigation using Methyl Bromide); and
d. Ministry of Agriculture: Pesticide Act 1974, Act 149 to control registration and use of Methyl Bromide;

5.5.2.3 ODSs' Phase Out Projects

i. Background

The Multilateral Fund was set up to provide financial and technical co-operation, including the transfer of technologies, to country Parties operating under paragraph 1 of Article 5 of the MP (developing countries). This is to enable the developing countries to comply with the control measures as set out in the MP. The Multilateral Fund is governed the Executive Committee (ExCom).

ii. Investment and Non investment Projects

Up until the end of 1997, the ExCom had approved over US$666 million for the implementation of investment and non-investment projects in Article 5 countries (UNEP, 1998). The projects are expected to result in the permanent, annual phase-out of 105,263 ODP tonnes of ozone depleting substances. Investment projects are those projects which directly phase out ODSs in the various industries through purchase of new equipment, retrofitting the economically viable existing equipment, and training, whereas non-investment projects are those pertaining to a country 's programme preparation, institutional strengthening, technical assistance and other like projects which will indirectly lead to the elimination of ODSs. The implementation of the projects at the national level is carried out by the implementing agencies; namely, are the World Bank, UNEP, UNDP, UNIDO and bilateral agencies.

iii. Projects in Malaysia

As an Article 5 Country, Malaysia has taken the opportunity to tap the financial and technical resources provided by the Multilateral Fund. As at 30 June 1998 there were approximately 105 projects and activities approved by the ExCom for Malaysia that involved all five implementing agencies. The funding for these

projects and activities amounted to US$30 million as summarised in **Appendix 11.**

The projects in Malaysia made up 4.9% of the total projects approved by the Multilateral Fund. The number of projects actually completed by Malaysia amounted to 6.8% of the overall total number of projects completed in other Article 5 countries (see **Table 5.7** below). The percentage of completed project in Malaysia was 61.9%. This was much better than the overall 32% of projects completed in all Article 5 countries. In respect of total ODSs' phase out the amount phased out in Malaysia as at 30 June 1998 was 5,786.98 ODP tonnes, whereas all projects in all Article 5 countries were expected to have phased out 105,263 ODP tonnes by this date.

Table 5.7: A Comparison of Projects in Malaysia and Overall Projects Approved by the Multilateral Fund

	Overall Projects	Projects in Malaysia	Projects in Malaysia as % of the overall MF projects	Overall ODSs' phase-out (ODP tonnes)	ODSs' phase-out in Malaysia (ODP tonnes)
No. of Projects	2,139	105	4.9%	105,263	5,786.98
No. of investment projects (%) and cost	1,002 (46.84%) US$541 M	79	7.9%		1,600
No. of non-investment projects(%) and cost	1,137 (US$125 M)	26	2.3%		4,186
Total Cost	US$666 M	US$30 M	4.5%		
No. of investment projects completed (%)	265 (26.45%)	48 (60.76%)	18.1%	40,988	
Cost of completed investment projects	US$149 M	US$13 M	8.7%		
No. of non-investment projects completed (%)	412 (36.24%)	17 (65.38%)	4.1%	5,068	
Cost of completed non-investment projects	US$125 M	US$2.3 M	1.8%		
Total Number Completed (%)	677 (31.65%)	65 (61.90%)	9.6%	46,056 ODP tonnes	3,423.10 ODP tonnes

Source: Data compiled from the Department of the Environment and UNEP

The large number of projects may lead to the notion that grants are easily available for the funding of these projects. This is, however, not the situation. Certain criteria need to be fulfilled. Some countries regard the criteria as being too restrictive to gain easy access to the financial resources. They argue that this situation gives a wrong signal to industries in the developing countries. An example is the issue of incremental cost. Incremental cost that is incurred during an ODSs phase-out project is eligible for funding under the Multilateral Fund. However, it is subjected to the indicative list as decided by the MoP, as shown in **Appendix 12.**

Generally, incremental cost is admissible to any established facility which falls into any one of the three following categories: supplying the substitute for ODSs; replacing their use in manufacturing as an intermediate good; and replacing them in their end use. If a facility is not an existing facility, it will not be eligible for incremental cost even if its purpose is to establish new production facilities for the supply of substitutes for ODSs. Hence, some Article 5 countries regard the indicative list as not representative of the incremental costs that need to be funded. Therefore, at the Sixth MoP, as a result of the proposal made by Malaysia and India, a decision was made to request the Open-ended working Group to examine the indicative list of categories of incremental cost.

In Malaysia, the implementation of these projects is carried out with the help of local implementing agents. For example, for the World Bank Programme, CETEC is co-ordinating 16 projects, Westech Sdn Bhd is co-ordinating several projects in the foam and refrigeration sectors under the UNDP, while SHOH Consultancy is supervising MAC (mobile air conditioning) projects under the World Bank. These local implementing agents are responsible for the implementation of the investment component, including subproject appraisal, disbursement of the Multilateral Fund to

the enterprises and supervision of subproject implementation. The appointment of these local agents thus releases the DoE from some of the heavy workload, including preparation of the sub-grant agreement between the DoE and the enterprise, and preparing project documents and reports for the implementing agencies. By discharging some of the responsibilities to the local agent, the DoE is able to spend more time monitoring and co-ordinating the overall ODS's phase-out programmes. The DoE is also able to review each subproject to ensure that cost-effective technologies are used and the subproject conforms to the country's priorities. This provides relief to the management of the national phase-out programme bearing in mind that the Ozone Protection Unit is at present manned by one officer only.

iv. Constraints

Procedural

Despite showing excellent progress, the ODSs' phase-out projects face several constraints. Firstly, the manner in which the Implementing Agencies operate differs from each other and sometimes imposes constraints on the DoE and the local implementing agencies. For instance, the World Bank as a financial entity is not well versed in technological aspects. Although it takes care of the financial procedures, it leaves the choice of selection of instruments to the project proponent. However, there are instances when it does not agree with the type of technology chosen and asks for it to be changed. With no guidance from the Agency, the local agent and the DoE are on their own and practise a trial and error approach. The UNDP, on the other hand, is well versed in the management of projects but leaves the DoE to manage the financial accounts. The Ozone Protection Unit is a technical Unit and in addition, is under-staffed. It therefore has difficulties handling financial matters (Aminah, 1998).

Financial

Sometimes the small enterprises experience financial constraints. It has been reported that most of the time, the cost of projects exceeds the amount given by the Multilateral Fund. The difficulties acquiring a `bridging loan' sometimes delay the implementation of projects. The financial factor seems to be exerting a greater impact during this time as the country experiences her worst financial crisis in a decade. It was reported that economic slowdown had caused some SMIs operators to put off their intention of participating in the programmes because they were reluctant to invest in upgraded facilities to embark on the new technology. Furthermore, reduced demand would render them unable to sustain production costs after switching to CFC-free technology (NST, 13/6/1999).

To circumvent such constraints, companies concerned, especially SMIs, often team up with other companies to reduce the risk of insufficient funds due to heavy capital intensive projects. Whilst local enterprises will get 100% funding, joint venture companies with foreign companies will receive funding based upon the percentage holding of the local component. If the local component is 51% then the funding from the Multilateral Fund will also be 51%, unless if the foreign counterpart belongs to another Article 5 country, in which case the company will receive full funding.

Transfer of technology

Another constraint is the transfer of technology. One of the objectives of the Multilateral Fund is to provide for technology transfer to developing country Parties. The changeover from ODSs technology to ODSs-free technology is based on a one to one ratio. This simply means that the technology is not an upgrade. If the capability of the new instruments is better than the earlier instruments, then the difference in cost has to be met by the industries concerned. Hence, incentives for

the transfer of technology to take place are being questioned.

Another constraint experienced in technology transfer is the characteristics of the alternative substances. In the foam sector, there are efforts to transfer technology by converting the relevant ODSs into HCs (hydrocarbons) instead of HCFCs. The reason for direct conversion is because HCFCs contribute to global warming. HCs on the other hand have zero ODP, meaning HCs have no ozone depleting characteristics. Nevertheless, HCs are very inflammable. Hence, the industry, especially SMIs, are reluctant to convert to such substances. The SMIs are small capital ventures and therefore unable to meet the necessary safety requirements, which require relatively high investments. Therefore without the necessary safety measures in place, management is reluctant to undertake conversion fearing the danger of explosion. Nevertheless, it has been reported that some HFCs are less energy efficient and expensive compared to other technologies.

It is also reported that some machineries received by industries which utilise ODSs are operating below capacity due to technical failure and unadaptablity to local conditions. Certain factors are said to cause such situations. Among these are the tendering processes that favour the lowest bidder, hence, suppliers often sacrifice quality of equipment to the project. In contrast, there are instances where the technology given is far in advance of existing equipment thereby resulting in mishandled equipment and interrupted production. Therefore the dilemma of trying to comprise between energy efficiency, safety and global warming has made Malaysia very cautious over proposals to phase out certain ODSs into substances with less ODP but considered `unsafe' and requiring very sophisticated equipment.

5.6 IMPACTS OF THE IMPLEMENTATION MEASURES

5.6.1 Consumption of ODSs

This section analyses whether the implementation measures successfully manage to reduce the consumption of ODSs in the country or if they badly affected the development of the industrial sector. By examining the consumption data for 1989 and 1997 implementation measures are shown to have been successful. As illustrated earlier, in 1989, Malaysia's consumption of CFCs and halon was 0.29 kg per capita whereas in 1997 it had reduced to 0.15 kg per capita. Nevertheless, it is important to investigate what measures actually make the most impact on the reduction of the consumption of ODSs.

i. Solvent Sector

Firstly, it is necessary to discuss the consumption trends of ODSs in the solvent sector using **Table 5.3** on page 140 as reference. The solvent sector reveals an overall downward trend in the consumption of ODSs. Referring to **Appendix 6,** from which Table 5.3 is drawn, indicates that this sector utilised Annex A and B substances in its manufacturing processes. In 1992, the MIDA Order prohibited the usage of Annex A substances in new investment projects. However, the figures for 1993 do not indicate a significant drop in Annex A consumption (from 9% to 4%) since the Order did not affect the existing industries. The drop in consumption might be due to the usage of CFCs' alternatives or the industrial facilities are no longer in production. Section 5.3.1 page 135 illustrates that there were 21 companies, which switched to using alternatives. Nonetheless, according to the DoE, there were only 4 projects in the solvents sector undertaking to phase out ODSs under the Montreal Protocol Multilateral Fund assistance programmes. This is not surprising since most companies belonging to this sector are MNCs (electronics and semiconductor

companies) which could have phased out their ODSs consumption on their own.

Nevertheless, it was in 1994 and beyond that there was a drop in ODSs' consumption as reflected in Appendix 6 and Table 5.3. This coincides with the introduction of an Application Permit system which controls the import and usage of ODSs in Annex A and Annex B substances. Hence it can be assumed that the AP system is the main factor contributing to the reduction of the consumption of ODSs in this sector.

ii. *Foam Sector*

However, in the foam sector, the consumption of ODSs does not seem to have been reduced. In fact in 1989 the sector was consuming about 590 metric tonnes (7.9%) of ODSs compared to 879 metric tonnes (12%) in 1997. About 227 metric tonnes of the total consumption in 1997 was made up of HCFCs (alternative substances) whereas it was shown that there were no alternative substances being used in 1989. The absence of HCFCs data from 1989 to 1994 was due to the fact that HCFCs were only monitored in 1994 with the introduction of the Customs Order, 1994.

In 1995, it was estimated that there were about 30 industries involved in the usage of ODSs in this sector and 27 of the companies had switched to alternatives. This might be the reason for the higher percentage of HCFCs used. Moreover, the foam sector has the largest number of projects involved in the phasing out of ODSs under the Montreal Fund programme (see **Appendix 11**). This could also be the reason for increased usage of alternatives because the phasing out would entail changing to non-ODSs and alternative substances. However, the data for the consumption of CFCs in this sector did not show a steep decline with the introduction of the Environmental Quality Order 1993 (prohibits the usage of CFCs in the foam

sector) because some sub-sectors (the production of rigid polyurethane foam) are allowed to use CFCs until 31 December 1998.

iii. Refrigeration Sector

The refrigeration sector showed the largest consumption of ODSs in the country, 36% in 1989 to 81% in 1997. The prohibition of ODSs in this sector has just recently been introduced under the Environmental Quality Act (Refrigerant Management Order, 1999). However, it will only be effective on 1st January 2000. Although this sector shows an overall increase to 81%, the data may be misleading since 52% of the ODSs in this sector are HCFCs, which are alternatives to the CFCs. This data corresponds to the MITI (1995) survey which showed that 87 out of 138 companies that had switched to alternatives belonged to this sector. In addition, the MP only requires HCFCs to be phased out by the year 2030. The servicing sectors of the car industry are also required to convert to this transitional substance.

iv. ODSs phased out under the Multilateral Fund Projects

It is also possible to compare the amount of consumption against the amount of ODSs phase-out by projects under the auspices of Multilateral Fund. For example, in 1993, the amount of ODSs phased out was only 150 ODP tonnes compared to consumption figures of 4318 ODP tonnes. However, in 1997, the total phased-out was 914 ODP tonnes while the consumption for 1997 was 3,645 ODP tonnes (see **Table 5.8** overleaf). However, if HCFCs are excluded from the consumption figures because HCFCs are substitute substances and Malaysia is not expected to phase these out until the year 2030, then the level of ODSs' consumption for 1997 was 3,439 ODP tonnes. The amounts of ODSs phased out tend to fluctuate according to the number of projects per year. The number of projects for 1997 was 15 compared

to 18 in 1996 and 13 in 1995. Nonetheless, the data showed a net reduction in ODSs phase out in 1997 compared to 1993.

Table 5.8: Consumption and Phase out of ODSs

	1993	1995	1996	1997
Consumption (ODP tonnes)	4318.2 (HCFC=143.1)	3723.19 (HCFC=189.98)	3281.61 (HCFC=164.2)	3645.14 (HCFC=206.5)
Phase out (ODP tonnes)	150	544	1532.50	914.90
Difference	4168.2	3179.19	1749.11	2730.24

Source: Department of the Environment, Malaysia

5.6.2 Industry and Development

Malaysia has managed to secure from the Multilateral Fund financial support of about US$30 million to help her industries phase out ODSs. However, the cost incurred by the country is much higher. The Minister of Science, Technology and the Environment at the Seventh MoP in Vienna (5-7 December, 1995) reported that US$150-200 millions had been expended in the conversion to non-CFC technologies in the past five years and since then had accelerated. Most recently Malaysia reported in the Commission on Sustainable Development 1997 Country Profiles, that the cost to the country for phasing out CFCs and Halons and switching to alternatives had been estimated at US$270 million.

It is somewhat `fortunate' that it is the private sector that incurs the cost of the phase out projects and is still able to continue with the phase-out programmes. As mentioned earlier, the government is unable to support the projects financially because of other development priorities. This can be seen in the budget allocation

given to MOSTE to conserve and protect the environment. For instance, the Sixth Malaysia Plan (1990-1995) allocated about RM40.35 Million ($US16 Million) for conservation and protection of the environment while the Seventh Malaysia Plan allocated about RM1.9 [3]Billion ($US760 Million). Compared to other Ministries this a modest figure. For example, the Ministry of Agriculture was allocated RM 8.7 Billion (6MP) and RM 7.6 Billion (7MP), Industrial Development was allocated RM1.7 Billion (6MP) and RM2.5 Billion (7MP) while for Science and Technology the budget allocation was RM3 Billion (7MP). Even the Housing and Social services received more allocation than the environment (RM3.9 Billion for 6MP and RM6.1 Billion for 7MP). These figures indicate the government's immediate priorities.

The additional cost to Malaysia has extended further than the cost of conversion. Some industries are reported to have invested in capital equipment using CFCs that have a 40 years life span. The 40 years life span in some industries will end up to the year 2010. Without the grace period, these industries would have had to have phase out the ODSs by the year 2000. But with the grace period they are able to continue production utilising CFCs until 2010 thus lessening the impact of the implementation measures. Therefore, the grace period given to Malaysia as an Article 5 country is somewhat able to lessen the impact by 10 years. Recently, the DoE estimated that Malaysia needs an additional US$1 million to convert the remaining SMI operations to CFC-free status (NST, 13/6/1999).

The Multilateral Fund was established to support local industries' transfer of technology, however, there is no mention of how the transfer is to take place. In fact, the incremental cost element which is supposed to compensate the industries when they convert to an ODSs-free technology does not include the establishment of new facilities. It is an irony that transfer of technology in the form of new facilities is not

[3] 1$US = RM2.5 (1995)

eligible for funding while retrofitting of equipment or conversion of existing facilities that in the long run will be more costly is eligible.

The changeover from ODSs technology to technology using the substitute or alternatives is higher both in terms of capital and production cost. The ODSs are used in the manufacturing process and in the products. Hence, if the cost of the alternatives is much higher than the ODSs, the industries will definitely incur a higher cost of production. They, in turn, will have to pass on the additional expenditure to their customers. The market survey undertaken in 1995 showed that the alternatives cost more than the ODSs (see **Appendix 13)**. Therefore, unless the alternatives and substitutes are available at a lower price than the ODSs, the changeover to ODSs-free technology will be hampered. Industries have already incurred additional expenditure due to changeover to new technology and the slowing of production during the conversion process.

5.7 CONCLUSION

The analysis of the national implementation of the MP has revealed many interesting factors. Although Malaysia did not actively participate in the early negotiations and was very sceptical about the fairness of the multilateral agreement, her initial perception did not stop her from discharging her responsibility to protect the global environment. The fact that she is willing to fulfil her commitment is shown in her encouragement of the early implementation of phase-out programmes, utilisation of the existing legal framework and industrial support. Most important is the establishment of co-ordinating bodies to facilitate the transposition of the international aspiration into national action. Nonetheless, there is more which needs to be done to facilitate the transfer of technology and additional funding required for research and

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1 $US= RM3.8 (1998)

the development of new substances. Retrofitting of equipment is shown to incur higher costs than had originally been estimated.

The statistics collected for 1995-1997 show that phase-out programmes seem to work better in some sectors than others. The forecast made by the DoE in 1995 (Appendix 7) was far more optimistic than the actual data collected by the DoE (Appendix 6) in sectors such as foam, aerosol and refrigeration. However, in solvent cleaning, fire fighting and agriculture (methyl bromide) the programmes seem to have achieved more than the forecasted phase-out. The data seem to confirm that those SMIs largely involved in the aerosol sector are not phasing out ODSs as fast.

The refrigeration sector, especially in the car industry, still needs CFCs for the MAC service sector. In fact, Malaysia still import products containing CFCs such as reconditioned cars and refrigerators particularly commercial refrigerators. Although the global ban of CFCs will take place in the year 2010, it can be seen that Malaysia has passed a regulation that prohibits the usage of CFCs as refrigerants in new applications with effect from 1st January 2000. Nonetheless, there is still a significant demand for CFCs, especially in the MAC service sectors, which foresees a continuous import of CFCs until the total ban in 2010. In the meantime, it can be seen that the refrigeration industries in Malaysia have begun to use HCFCs, a transitional substance, as an alternative to CFCs. The HCFCs will be banned in 2030, which gives Malaysia ample time to change to new alternatives.

The impetus to change to ODSs-free technology has been provided indirectly by the international community. Being a net importer, whether Malaysia likes it or not, she has to change her manufacturing practice. Refusal to change will leave her with no or expensive supplies of raw material for her industries. In fact, the MP provides her with the opportunity to stall the early phase-out of the CFCs to her advantage. For obvious reasons, Malaysia also does not agree to an early phase out of HCFCs

which are alternatives to CFCs. Hence, it is the case of trying to steer the international direction to comply with her own needs. Fortunately for Malaysia, her effort to delay the phase-out is supported by data from the Technology and Economic Assessment Panel, established under the Montreal Protocol mechanism. The Panel at the 7th MoP reported that it was not technically and economically feasible to phase-out methyl bromide by 2001 in developing countries. It reported that a 25% reduction by 2005 at 1993-1995 average levels would cost from US$ 48.6 Million to US$232.3 million. As for HCFCs, the panel reported that a freeze of HCFC in 2011 will also cost developing countries US$115 million to US$235 million to switch to other alternatives.

It can be seen that the Sixth and Seventh Development Plans, and the Second Industrial Master Plan did not contain specific policy to phase-out ODSs. The significance of such a finding shows that while at the international level Malaysia supports a policy to control the production and consumption of ozone depleting substances, it did not however, embed such a policy into the Plans mentioned earlier. The absence of such a policy at the macro level does not however indicate that the ODS issue has not been placed onto the political agenda. Indeed, it has got on to the political agenda of two `rival' agencies: the agenda of MOSTE as an environmental agency and, for obvious reasons, on the MITI 's agenda. Hence, the ODSs' issue is a good example of how environmental issues get on the political agenda for different reasons: one to protect the global environment and another to protect local industries.

It seems that the implementation of the MP is not hindered by the absence of policy at the macro level. Although the Montreal Protocol is an international effort to protect the global environment, its implementation in Malaysia is however limited to a few sectors of industries. In addition, its implementation involves very few federal

agencies and is without the complexity of states' interference. Therefore, implementation is not spread out on a wide scale and a micro level policy under MOSTE will be able to provide the necessary direction.

Nonetheless, the time frame within which all types of ODSs will be banned extends well into 2030. Therefore, for such a long-term process, it would certainly help in the effort to phase out ODSs if there were a clear policy in the development and industrial plans. The presence of such a policy would definitely provide the direction required to phase-out ODSs to much wider target groups. Nonetheless, it seems for now, policy direction will only be provided by MOSTE and disseminated through the National Steering Committee that comprises specific agencies and target groups only.

The establishment of the Ozone Protection Unit, which also acts as the Secretariat for the Committees, is important because it provides the Committees with permanent staff members well versed in the current issues. Although the DoE is a technical department but has been given quite a free hand in the formulation of policy relating to the MP. It has been a normal mode of management for a technical department to receive policy direction from the Ministry which, in this case, is MOSTE (CEMD). Nonetheless, this arrangement, which differs from the `normal norm', might have come about because the CEMD was only established in the early 1990s whereas the DoE has been involved in the negotiation and implementation of the MP since the late 1980s. Thus, this circumstance has made the DoE competent to manage policy as well as the implementation of the MP. Nevertheless, the final decision is always referred to the Ministry for endorsement.

The ease of transposing the MP legal requirements into national law seems to indicate that the MP provides clear directions and there exists a national legislative framework to facilitate the transposition. Firstly, the text of the Protocol provides clear

phase-out dates of ODSs and the list of controlled substances that are to be phased-out. As a country operating under Article 5 of the Protocol, Malaysia is expected to phase-out controlled substances as in Annex A, with a ten years' grace period (until 2010). Hence, the legislation to be formulated is very clear on the issues to be addressed, the substances and the phase-out dates. Therefore, the transposing process needs only a framework or mechanism to take these issues on board.

The laws and regulations to enforce the implementation of the MP are made up of trade and environmental instruments. The trade laws and regulations are made under the Customs Act, the MITI and the MIDA's order and the environmental laws are made under the EQA, 1974.

The three environmental legislation under the EQA 1974, work in the same manner as the administrative Order that was made under the MIDA, except they have the force of law whereas the MIDA's Order was only an administrative tool. However, the MIDA's Order is much easier to implement. Although the Order does not have the force of 'legal power' it is the prerogative of the MIDA to allow or not to allow new investment, whereas the Environmental Order needs enforcement action to ensure its effective implementation. In other words, the effectiveness of the MIDA's Order lies in its ability to stop the ODSs industry before it starts operating whereas the EQA's Order has to monitor existing industries. The Application Permit (AP) system under the MITI also works similar to the MIDA's Order, stopping the ODSs at the point of entry.

With the given grace period and financial assistance, it is expected that Malaysia can protect her national interest and at the same time participate in international co-operation to protect the ozone layer.

Thus to conclude, the contribution from Malaysia towards the improvement of the global environment is more to do with her effort to be competitive in her trading of export items especially in semiconductors and electrical products. It is the prospect of not having the necessary materials for her industries that catalyses her rapid implementation of measures to phase out the ODSs, especially CFCs and Halons, which will ultimately result in an enhancement of the global environment. Nonetheless, the presence of an organisational framework, which facilitates the implementation of projects and programmes; and the monitoring and enforcement of legal and regulative instruments has intensified the ODSs' phase out. Last, but not least, the absence of complications involving state and federal jurisdiction over the subject matter makes implementation much easier.

CHAPTER SIX

ANALYSIS OF THE NATIONAL IMPLEMENTATION OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

6.1 INTRODUCTION

This chapter aims to analyse the factors that affect the national implementation of the United Nations Framework Convention on Climate Change (UNFCCC). Nonetheless, it should be made clear at the start that Malaysia is not required to reduce her emissions of greenhouse gases. She only needs to provide an inventory of greenhouse gas emissions and sinks and a national climate change response strategy whereas developed country Parties, on the other hand, have more definite commitments. For instance, the Kyoto Protocol under the UNFCCC subjected the developed country parties to a Quantified Emissions Limitation and Reduction Schedule. However, for the purpose of this study, analysis will be undertaken of the various measures that Malaysia has carried out either directly or indirectly related to the UNFCCC.

The analysis process will follow the framework for the analysis of the implementation of a multilateral environment agreement as illustrated in Figure 1.1 in Chapter One. The analysis focuses on the factors that affect the implementation of the UNFCCC, the constraints faced during the implementation of the various measures, and the impacts of the measures on emissions of greenhouse gases, environmental management, and the economic and overall development of the country. The analysis will examine the reasons why and how the variables affect the implementation measures and how they are induced. The analysis will also investigate how the various agencies interact with each other pertaining to climate

change issues, why they differ or concur in their actions and what motivates their differences and similarities.

In order to conform to the analysis process described above, the chapter commences with a detailed account of the UNFCCC's background, then analyses Malaysia's perceptions of the Convention, the position that she took during the negotiations in the Conference of Parties (CoP), and the decisions of the CoP that presently affect or will affect Malaysia in the future.

An analysis of Malaysia's perceptions of the Convention and the position she took is important to account for the policy and strategies undertaken by the country. Later, the chapter describes and analyses the other factors that have been identified to affect the implementation of the UNFCCC. The factors are: policy formulation; organisational structuring, programmes, legislation and projects called "Activities Implemented Jointly (AIJ)" which are carried out between Malaysia, the USA and the Netherlands to offset greenhouse gases emissions. An identification of the constraints faced during the implementation of the measures will also be undertaken. Finally, the chapter investigates the impacts of the implementation of the UNFCCC on Malaysia's emission of greenhouse gases, her economy and overall development of the country.

6.2 BACKGROUND

This section commences with a detailed outline of the historical background of the Convention and its objectives. Several important decisions of the CoP will be discussed in relation to the national implementation of the UNFCCC and also Malaysia as a party to the Convention.

6.2.1 United Nations Framework Convention on Climate Change (UNFCCC)

The international effort to address the climate change issue was initiated during a UN General Assembly, which adopted Resolution 45/212 on 11 December 1990, establishing an Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/UNFCCC) which would start work on the formulation of a climate change convention. A Framework Convention on Climate Change was finally conceptualised during the Rio Summit, 1992. At Rio, the UNFCCC received 155 signatures whereas at the opening of the first Conference of Parties (1995), there had only been 115 country Parties indicating that a significant number of countries which signed the Convention at Rio, did not ratify it. However, as at 7 October 1998 the number of countries that have ratified the Convention has increased to 176 country parties.

The Convention is a framework with general objectives to stabilise greenhouse gas concentrations in the atmosphere. Based on the principle of common but differentiated responsibilities the Convention designated developed countries as Annex 1 countries. The Annex 1 countries are expected to take corresponding measures to limit their anthropogenic emissions of greenhouse gases, protecting and enhancing their greenhouse gas sinks and reservoirs. The Kyoto Protocol established under the UNFCCC categorised CO_2, CH_4, HFCs, PFCs and SF_6 as greenhouse gases. The Convention requires developed country Parties to limit their anthropogenic emissions of greenhouse gases and enhance their greenhouse gas "sinks" with the aim of returning to their 1990 emissions levels (the summary of the text of the Convention is as in **Box 6.1** overleaf).

BOX 6.1 : United Nations Framework Convention on Climate Change

Objective

To achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that will prevent anthropogenic interference with the climate system

Principles

-Parties should protect the climate system.

-The specific needs and special circumstances of developing country Parties [...] be given full consideration.

-Parties should take precautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse affects.

Commitments

All parties, taking into consideration their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:

-Develop, periodically update, publish and make available [..] national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases

-Formulate, implement, publish and regularly update national [...]programmes containing measures to mitigate climate change

The developed country Parties and other Parties included in Annex 1[..] shall:

-adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs

The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology.

6.2.2 The Conference of Parties (CoP)

The CoP for UNFCCC has taken place four times. The First CoP was held in Berlin in 1995, the Second in Geneva (1996), the Third in Kyoto (1997) and the most recent CoP was held in Buenos Aires in November 1998. The CoP has many important decisions. However, for the purpose of the study, only those decisions that influence Malaysia in the implementation of the Convention will be detailed.

6.2.2.1 First Conference of Parties (CoP1), 1995

The First CoP made 21 decisions. One of the important decisions was called the Berlin Mandate (BM). The BM was an embodiment of the decision to review the adequacy of commitment of the parties to implement the Convention. The CoP agreed to start a process to strengthen especially the commitment of Annex I Parties (developed country Parties). The decision came about because it was decided that the existing commitments by the developed country parties were inadequate. The BM was to elaborate policies and measures as well as set quantified limitation and reduction objectives within specified timeframes, such as 2005, 2010, 2020, with respect to their anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol. Nevertheless, this Mandate was not to introduce new commitments to parties not included in Annex I. The result of this process was to be reviewed at the Third CoP.

Another important decision was taken on Joint Implementation. JI was a new concept where a country (the investor) with high costs of reducing CO_2 and other GHGs invests in emission-reducing measures in a country with lower reduction costs (the host). The investor country will be credited in whole or in part, for emission reductions in its own climate gas accounts. Joint Implementation is a commitment

among the Annex I Parties (developed countries) only. However, at the Eighth Meeting of the INC/UNFCCC, there are intentions to broaden JI to include developing countries. The developing countries objected to the intention because they regarded it as a move by developed countries to evade fulfilling their commitments. Hence, the Convention required CoP1 to make a decision on the criteria of Joint Implementation (JI).

Nonetheless, CoP1 created AIJ (Activities Implemented Jointly) to solve the issue of the involvement of developing countries. In contrast to JI, the AIJ are activities among Annex I Parties and on voluntary basis with Non-Annex I Parties that so request. Hence, the creation of AIJ provides the opportunity for any developing countries to carry out GHG emissions reduction projects with a developed country.

AIJ is to be looked at as a supplement to JI and not as fulfilment of current commitments of Annex I parties. The AIJ require prior acceptance, approval or endorsement by the governments of the parties participating in these activities. Another criterion was that no credits should be given to any party as a result of greenhouse gas emissions reduced or sequestered during the pilot phase. The projects under AIJ should bring about real, measurable and long-term environmental benefits related to the mitigation of climate change that would not have occurred in the absence of such activities.

Finally, another decision of the CoP1 that has a great impact on implementation at the national level is guidance on policies, programmes and eligibility criteria to the operating entity or entities of the financial mechanism. Under this decision, projects to be funded through the financial mechanisms should be country-driven and in conformity with and supportive of the national development

priorities. However, CoP1 did not make any decision on the agreed full incremental cost but decided that the concept of full incremental costs should be flexible and applied on a case-by-case basis. It then decided that the guidelines on incremental cost would be developed later.

6.2.2.2 Second Conference of Parties (CoP2), 1996

CoP2 made an important political decision called the Geneva Ministerial Declaration. The Ministers and Heads of Governments through the Declaration instructed their representatives to accelerate negotiation on the text of a legally binding protocol or another legal instrument to be completed in due time for adoption at CoP3. The outcome of the negotiation should include the commitment of developed countries (Annex I Parties) regarding policies and measures relating to energy, transport, industry, agriculture, forestry, waste management, economic instruments, institutions and mechanisms. In addition, the outcome should include quantified legally-binding objectives for emission limitations and significant overall reductions within specified time-frames, such as 2005, 2010, 2020, with respect to their anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol. Other than the specific attention given to the Annex 1 parties, the Declaration required commitments for all Parties on continuing to advance the implementation of existing commitments as provided in the text of the Convention.

6.2.2.3 Third Conference of Parties (CoP3), 1997

The most important decision taken at CoP3 was the adoption of the Kyoto Protocol. This is a legally binding agreement that requires Parties in Annex 1 to individually or jointly ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of greenhouse gases do not exceed their assigned amount. This is with a view to reducing their overall emissions of such gases by at least 5% below 1990 levels in the commitment period 2008 to 2012. The quantified emission limitation and reduction commitments of Annex I parties resulted in several countries being asked to reduce emissions as follows: the EU (-8%), the USA (-7%,) Japan and Canada (-6%) whereas other countries such as Australia and Norway were allowed to increase their emissions level by 8% and 1% respectively. The Protocol was opened for signature on 16 March 1998. It will enter into force 90 days after it has been ratified by at least 55 parties to the UNFCCC, including developed countries representing at least 55% of this group's total 1990's CO_2 emissions.

The Kyoto Protocol also requires all parties to reaffirm and continue to implement their commitment such as to develop, periodically update, publish and make available national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases. They shall also formulate, implement, and publish national programmes containing measures to mitigate climate change, and measures to facilitate adequate adaptation to climate change. The programmes will *inter alia* concern the energy, transport and industry sectors as well as agriculture, forestry and waste management. The adaptation of technologies and methods for improving spatial planning are also considered as adaptation to climate change.

6.2.3 Malaysia as a Country Party

Malaysia did not sign the UNFCCC when it was opened for signature during the UNCED in 1992. She signed the UNFCCC on 9 June 1993 and ratified it on 11 October 1994. The UNFCCC and its Protocol (the Kyoto Protocol) did not set any definite timetable and target on Malaysia to reduce emissions of GHGs. As a developing country, Malaysia is only required to implement her commitment such as to develop, periodically update, publish, and make available national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases. Malaysia shall also formulate, implement, and publish national programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals of all greenhouse gases.

At present, there is no national inventory of all Malaysia's GHG emissions. The Department of the Environment, which is responsible for monitoring and enforcing regulations on clean air, does not list carbon dioxide, methane and nitrous oxide among the atmospheric pollutants. According to the ADB (1994), a DoE's air pollution study is normally based on physical units rather than energy units. In measuring carbon emission, it is necessary to convert the physical units into energy units. In addition, the ADB reported there was no account taken of carbon flow from the energy supply sector such as in the production of oil, gas and coal.

As a party to the UNFCCC Malaysia is affected through two factors: the sinks and sources. The commonly identified sinks for carbon absorption are the ocean and the forest. Since the surrounding ocean is not a controversial issue due to its `constant' volume and the international dimension that is attached to it, Malaysia is left with the forest as the issue. As far back as the pre-UNCED era, her tropical rainforests have always been a subject of international criticism, associated with

deforestation and endangered flora and fauna. Hence, Malaysia was said to seriously oppose the suggestion by FAO to develop a treaty for the conservation and sustainable development of the world's forests. Her objection was based on the ground that the treaty might interfere with her sovereign rights to exploit her forest in whatever way she wished (Johnson, 1993).

Now her forest is added to the list as an important sink for the absorption of CO_2. The Prime Minister of Malaysia candidly said, "*we in Malaysia are fully aware of the role the tropical forests are playing in preserving the delicate balance in the environment [...]. We are aware that trees absorb carbon dioxide and give back the precious oxygen without which we will all drop dead [...]. But we are also acutely conscious that we are a developing country, which needs the wealth, afforded by our forests [...]. If it is in the interests of the rich that we do not cut down our trees then they must compensate us for the loss of income*" (Mahathir, 1992). More recently, the Deputy Minister of Primary Industries has pointed out that linking global warming with deforestation of tropical forests alone is totally unjust as tropical forests cover only seven per cent of the earth's surface while countries in the developed world account for the major share of the world's pollution. He added that the solution to global warming cannot rest solely on the shoulders of developing countries. Industrialised countries must also have the sincerity and political will to reduce greenhouse gases (Bernama, 2/8/1999).

The EPU (1996) estimated that one km^2 of the forest is able to sequestrate about 1,800 tonnes of CO_2 per year. However, Houghton in Adger and Brown (1994) reported that tropical deforestation may have been responsible for 22 to 26 per cent of the greenhouse effect during the 1980s and for 26-33 per cent of global CO_2 emissions for the same period. Hence, not only is the forest identified as a sink but

also as source of CO_2 when deforestation activities change it into other land uses such as logging, agriculture and dam building.

Therefore policies, programmes and activities on the utilisation and conservation of the forest which affect the size of the sink will ultimately influence Malaysia's responses as a country party.

In contrast to the sink factor, important sources of emissions of greenhouse gases are identified with the power, transport, industrial, waste management and agriculture sectors. Although the sources are spread over the various sectors, they are not subjected to international scrutiny as intense as the sink issue, probably because Malaysia is not a serious emitter of greenhouse gases compared to the USA, the EU, Japan and China. According to Hayes (1993) carbon emissions in Malaysia were only 0.1 percent of the world's total (see **Table 6.1** below).

Table 6.1: Proportion of World Carbon Emissions and Population, by Country

	1950-1986 Carbon Emissions (% of world)	1986 Total Population (% of the World)	1950-1986 Cumulative capita/year	1986 per capita emissions (% of means)
USA	30.1	5.3	5.9	503
Germany, United	7.4	1.7	2.2	352
United Kingdom	4.8	1.3	1.6	296
Australia	1.1	0.4	0.4	388
Japan	5.6	2.7	3.2	212
Saudi Arabia	0.2	0.3	0.2	260
Malaysia	0.1	0.4	0.2	58
China	6.8	23.1	23.4	53
Brazil	0.8	3	2.7	38
India	1.8	16.9	16.1	19
Indonesia	0.3	3.8	3.5	17
USSR	17.8	6.2	7	361

Source: Hayes, P (1993)

According to government statistics, Malaysia produced only 0.2 per cent of the world's anthropogenic CO_2 (ADB, 1994). The First ASEAN State of the Environment Report (ASEAN, 1997) reported on Malaysia's CO_2 and methane emissions compared to certain other selected countries. For example, in 1990, Malaysia emitted 16,216,000 tons of carbon per year compared to 107,046,000 of tons of carbon emitted by other ASEAN countries per year (see **Appendix 14**).

6.3 The "SINKS" AND "SOURCES" OF GREENHOUSE GASES IN MALAYSIA

This section identifies and analyses the sinks and various sources of greenhouse gases in Malaysia.

6.3.1 The Sink

As stated earlier, the forests in Malaysia are identified as a sink for carbon dioxide absorption. There are various studies which suggest that the tropical forests are vast sinks for CO_2 and should be protected if global warming is to be mitigated. Nonetheless not all agree with these studies and regard the linkage between tropical forest extent and climate change as a ploy to deprive the country of her income. For instance, Abu Bakar, the former DG of DoE (1995) believed that the importance of tree crops and other terrestrial flora had been overstated, especially by the World's Green movements. He said these movements had successfully put pressure on various local authorities in Europe to prohibit the use of tropical hardwood, especially in the construction and building industries. Therefore, as a national response to such unilateral action, Malaysia feels that scientific truth should have been more widely projected and not suppressed by those with personal stakes to protect their own industries.

In fact, Abu Bakar said that the ocean and surrounding seas are able to fix the atmospheric CO_2 at a greater capacity than all the forests in the world. Hence, he suggested that greater attention should have been paid by the international community to protecting and preserving the marine environment, rather than continue to muddle the subject of "tropical timber trade and the environment".

Although the focus of the international community has always been on her tropical forests, it has been "conveniently forgotten" that Malaysia has large acres of agricultural tree crops such as rubber and oil palm. These agricultural crops are also important sinks for the purpose of the Convention. According to the Forest Department (1994) the percentage of tree cover to land area in Malaysia was 72% while the percentage of agricultural tree crop to land area was 14% (**Table 6.2** below).

Table 6.2: Tree Cover in Malaysia, 1994 (in million hectares)

	Land Area	Natural Forest	Plantation Forest	Agriculture Tree Crops	Total Area Under Tree Cover	% of Tree Cover to Land Area
Peninsular Malaysia	13.16	5.95	0.07	3.41	9.43	71.65
Sabah	7.37	4.41	0.09	0.64	5.14	69.74
Sarawak	12.33	8.65	0.01	0.39	9.05	73.4
Malaysia	32.86	19.01	0.17	4.44	23.62	71.88

Source: Forestry Department of Peninsular Malaysia (1994)

The Seventh Malaysia Plan (1996-2000) reported that at the end of 1995, the area under permanent forest was 14.06 million hectares. This area was estimated to be 59% of the total land area while the total land area under forest and crop cover was 72%. However, the DWNP (1996) reported a smaller area of forest coverage in 1995 (45%) as shown in **Table 6.3** below.

Table 6.3: Major Land Use Systems (1974-1995)

Land Use	Percentages				Change
	1974	1982	1990	1995	1974-1990
Urban Areas	0.6	1.0	1.3	1.6	0.7
Mixed Horticulture	1.7	1.9	2.1	2.2	0.4
Rubber	14.5	15.2	14.8	14.9	0.3
Oil Palm	3.7	8.3	12.1	15.2	8.4
Coconut	1.4	1.5	1.5	1.5	0.1
Paddy	3.1	3.2	3.2	3.2	0.1
Unimproved pasture, scrub, grass land	1.7	1.5	1.3	1.2	-0.4
Forest	55.0	50.3	47.4	44.5	-7.6
Scrub	3.8	3.3	3.6	3.5	-0.2
Cleared Land	2.6	1.9	1.2	0.7	-1.5
Swamps	8.1	7.6	6.8	6.3	-1.3
Roads, rivers, canals, etc	1.1	1.3	1.7	1.9	0.5
Other Uses	2.5	3.0	3.1	3.3	0.5
Total	100	100	100	100	0

Source: Department of Wildlife and National Parks (DWNP),1996

Note: Land use systems constructed on data from Department of Agriculture, 1995
*1995 figures – are projected value

6.3.2 The Sources

As stated in section 6.2.3, there is no official national inventory of greenhouse gas emissions in Malaysia. Nonetheless, in 1996, the Global Environmental Facility agreed to provide funds for the Institute of Strategic and International Studies (ISIS) Malaysia to carry out national inventories of greenhouse gas emissions in Malaysia.

This exercise, which is still ongoing, is to help Malaysia to make available to the CoP her national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases. The present study is able to identify major sources and the amount of greenhouse gas emissions from several studies carried out by the Economic Planning Unit in the Prime Minister's Department; the Ministry of Energy, Communications and Multimedia; and also the ASEAN Secretariat.

6.3.2.1 Energy Sector

According to the IPCC (1990), the energy sector accounted for 50% of global greenhouse gas emissions. The energy sector can be further divided into several sub-sectors as follows:

Energy sector use and transformation

This sub-sector includes electricity generated by hydro and thermal (gas, coal and oil) power generation; and other energy transformation such as from fuel-wood to charcoal.

Electricity final demand

This includes residential, commercial service sector and public lighting, and the industrial sector.

Final fuel demand

This sub-sector includes transportation.

In 1992, the Ministry of Energy, Communications and Multimedia undertook a Study (the Integrated National Energy Planning Study-INEP) on energy demand for the power, industrial (agriculture, construction, mining and manufacturing), commercial, residential and transport sectors. The study is considered the best existing base for the calculation of emissions caused by the burning of fossil fuel in Malaysia. The Study provided data on carbon emission from fuel combustion as shown in **Table 6.4** below. The Study indicated that in 1990, the power sector dominated the national scene, accounting for 28% of carbon emission, followed by the transport sector with 27%.

Table 6.4: Carbon Emissions from Fuel Combustion (% Share) 1978-1990

Year	1978	1980	1982	1984	1986	1988	1990
Power Sector	25.6%	26.4%	26.7%	22.7%	23.3%	22.7%	28.0%
Gas-Based Industry	19.4%	26.9%	16.7%	23.8%	21.9%	21.9%	17.9%
Industry	29.5%	26.9%	22.8%	22.0%	21.6%	21.9%	23.8%
Commercial & Residential	5.5%	4.8%	4.6%	4.2%	4.4%	4.7%	3.7%
Transport	20.0%	24.6%	29.2%	27.3%	28.7%	28.9%	26.7%
Total (M tonne)	6.5	7.9	8.1	10.5	10.9	11.8	15.9

Source: Integrated National Energy Planning Study (INEP) (1990-2020), MECM (1992)

A study by Cecilya (1996) under the ASEAN Secretariat reported an increase in the emissions of greenhouse gases. She estimated that the total CO_2 emission in Malaysia will increase from 32 million tonnes in 1988 to 260 million tonnes in 2020. The study reported that 42% of the total CO_2 in 2020 will come from power generation (energy sector use and transformation), 31% from the transport sub

sector (final fuel-demand), industry (23%) and others (4%). The study concluded that the increase of CO_2 in the power sector in 2020 (9 times the 1988 level) will be due to the dramatic increase in coal demand in conventional coal-fired power plants. Similarly, the transport and industrial sector will experience a CO_2 increase to 6 times its 1988 level through the combustion of petroleum products such as gasoline and gas-oil. It is suggested that the increase in CO_2 from the transport sector will be attributable to the continued increase in the number of motor vehicles as indicated in **Table 6.5** below.

Table 6.5: Number of Registered Vehicles 1992-1996 ('000)

Year / Vehicles	1992	1994	1996
Motorcycles	3222	3665	3951
Private car	1780	2042	2886
Van & lorry	348	389	512
Taxi	34	41	59
Bus	24	28	39
Others	131	150	237
Total	5539	6315	7684

Source: Transport Statistics 1996, Ministry of Transport, Malaysia

The different types of fuel used in power (electricity) generation determine the level of carbon emission. For instance, coal used as fuel will generate more carbon dioxide than oil whereas gas produces less carbon dioxide than oil. This is shown by another study carried out on one of the coal power stations as shown in **Appendix 15** (EPU, 1996). The Study showed that natural gas is presently the major fuel, taking over from petroleum products in 1995 and continuing to increase until the year 2000

before tapering off. Hydro and coal are in 2nd and 3rd places respectively as shown in **Table 6.6** below.

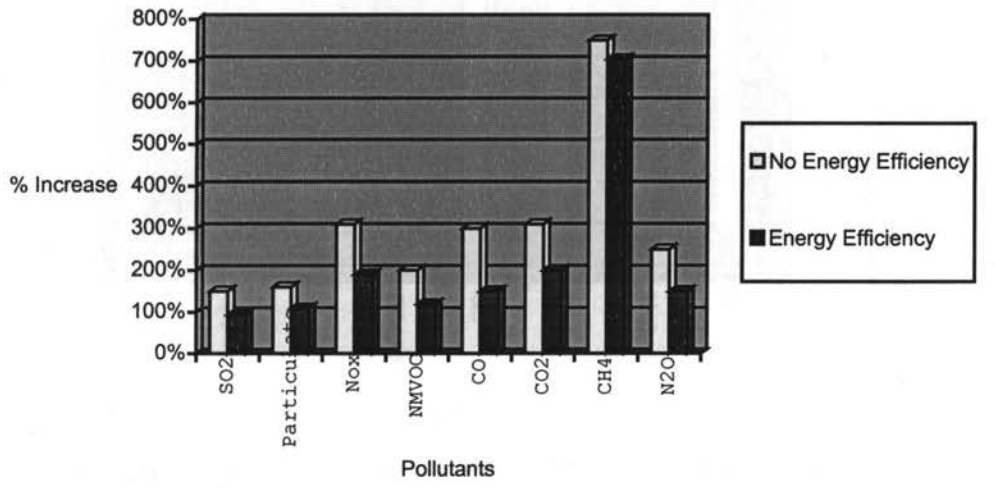
Table 6.6: Energy Mix for Electricity Generation (1990-2020)

Year	1990	1995	2000	2010	2020
Petroleum Products	50.20%	11.60%	4.00%	0.20%	0.10%
Natural Gas	22.10%	68.90%	70.00%	55.00%	50.00%
Coal	12.10%	8.00%	16.00%	23.00%	17.00%
Hydropower	15.60%	11.50%	10.00%	12.50%	18.00%
Nuclear	0.00%	0.00%	0.00%	9.30%	14.90%
Total (Ktoe)	6,212	10,885	15,988	25,863	41,480

Source: Integrated National Energy Planning Study (1990-2020), Ministry of Energy, Communications and Multimedia

The most recent Study (EPAP) on the energy sector was carried out in 1996 under the supervision of the Economic Planning Unit in the Prime Minister's Department, on the preliminary emission inventories of classical pollutants such as SO_2, NO_x, particulate matter, non-methane volatile organic compounds, CO, greenhouse gases (CH_4, CO_2, N_2O, CFC) and ozone. The study presented two scenarios on the emission of classical pollutants and greenhouse gases. One scenario is a business as usual scenario with and without the achievement of an Energy Efficiency Policy as illustrated in **Figure 6.1** overleaf.

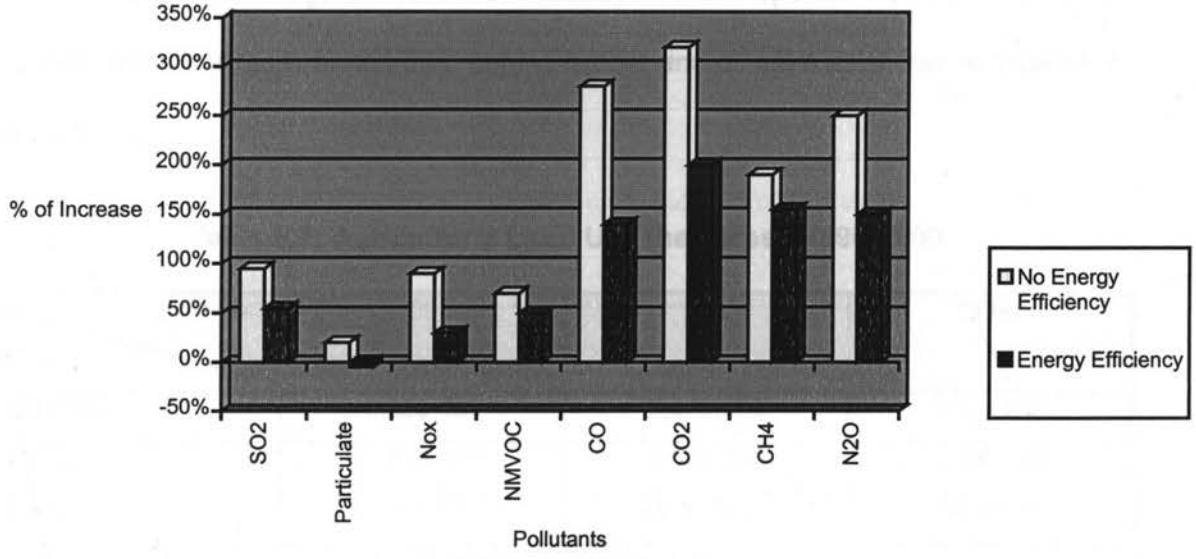
Figure 6.1: Business As Usual Emission Levels Increase from 1990 to 2020



Source: Economic Planning Unit, Prime Minister's Department (1996), p. iv

The second scenario concerned the same air pollutants over the same period. However, the scenario incorporated the implementation of an Emission Abatement Strategy (EAS) to improve the major equipment in terms of emissions control. The introduction of the EAS did not seem to decrease substantially the amount of carbon dioxide and nitrous oxide emissions but reduced methane emission considerably, as shown in **Figure 6.2** overleaf.

Figure 6.2:Emission Abatement Strategy Emission Leves Increase from 1990 to 2020



Source: Economic Planning Unit, Prime Minister's Department (1996), p. iv

With regard to the power plants, the National Electrical Utility Company (TNB) as at September 1994, had only one plant in Peninsular Malaysia that used coal and oil (EPU, 1996). Another 47 power plants were hydro power stations, including 37 mini hydro units. In Sabah and Sarawak there is no plant using coal as fuel. However, latest developments have seen a number of thermal power plants being built, using coal as the fuel source. Most of these coal power plants will begin operating in early 2000 (see **Appendix 16)**.

6.3.2.2 Agriculture Sector

The agriculture sector contributes to the emissions of greenhouse gases through the livestock industry and wet paddy cultivation. A study by DANCED (1997) estimated that the emission of methane and nitrous oxide in 1990 from paddy

cultivation and livestock was approximately 250,000 tonnes and 4,000 tonnes respectively. In this regard, the Seventh Malaysia Plan reported that the area under paddy cultivation was ranked third behind rubber and oil palm as shown in **Table 6.7** below.

Table 6.7: Agricultural Land Use (hectares), 1990-2000

Year / Crops	1990	1995	2000
Oil Palm	2,029,464	2,479,000	2,622.240
Rubber	1,823,100	1,696,000	1,400,000
Paddy	662,617	666,321	400,000

Source: 7 Malaysia Plan

6.4 FACTORS AFFECTING IMPLEMENTATION MEASURES

To reiterate, as a developing country, Malaysia was not given any timetable for the reduction of greenhouse gas emissions. She was also not required to maintain or increase her carbon sinks. Nonetheless, it was stated that Malaysia had taken measures which had led to the reduction of her greenhouse gas emissions and the increase of her carbon dioxide sink long before the UNFCCC was conceptualised in 1992. A policy instrument had been in place imposing a road tax of 300 per cent on cars with large capacity engines. The Prime Minister reported at UNCED that *"Malaysia has for several years been cutting back on the emission of CO_2. Malaysia has imposed a tax of 300 per cent on cars with large capacity engines. Even small cars are heavily taxed. However, in most developed countries the tax on automobiles and petrol is minimal, thus accounting for the high car/population ratio. Surely, a reduction in the number of private cars and better*

public transport would not change the lifestyle too much. Yet, it will do wonders for global warming" (Mahathir, 1992a).

Taking her cue from developments in the Montreal Protocol and hence in anticipation of similar progress in the UNFCCC, Malaysia carried out certain measures to implement the UNFCCC and mitigate her greenhouse gas emissions. Eventually, it is anticipated, the standards and schedules set by the international community will be applied to all developing and developed countries alike for the reduction of greenhouse gases, in particular carbon dioxide. The following sections analyse the factors that affect the implementation of the UNFCCC.

6.4.1 Governmental Factors

6.4.1.1 National Perception

Malaysia's initial reaction to international efforts to mitigate climate change were quite positive. In 1989, Malaysia along with other Commonwealth Countries during the CHOGM[1] called for the early conclusion of an international convention to protect and conserve the global climate (Langkawi, 1989). Malaysia again joined other developing countries in the Kuala Lumpur Declaration on the Environment calling for an accelerated adoption of measures and commitments on the stabilisation and reduction of CO_2 and other greenhouse gases, and the transfer of technology accordingly (Kuala Lumpur, 1992). Malaysia believes developed countries are the greatest emitters of greenhouse gases, therefore, they should be at the forefront of climate change mitigation rather than harping on the issue of sustainable development in the developing countries.

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[1] CHOGM = Commonwealth Head of Governments Meeting in Kuala Lumpur, Malaysia (18-24 Oct.'89)

Law (1997) pointed out that there had been a deliberate attempt on the part of the developed countries to divert attention from the fundamental task of the CoP3 to adopt a protocol which sought to address the adequacy of the commitments of developed countries, to enforcement of new commitments on developing countries. Malaysia is also annoyed with the continual reference to her tropical forests as an important carbon dioxide sink and the efforts by certain countries to use trade measures to pressure Malaysia to conserve her forest.

Malaysia assumed that the international community effort would soon come up with a target and timetable for developed countries to reduce their greenhouse gas emissions, especially CO_2. However, what was expected did not turn out as Malaysia wished. The Prime Minister expressed his disappointment during UNCED stating, *"the rich will not accept a progressive and meaningful cutback in their emission of CO_2 and other greenhouse gases because it will be a cost to them and retard their progress. Yet, they expect the poor peoples of the developing countries to stifle even their minute growth as if it will cost them nothing. One of the major issues we are expected to resolve is global warming. Here one of the major industrialised countries could not agree to cut back on its emission of CO_2 at the rate generally accepted by others. Since it is the major source of industrial pollution, its decision has rendered the Agreement inequitable and meaningless*" (Mahathir, 1992a). The agreement to which he referred was the UNFCCC and the country was the USA.

At the same Conference, the Prime Minister also stated that "Malaysia is almost 60% covered with self-generating tropical rainforest with an additional 15% covered by tree plantations. Any carbon dioxide we produce, we can absorb. If pollution can be contained within the boundaries of a country, then Malaysia has

nothing to worry about. But, Malaysia has to deal with cross border pollution. Most developed countries have already destroyed their capacity to deal with their own wastes. Not only have they clear felled their forests, but the production of wastes is so great that they must rely on the poor countries to dispose of these wastes."

Sham Sani (1993) noted that on 13 May 1992, Malaysia was doubtful whether to accept the proposed treaty on climate change because of the missing section on binding commitment and targets for developed countries to reduce their emission. Malaysia was of the view that the document was not negotiated transparently and was not in a spirit of true partnership. The climax of such a disposition culminated in Malaysia rejecting the text of the Convention calling it "fundamentally flawed" (ADB, 1994) and consequently did not sign the Convention during the UNCED, 1992. Yet years before the UNCED, Malaysia had several times mooted her idea of how to deal with the climate change issues and supported international agreement to combat climate change.

Malaysia's position on the climate change issue is very clear. She believes that the root of global warming is the unsustainable life style in the developed countries and these are the major emitters of greenhouse gases. Therefore, it is the developed countries who should come out with targets and schedules of greenhouse gas reductions. Although she did not sign the UNFCCC, nonetheless Malaysia participated in the sixth and seventh sessions of the INC/UNFCCC. The reason was to ensure that nothing was taken on board during the CoP that would jeopardise her national interest. Malaysia continues to hold to her original position. Therefore, when AOSIS countries proposed the establishment of a protocol to spell out the targets and schedule for the developed counties to reduce their greenhouse gas emission, Malaysia immediately supported the proposal. She also supported the AOSIS

reservation on the text in paragraph 5[2] of Decision 1/CP.1 of the Berlin Mandate and expressed disappointment that the CoP had not been able to agree on specific reduction targets and on a clearer mandate for the forthcoming negotiations.

Malaysia's strong insistence on developed countries taking the lead was based on the principle laid down by the Convention itself to achieve its objectives: i.e. the spirit of common but differentiated responsibility. Hence, Malaysia keeps asserting that the developed countries should first implement their own commitment before putting pressures on developing countries. However, this viewpoint has been wrongly perceived by some developed countries. For instance, the USA suggested that developing countries were getting a "free ride" and, it was necessary to impose new commitments on them. Malaysia has rebutted this accusation, reiterating developing countries' commitment to sustainable development, to bringing about changes in policies, and to implementing measures that address the adverse effects of climate change (Renji, 1997).

Malaysia viewed the proposal to impose new commitments onto developing countries as negative, and registered her dissatisfaction at CoP3. The Minister of Science, Technology and the Environment pointed to the fact that the record showed that developed country Parties conspicuously failed to take the lead, as they promised they would. Only five Annex 1 Parties are expected to meet the Convention target of reducing their greenhouse gas emissions to 1990 levels by the year 2000.

[2] Para 5 of the Decision wanted the protocol forwarded by AOSIS to be included for consideration in the process whereas AOSIS wanted it to be the basis for the process established by that decision.

Their promises to provide new and additional financial resources and facilitate transfer of technology have proved to be hollow ones (Law, 1997). Law reiterated that unless and until developed countries take the lead and keep their promises under the UNFCCC, it is unacceptable for them to demand new commitments from developing countries. Furthermore, the Minister of Energy, Communications and Multimedia iterated recently, that greenhouse gas emissions are no big problem to Malaysia, however, she still needs to carry out energy efficiency programmes to reduce the emissions of greenhouse gases (Bernama, 30/7/1999).

6.4.1.2.System of Government and Politics

The national implementation of the UNFCCC involves both states and federal governments. In addition, within the federal system, the climate change issue transverses across six ministries. These are the Ministry of Science, Technology and the Environment; the Ministry of Energy, Communications and Multimedia; the Ministry of International Trade and Industry; the Ministry of Primary Industries; the Ministry of Agriculture; and the Ministry of Transport. As laid down by the Federal Constitution, the implementation of international agreements is the responsibility of the Federal government. Nevertheless, the implementation of UNFCCC involves a mixture of areas such as forest, agriculture and industries. While the states have jurisdiction over forest and agriculture matters, industrial activities fall under the federal government's jurisdiction. The management of these items often pits federal and states' interests against each other. For instance, the annual felling rate of logs by the states increased 5.8% per cent annually during the Fifth Malaysia Plan in

spite of the conscious policy (the Federal Policy) to sustain yield levels (the Sixth Malaysia Plan).

The conflict between the states and federal government is not unusual considering that these items are major sources of revenue to the states. Nonetheless, the antagonism among federal agencies involves issues that are more implicit in nature. In this regard, greenhouse gases are often by-products of activities such as deforestation, paddy cultivation and livestock rearing, industrialisation and transportation. These activities are considered the `bread and butter' of the relevant ministries. There is the notion that if the GHGs are taken into serious concern then their main activities, or rather the main objective of Ministries, will be affected and will not be a good reflection on the Ministries. In addition, the `ignorance' of some officers pertaining to the sources of the GHGs and their linkages with energy, transport, and industrial activities, has led to the issue being left out of the Ministries' political agenda. For instance, there has even been a suggestion that the focus should not be on the power sector, which is under the MECM, but on transport under the MOT, since it has been incorrectly argued that vehicles are the greatest emitters of CO_2. Thus, this issue is shifted from one Ministry to another.

6.4.1.3 Policy Formulation

Malaysia does not have a national policy specifically formulated to address the climate change issue. Nevertheless, the following section will proceed to analyse the development plans and several policies to ascertain any policy statements regarding the control of GHG emissions within these instruments.

i. **National Development Plans**

The climate change issue only came on to the national scene as recently as early 1990s. Therefore, only the Sixth and Seventh Malaysia will be analysed.

Sixth Malaysia Plan (1991-1995)

The Sixth Malaysia Plan had only made a passing remark to GHGs, and identified its implications for Malaysia. Then, in the chapter on sustainable forest management, it linked the expansion of tree cover to the absorption of excessive carbon dioxide. However, the Plan was silent on the sources of emission of GHGs.

Seventh Malaysia Plan (1996-2000)

The Seventh Malaysia Plan recognises the fact that Malaysia is a party to the UNFCCC. However, it does not identify the sources and the sinks of GHGs but it acknowledges the negative impacts the energy sector has on the environment. Hence, the Plan provides for the increased utilisation of natural gas in the production of electricity as well as in the transport, industrial and commercial sectors. The Plan continues to pursue a strategy utilising less polluting energy sources such as fuels with low sulphur content, and renewable energy sources, especially solar. Nevertheless, its focus on pollution from the energy sector is only on the aspect of sulphur content. This unfortunately addresses more national concern than the Convention's concern about global warming.

With regard to the forest sector, the Plan reports that the projects to rehabilitate forests and establish forest plantations are being implemented to ensure continuous supply of timber in the future. Logging activities practising reduced

impact logging are encouraged and EIA preparation is required to protect the forest environment. Reforestation and afforestation projects are being carried out to ensure a steady supply of timber. As in the Sixth Malaysia Plan, the Seventh Malaysia Plan also does not provide the link between forest and climate change. Nevertheless, the net effect of the other policies found in the Plan is supportive of UNFCCC objectives.

ii. Policies

Climate change issues transverse across several sectors, therefore, the study will proceed to look into each of these sectors and analyse whether there is any direct of indirect relation between the policies and the country's participation in mitigation of global warming.

Energy Policy

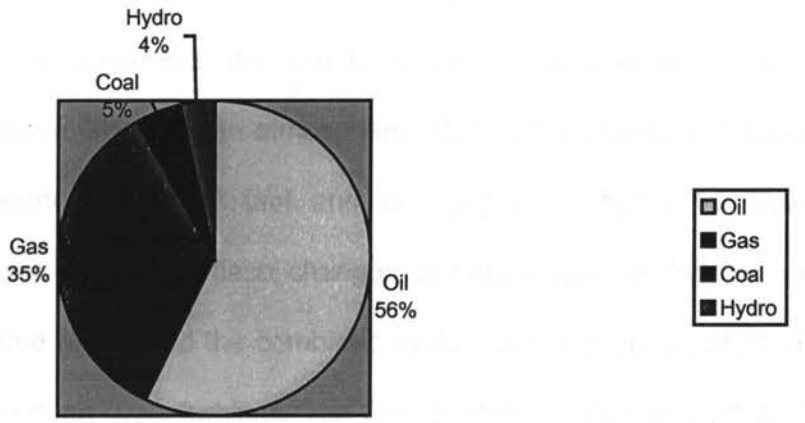
The energy sector is under the purview of the Ministry of Energy, Communications and Multimedia. The Ministry's energy policy has three important objectives as follows:

i. To ensure the provision of adequate, secure, and cost-effective energy supplies;
ii. To promote efficient utilisation and consumption of energy; and
iii. To minimise the negative impacts of energy production, transportation, conversion and utilisation on the environment.

In order to meet the first objective, the Government has adopted a four-fuel strategy, which involves a mixed supply of oil, gas, hydro and coal in energy use.

The Seventh Malaysia Plan reports a move away from crude oil and petroleum products in the commercial energy supply because of the strategy. The consumption of gas, coal and electricity grew at 17.8%, 13.3% and 12.8% per annum respectively for the period 1991-1995. The MECM reported the proportion of the four fuels in commercial energy supply in 1996 as shown in **Figure 6.3** below.

Figure 6.3: Proportions of 4 Types of Fuel in Commercial Energy Supply



Source: Ministry of Energy, Communications and Multimedia

The strategy to implement the third objective is to use more hydro resources to generate electricity and natural gas is promoted in the transport and manufacturing sectors. Although this is not an indication that direct emphasis is placed on the mitigation of GHGs' emissions, by shifting of the fuel types from oil to gas and hydro does however indirectly address the GHGs' emissions issue. However, the policy by the MECM to use more coal in the future as fuel source for power generation must be carefully considered.

In 1996, an unfavourable comment by a State's Director of the Department of Environment in a local newspaper on the plan by a state government to use coal in their power generation drew flak from the state Government. The state Government contended that this is an energy policy matter and not an environmental issue. Therefore, the DoE 'should' not interfere in her policy to use coal as fuel. Hence, an `apparent' conflict of interests between two entities, although at the macro level, is obvious, indicating that environmental consideration is to be emphasised in energy policy formulation, not vice versa. The view of the State Director of the DoE is echoed by the Deputy Minister of Science, Technology and the Environment at a Convention in 1996. He stated that the energy sector is known to be the prime contributor to increases in GHGs in the atmosphere. Malaysia is therefore gradually reducing her dependence on fossil fuel and is using more hydro for power generation. Most power generators have changed to natural gas as their primary source of fuel and some have used the combined cycle gas-fire turbines, which are more efficient than the open cycle turbines. The Deputy Minister also stated that the government had launched guidelines on efficient utilisation of energy in buildings. The guidelines set the minimum standard for energy use in building design (Abu Bakar Daud, 1996).

Nonetheless, this political statement did not help in the reduction of GHGs emissions from this sector. A recent statement by the Minister of Primary Industries on the increased utilisation of coal seems to have neutralised any impact of such a political statement. He said that the demand for coal was estimated to rise to 6.1 million tonnes in 2000 and to 11.5 million tonnes in 2005, a situation which would push coal imports past the RM1 billion level by 2005. These estimates were based on the proposal to boost coal power generation to 3100mw in order to meet the

needs of heavy industries in the country. He further added that Malaysia needs about 2.5 million tonnes of coal every year and almost all of this is imported. Last year's coal imports, worth RM350 million, were mainly for the Sultan Sallahuddin Abdul Aziz Power Station in Selangor and the Sejingkat Station, Sarawak. The country's coal resources totalled 980 million tonnes, 74 per cent of which were found in Sarawak (NST, 12/8/1998). Imports are expected to increase in the future with the building of the country's biggest coal-fired power plant (Manjung Power Plant) on the man-made island of Lekir, Stiawan in Perak (NST, 20/2/1999).

National Forestry Policy

This section will look at the Ministry of Primary Industries and its National Forestry Policy in order to identify any aspect related to GHGs emissions mitigation. The National Forest Policy, which was established by the National Forestry Council in 1978, aims to ensure:

i. the sound climatic and physical condition of the country; the safe-guarding of water supplies and soil fertility; and the minimisation of damage by floods and erosion to rivers and agricultural land;
ii. the supply in perpetuity and at reasonable rates of forest produce for further processing, manufacturing and export; and
iii. the conservation of adequate forest areas for recreation, education, research and protection of the country's flora and fauna.

The forest policy was formulated very much earlier than the involvement of Malaysia in global co-operation to mitigate climate change. Therefore, it is no surprise that the policy to conserve forest is mainly for recreation, education, research and the protection of flora and fauna. The policy remains unchanged. Obviously, the policy to conserve forest works well towards protecting the forest as a carbon sink. Since the forest is an important carbon sink, indirectly the result of the Forest Policy on conservation runs parallel with the objectives of the UNFCCC, although for different reasons.

In 1992, an important amendment was made to the forest policy. The MPI revised the National Forestry Policy to take into consideration recent developments both at the national and international level. It was consequently revised on 19th November, 1992, to take cognisance of the current concern expressed by the world community on the importance of biological diversity conservation and sustainable utilisation of genetic resources but did not mention global warming. The absence of a reference to global warming is reflected in the policy itself. None of the policy objectives are directed towards mitigating climate change although the function of the "Protection Forest" is to ensure the country's favourable climatic and physical conditions.

National Agricultural Policy

The National Agricultural Policy 1984 indirectly touched on forest by emphasising the development of aquaculture in mangrove areas to meet increasing demands for marine products. Here, marine fish landings were perceived to have already reached maximum expansion (ADB, 1994). The Deputy Agriculture Minister believes that Malaysia needed to import fish worth RM850 million a year in order to

meet local demand, and thus confirmed the ADB report. He said that the country's fish consumption was 1.9 million tonnes a year while she produced only 1.2 million tonnes annually (Bernama, 26/7/1999).

Nonetheless, the revised National Agricultural Policy (NAP2) (1992-2002) focuses directly on forest issues. The policy states that the development and the utilisation of forest resources will be undertaken on a sustainable resource management basis. In this regard, the maintenance of environmental stability and ecological balance will be of prime consideration. The establishment of forest plantations with indigenous and exotic species, apart from rubber, bamboo and rattan, will be expanded. The areas under Permanent Forest Estates will be maintained while that of the recreational forest will be increased to cope with the increasing demand for leisure and related facilities. The policy targets a maximum 85% of green cover, which includes forest areas, by the year 2010.

It seems that the National Agriculture Policy (NAP2) besides addressing agriculture issues also focuses on forest too. However, the NAP2 differs from the Forestry Policy because its reference to forest is made in the context of the UNFCCC. The policy literally specifies that Malaysia's commitment to the treaty on global warming will be given due cognisance in policy formulation. The Policy stresses that environmental stability and ecological functions of the forest will be top priorities when planning for agriculture land use. This thus reflects the sustainability of the agriculture policy, although it tends to portray agricultural activities as taking second place to the important function of the forest. Hence, the policy target of 85% green cover will work well to provide the sink for absorption of carbon dioxide.

More recently, the Cabinet on the 23rd December 1998 agreed to a Third National Agriculture Policy (NAP3). This latest agricultural policy seems to continue the greater emphasis on the forestry sector. This can be seen through its main objective to maximise income through the optimum use of agricultural resources by introducing two approaches, namely, agroforestry and a product-based strategy. The agroforestry approach allows the production of both agricultural and forestry products on the same land. This will ensure that demand on new arable land is mitigated and hence leaves more land for forest. The Minister of Agriculture perceives various challenges faced by the forestry sector, among them ensuring consolidated and integrated agricultural and forestry development. In responding to NAP3 and the need to increase food production without sacrificing the forest, the Agriculture Ministry convinced the states to allocate lands for this purpose. The states' allocation of deforested state land, grazing reserves, tin tailing areas and sandy soil to be converted for agricultural purposes seems to satisfy the NAP3 requirement (NST, 26/4/1999). This action will indirectly save the forest, which acts as a sink for carbon adsorption.

Transport Policy

The transport sector accounted for 31% of carbon dioxide emission in Malaysia in 1988 (Cecilya, 1996). However, the Ministry of Transport has no policy on the control of GHGs emissions from vehicles, in particular, carbon dioxide emission. The policy of the Ministry, as seen through the objective of the Road Transport Department, is to produce competent drivers and to ensure vehicles are roadworthy so that road accidents can be reduced. The Chief Minister of Penang believed that there is a need for an integrated national transport policy. He asked the

Federal Government to introduce a national public transportation policy to provide for an integrated management system for public transportation nationwide. The policy would provide a framework for a more integrated approach in terms of laws and regulation. The policy should also aim to improve co-ordination between various ministries including the Transport Ministry, the Entrepreneur Development Ministry, the Local Government and Housing Ministry and other related departments (The Star, 25/4/1999). The new transport policy could take into consideration the greenhouse gases issue since the transportation sector accounts for at least 31% of all greenhouse gas emissions in Malaysia.

6.4.2 Implementing Instruments

6.4.2.1 Organisational Structure

Climate change involves issues that are cross sectoral. Therefore, an institutional mechanism is badly needed to develop policy options related to climate change, to co-ordinate activities and to comply with the provisions of the UNFCCC. The institutional mechanism should be able to provide the fora for dialogue processes among government, non-government, academic, business and grassroots sectors. This would create and strengthen the understanding of climate change and the linkages with sustainable development strategy.

i. *National Climate Council*

In early 1991, an inter-agency Technical Committee for an Intergovernmental Negotiating Committee for a Framework Convention of Climate Change was set up by the National Steering Committee for Environment and Development. This Steering Committee, which was under MOFA, was chaired by its Secretary General.

The Technical Committee, on the other hand, was chaired by the Secretary General of MOSTE. However after Malaysia ratified the UNFCCC in October 1994, MOSTE formed a National Climate Council in January 1995. The objectives of the Council are to make policies, co-ordinate national actions and activities relating to the implementation of the UNFCCC. The structure of the Council is shown in **Appendix 17.**

ii. *Technical Committees*

The Council is assisted by two technical committees: the Sub-Committee on Scientific Research and Impact Studies and the Sub-Committee on Climate Change Data. The Sub-Committee on Scientific Research and Impact Studies co-ordinates observation and scientific studies related to climate, its changes and regional climate modelling and advises the NCC regarding regional climate scenarios and potential impacts of climate change. The Sub-Committee on Climate Change Data is to establish a national data centre, collect, quality check and archive data and to make available climate data for research and studies The members of these sub-committees include representatives from research institutes and universities. These two committees are expected to provide the necessary linkages between policy makers, academicians and technical experts. Both technical committees are anchored by MSD.

iii. Policy Makers

The establishment of the Council is a step in the right direction. With members from the relevant sectors, the Council should be able to co-ordinate effort to alleviate greenhouse gas emissions. However, the effectiveness of the Council

depends greatly on the Secretariat to provide the necessary impetus. Unfortunately, the role of the Secretariat does not seem to extend further than providing the administrative support for meetings of the Council. Due to its set up the Secretariat is only active when the Council is meeting. Its function lingers around the preparation of the Council meeting without having the capability to be actually involved in the long term planning required for the mitigation of GHGs emissions. Since the Secretariat is only a virtual set up, it does not have officers physically dedicated to looking into the implementation of the UNFCCC via the various sectoral policies.

This `handicap' is further compounded because MSD officers are technical officers and experts in their own field but not exposed to policy making. However, this situation could be avoided if MOSTE, which is responsible for formulating national environmental policies, were able to provide the catalyst. After all, the Secretariat is only expected to forward policies, strategies and programmes for the Council to decide. It is MOSTE who should be consulted and who provides the Secretariat with the necessary write up on items to be discussed and decided. Nevertheless, MOSTE is also without an adequate number of officers and is unable to provide the crucially needed direction and support.

Apart from this, a recent announcement by the Minister of Science, Technology and the Environment that the Cabinet had agreed to start the process of privatising the MSD in April 1999 (BH, 27/11/1998) has cast further doubt over the MSD role as the Secretariat to the NCC. Inevitably, the MSD can no longer function as the Secretariat since as a private entity its role has changed from being just a service provider into a business venture. Therefore, the next step is to shift the Secretariat back to the MOSTE, which would provide a better influence than the MSD because as a Ministry, MOSTE is able to command more co-operations from

other ministries. However, as regards the Technical Committees, it would better facilitate implementation measures if the Committees were to be anchored by either the DoE or the Ministry of Energy, Communications and Multimedia. These agencies are involved in the enforcement of clean air regulations and responsible for the formulation of policy regarding energy sources respectively. The MECM's role is becoming more important especially when the Minister and the EPU will co-chaired a steering committee set up to oversee Malaysia's largest industrial energy efficiency improvement project (a four year (1999-2004) RM80 million project). The project is targeted at the country's eight energy-intensive industrial sub sectors (cement, ceramics, food, glass, iron and steel, pulp and paper, rubber and wood). The project is expected to provide Malaysia with a strong institutional foundation for energy efficiency improvement initiatives as well as significantly reduce greenhouse gas emissions from local industries. It is envisaged that by the year 2004, there will be a 10 per cent decrease of GHGs emission from all eight sectors (Bernama, 27/7/1999).

The representation of the Malaysian delegation at the Conference of Parties seems to be a reflection of the policy taken by the individual ministries towards the climate change issue. Besides MOFA, MOSTE seems to have been the only other agency that attended the CoP. Malaysia's delegation to the CoP was not as consistent as in the Meeting of Parties of the Montreal Protocol. Whilst CoP1 (1995) was represented by officers from the Attorney General's Chamber, the Ministry of Foreign Affairs (MOFA), the Ministry of Science, Technology and the Environment (MOSTE), and the Malaysian Meteorological Service Department (MSD), the CoP2 (1996) only saw officers from the Ministry of Foreign Affairs attending and

participating in the negotiations. CoP3 (1997) however, saw the participation of officers from the MOSTE, MOFA and MSD.

Based on the almost universal non-participation of relevant agencies, it could generally be assumed that the emission of greenhouse gases does not seem to be high on the agenda of the ministries concerned other than MOSTE. However, this assumption may be a little extreme. In some instances, due to financial constraints, only a limited number of delegates will be allowed by the Treasury to participate in the CoP. Those who do participate are expected to be well versed in all cross-sectoral issues so as not to jeopardise the interests of the nation. However, when the decision of the Treasury is not seriously and convincingly contested by the Ministries this can indicate an indifferent attitude towards such issues.

6.4.2.2.Legal and Regulative Framework

In the effort to increase the sink, Malaysia has had in place several legal instruments to protect the forest. However, these measures were not taken to satisfy international agreement but to satisfy her own environmental standards and vision. The National Forestry Act 1984, the National Parks Act 1980 and the Protection of Wildlife Act 1972 were established for the protection of the forest, either for the sustainable utilisation of the forest commodities or to protect the fauna and flora. However, whatever the intentions and objectives are, these legal instruments indirectly ensure that the forest as an important sink for carbon dioxide absorption will be protected and expanded.

This section aims to analyse the three existing acts indirectly related to the mitigation of GHGs emissions.

i. National Forestry Act 1984

Theoretically, the National Forestry Act 1984 should be able to protect the forests by declaring them Permanent Forest Estates (PFEs) in a gazette. However, the PFEs are divided into two categories: Production Forests and Protected Forests. Production forest is to be logged for timber production but it cannot be converted into other uses. Timber production releases carbon into the atmosphere. Unfortunately, a Protection Forest too, can be changed into other uses as provided by the Forest Act 1984. Section 11(1) of the Act allows the state authority to excise land from the Permanent Forest Estate if the forest is required for economic use higher than that for which it is being utilised.

ii. Road Transport Act 1987

The Road Transport Act 1987 under the jurisdiction of the Ministry of Transport provides for the control of smoke and gas emissions. This Act was not introduced in the spirit of air pollution control but more as a result of concern about the road worthiness or safety of vehicles. The emission of smoke and excessive pollutants signify that the vehicles are not well maintained and therefore pose a safety hazard to other road users. Indirectly the enforcement of the Act nevertheless contributes to the reduction of CO_2 through better maintenance of vehicles.

iii. Environmental Quality Act, 1974

Beside the Department of Transport, the Department of the Environment is also involved in the enforcement and monitoring of air pollutants, from vehicles and from stationary sources such as factories and power generation plants. However, GHGs are not among the gases monitored by the Environmental Quality (Clean Air) Regulations 1978 nor in other related regulations as shown in **Appendix 18.** The most recent regulation [Environmental Quality (Control of Emission from Diesel Engines) Regulation 1996] also did not address the issue of GHGs as identified under the UNFCCC. Judging by existing provisions, it would seem the DoE is less prepared for the implementation of the UNFCCC than the implementation of the Montreal Protocol. However, this does not mean that the DoE cannot play a significant role in the implementation of the UNFCCC.

The Environmental Quality Act 1974 is well provided for if there is a need to use it to control GHGs emissions. The EQA 1974 can be applied easily to control the emissions of GHGs from power generation plants, transport and even from waste disposal sites. This is because the construction of power generation plants is one of the prescribed activities which requires an Environmental Impact Assessment to be carried out before the facilities are built. The EIA can include GHGs emissions as one of the criteria to be considered. As for the emission of carbon dioxide from vehicles, the existing regulations can be amended to include the gas as one of the pollutants. The same goes for methane emission from landfill sites. In fact, the EIA Order covers a very wide range of activities including the development of forest areas, mining, quarrying activities and waste disposal which are all potential GHGs emitters. In this regard, the Director General of the DoE feels that in future the Department will be actively involved in the mitigation of climate change. She said it

was unfortunate that somehow the DoE was not involved in the discussion of UNFCCC. Nevertheless, in spite of that, the DoE will be involved in its implementation later. Since climate change has much to do with the utilisation of energy, the DoE could play its role through EIA approval and it could insist on the types of fuel to be used. The DoE's Director General added that even then the DoE was examining the types of fuels used by motor vehicles. However, she believed that a more effective way would be through the involvement of the EPU and the Ministry of Transport since they are much involved in the formulation of transport sector policy (Rosnani, 1998). Easy as it seems, there is still the issue of the standard or level for GHGs emissions to be set for which the DoE needs to carry out more studies.

6.4.2.3 Activities Implemented Jointly

i. Background

The Convention requires Malaysia as a developing country Party to collect data, to make available national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs and formulate programmes to mitigate climate change. However, in the international arena there are efforts to persuade developing countries to participate in global activities to offset greenhouse gas emissions through projects called Activities Implemented Jointly (AIJ). Renji (1997) believed that many developed countries have pinned all their hopes on AIJs and have made it a condition for technology transfer. According to him, the South perceives the AIJ as a means to transfer commitments from the North to the South under the guise of transfer of technology. Malaysia is one of those countries where AIJs are being

carried out. Due to the controversial nature of the AIJ, it is important that the projects under AIJ in Malaysia are analysed.

The concept of AIJ is to carry out mitigation measures that are more cost effective in the host country than in the sponsor country. Before an AIJ is carried out, it must be endorsed by the Government of the day. Regarding AIJ, Malaysia has always insisted that no credits be given during the pilot phase to developed countries which carried out AIJ. Malaysia is also of the view that such measures should not reduce the commitment by developed countries to reduce their own carbon dioxide emissions. Hence, when the AIJ are carried out in Malaysia it is interesting to see the manner in which the projects proceed. Therefore, the following section will analyse the projects carried out under the AIJ banner in Malaysia.

ii. The Projects

There are two AIJ projects in Malaysia between a private company owned by Sabah Foundation (state owned) and the USA and the Netherlands. The project with the USA is a carbon offset joint commitment implemented with the New England Electric Supply Company (NEES) for a logging trail programme (Reduced Impact Logging-RIL). The project with the Netherlands is a commercial reforestation programme implemented with the Forests Absorbing Carbon Dioxide Emission Foundation (FACE) to reforest heavily logged forests with native *dipterocarp (*a type of forest tree).

The first project which is a RIL programme, started in 1991 and the local company claimed that it is the first significant carbon offset project in Asia. It has been hailed by the President of New England Power Utilities as not only offsetting a percentage of their industrial CO_2 emission but also providing significant and

scientifically quantifiable climate change and biodiversity benefits to the world. Based on this, the companies renewed the contract in 1995 to further reduced carbon emission equivalent to 530,000 tons of CO_2 in RIL 1 and 344,000 tons in RIL 2.

The second project is with the FACE Foundation. FACE was set-up in 1990 by the Dutch Electricity Generating Board. They signed a contract to undertake a reforestation project in Sabah to plant sufficient trees to offset the equivalent of the CO_2 emission from coal-fired power plants in the Netherlands.

iii. Issues

Both the projects started well before any negotiations on AIJ even conceptualised. The two foreign investment agencies had written to the Federal Government in 1993, requesting the government to recognise and endorse the two projects as JI programmes. MOFA responding to these requests regarded JI as eco-colonialism. The carbon offsets were chastised as attempts by developed countries to avoid their responsibilities to reduce GHGs emissions by not reducing energy consumption at home and transferring this responsibility to developing countries. MOFA interpreted such action as one which required developing countries to forego economic development by conserving natural resources which the developed countries themselves were unwilling to conserve. Hence the MOFA wanted the Sabah JI projects to be looked at in detail and in the context of national policy. Consequently, the companies' request to register the projects as JI projects was rejected by the Malaysian government on the grounds that the criteria of a JI were still being negotiated. Malaysia looked at the application not only in terms of the physical components or in the context of the nation's interest, but also with regard to its connection with the global development of the UNFCCC itself. Even the Seventh

Malaysia Plan expressed concern about JI projects. However in an official document of the UNFCCC in 1996, the Netherlands in their progress report to the Secretariat of the UNFCCC registered the projects in Malaysia as an AIJ project and not as JI (UN, 1996).

Malaysia viewed the application with misgivings as she was of the opinion that developed countries were reducing their own reduction programmes at the expense of short-term reduction programmes in developing countries. Her belief was further strengthened when it was known that some developed countries had legislation which allowed companies that invested in other countries' carbon sequestration programmes to receive credit and not be penalised for emitting carbon dioxide back home. The USA, for instance, has an Energy Act (1992) which permits investment activities by utility companies to be considered for allowable offsets against future tax liability. The Act specifically authorises the DoE (USA) to credit offsets created by improved forestry management, energy efficiency, fuel switching, methane recovery and other methods. Hence, in anticipation of these, utilities companies started to venture out to developing countries as was done by the NEES in Sabah.

In terms of finance, it was feared that the funding for JI would be considered as part of the developed countries' financial allocation for the UNFCCC and not as an additional measure. Hence, this reduced the overall financial capabilities of the UNFCCC to help other developing countries in their climate change mitigation measures.

Besides the international dimension of the projects, the contentious issue in the light of national perspective is the cost of the AIJ. The MSD believed that Malaysia and other developing countries were not having a fair and equitable price

for their carbon sequestration potential. The MSD quoted the studies by Sedjo (1994) and Michaelowa (1995). Sedjo (1994) estimated marginal costs in the USA to range from $5 per tonne to over $45 per tonne as the total area of tree planting exceeded 100 million ha. In addition, Michaelowa estimated the cost of reforestation projects undertaken by FACE to range from $10.77 per tonne for a project in the Netherlands, $4.66 per tonne in the Czech Republic, *$1.20 per tonne in Sabah* and $0.53 per tonne in Uganda.

Taking into account the diverse price range, it was argued that the price tag of $1.20 per tonne given to the company in Sabah was not fair compared to the cost of the same project undertaken in the Netherlands or in the USA. This is further backed by a study undertaken by Krutilla cited in Vincent *et al.* (1997) who estimated the carbon sequestration value of Malaysia's forests to be in the thousands of ringgits (1US$=RM2.50, 1991) per hectare based on US$28 per tonne of carbon. However, Nordhaus in Vincent *et al.*(1997) estimated the value to be much lower, around US$5 per tonne. Nevertheless, Vincent (1997) argued that such value remained hypothetical unless compensation was actually paid.

In another account, Sedjo (1994) reported that the costs to prevent the emission of a tonne of carbon from the destruction of forests were estimated at $2.30 for Brazil, $8 for the Ivory Coast and $25 for Indonesia. The cost of fuel switching was priced at $4.48 per tonne. Comparing the cost between the sectors, one wonders why fuel switching which is lower in cost in some instances does not prevail over forestry projects. Such a situation only drives Malaysia to believe that there are ulterior motives other than environmental motives for undertaking afforestation project in the mitigation of GHGs emissions. Furthermore, fuel switching

often requires the transfer of technology, which is much needed by developing countries such as Malaysia.

Another contentious issue is the life cycle given for the projects. The FACE foundation talks about 99 year leases while the American NEES talks about a 55 year period. The long tenures have raised many concerns, among them the accessibility of the local community to the area, the cost versus life cycle and the fate of the trees. It was reported during the First CoP that the Ugandan representative was heard telling how he regretted they had been tied down to a poor deal for 99 years. Here again we can see the importance of prior information before making any commitment to a certain project. The fact that some countries have a negative perception of AIJ, has made policy makers in Malaysia more vigilant.

On this issue, Nik Adnan (1998) questioned whether trees could later be logged, protected as sinks or preserved for conservation purposes only. He added there was scientific evidence which showed that the sequestration of carbon is higher in growing plants while at maturity the sequestration is less. Nonetheless, Nik Adnan (1998) regarded the AIJ as a bonus to the forestry sector because they helped in forest management. However, he also stated that the AIJ should not be an excuse for the developed countries' partners to increase CO_2 emission back home. He also touched on the cost of carbon sequestration projects in Malaysia, by saying that a project's cost must at least be on a par or equivalent to the amount of money spent sequestering carbon in the USA and the Netherlands.

iv. Remarks

The case study on the AIJ projects in Malaysia has demonstrated the power information has on decision-makers. Science is said to play a part in shaping environmental co-operation (Weale, 1992a) and the situation is similar in policy making. However, scientific knowledge that exists is no good to the country Parties if they are not able to get access to it. For developing countries to be able to gain access to scientific information there must be transparency in the global information system. As shown by the above example Malaysia was able to evaluate the AIJ project carried out because she was able to benefit from the experience of others through the transmission of knowledge. Here again the availability of scientific knowledge is shown to be of great help in policy making and its implementation.

Another issue that arises is the usage of agricultural crops for carbon dioxide sinks. Rubber and Oil Palm are tree crops planted on large estates. As indicated earlier, rubber and oil palm make up around 30% of land use in Malaysia. The question is posed: can rubber and oil palm be used as carbon dioxide sinks instead of forest trees in the AIJ projects? The rubber trees and oil palm could serve the same purpose as the forest trees. Besides being a carbon dioxide sink, they could provide an income to the local population. Hence, the issue of having to log the mature forest trees for timber could be solved because the rubber trees and oil palm could remain as carbon dioxide sinks and at the same time produce oil and latex, thereby providing incomes for the local population. Thus, the next question raised is: who will own the product of these crops - the foreign companies or the local firm. We should bear in mind the fact that the projects are to sequestrate carbon. If we play by the rule, then once the crops are planted the developed country Party has already fulfilled its obligation under the UNFCCC and should leave the local firm with the

latex and palm oil. After all, the developed country Parties are pursuing carbon dioxide reduction credits to offsets their own carbon dioxide emissions at home. Therefore, the usages of agricultural crops as carbon dioxide sinks are more palatable than reforestation projects. In fact Malaysia has proposed that the definition of forest be more comprehensive and should include land covered with tree species not just forest species, to include mono cultural areas such as oil palm and rubber plantations. The Deputy Minister of Primary Industries was of the opinion that such recognition should also be given to oil palm plantations as they also perform similar functions as forest species in areas of carbon sequestration. He stated that the Food and Agricultural Organisation (FAO), during its ministerial meeting in Rome, had included rubber plantations as forests in its Forest Resources Assessment 2000 (Bernama, 2/8/1999).

Nonetheless there are those who regard AIJ projects very highly. The Company which carried out the AIJ projects in Sabah proudly viewed the projects as highly imaginative international collaborative programmes of natural resource management with potentially great benefits to all concerned. According to the company the AIJ project is a new paradigm for integrating conservation and development between developed and developing nations. They regard the involvement of the foreign partner as a way to subscribe to the polluter pays principle (PPP) whereby the foreign companies are now paying for the pollution that they emit back home.

This provides an interesting example of different interpretations of a well-known principle between the Federal and a state own company. The Federal government believes that to subscribe to the PPP, the cost of the project must be commensurate with the cost of pollution mitigation measures that are undertaken in

the foreign company's country. However, in the projects undertaken by the FACE and the NEES, the payment is not commensurate with the cost to abate the reduction of CO_2 emissions in the USA and the Netherlands. By sequestrating CO_2 in Malaysia through reforestation programmes, the developed countries are able to pay less than they would have to at home and Malaysia is left with trees that they are not able to make use of other than as a carbon dioxide sink.

6.5 IMPACT OF IMPLEMENTATION MEASURES

The study reiterates the fact that the measures carried out by Malaysia are not measures imposed on her by the UNFCCC. Malaysia has no specific obligations such as those identified with developed country Parties. The measures described and analysed above are taken up either as proactive responses as a country Party or to conform to other policies, but with a net result of reducing GHG emissions. This section will analyse in turn the impact of these measures on future development of the energy, forestry, transport and agriculture sectors.

6.5.1 Energy Sector

Firstly, the policy to mitigate GHG emissions seems to run counter to the policy used by the energy sector. The Seventh Malaysia Plan anticipates that the development of known coal deposits will intensify in view of the high demand for coal in electricity and cement manufacture. Local production of coal is expected to increase from 200,000 tonnes in 1995 to 510,000 tonnes by the year 2000. In tandem with this development, additional coal powered plants are being built and will be commissioned in early 2000. Adding to all these developments, coal as fuel has been used increasingly with the commissioning of four new cement plants.

Therefore, the impact of the GHG emissions mitigation policy on the energy sector will very much depend on how much political influence the MOSTE has over the MECM and the EPU.

Greenhouse gases, especially CO_2, have no visual impact and cannot be physically seen or experienced by the population. This is in contrast to the haze episodes, which have drawn serious reaction not only from the local population but also from the region. Hence to date, local populations are not sensitised to the greenhouse gases issue. Therefore, without such support the greenhouse gases issue will never achieve the same political platform as the haze episodes. The requirements of the manufacturing, residential and commercial sectors for electricity will force the energy sector to embark on coal as an important alternative to gas and oil. Furthermore, a study by the MECM in 1993 indicated that gas reserves would be depleted in 2035-2040 unless new discoveries are made. Earlier, Malaysia had invested a substantial amount of capital to introduce coal technology in the late 1980s. Therefore, unless the power generation sector uses state of the art technology, CO_2 emission will continue to grow. This situation is further exacerbated by the policy thrust in this sector, which is to supply adequate energy efficiently and on a least-cost basis to energy users.

6.5.2 Forestry Sector

Another sector to examine is the forestry sector. The forestry sector seems to have both positive and negative impacts from the measures taken to abate GHG emissions. The policy to mitigate GHG emissions supports the sustainable forest management carried out by the Ministry of Primary Industries. Methods such as "reduced impact logging" promoted by the Ministry will reduce unnecessary

destruction of trees and thereby reduce the emissions of carbon dioxide into the atmosphere. In addition, reforestation projects under the AIJ and forestry programmes will increase forest cover in the country. In fact, the forest policy on conservation and the climate policy are interdependent of each other.

Afforestation and reforestation programmes, and conservation measures increase the number of trees and these in turn will serve as a sink for carbon dioxide sequestration. However, climate change policy necessitates long term planning. The trees planted in afforestation and/or reforestation projects will be required to be in place for a long period. However, under the MPI, these projects are to ensure a continual supply of timber. This is because the forestry sector is important as an income earner for the country as the Deputy Minister of Primary Industries indicated when he reported that 1997's export of timber products totalled RM14.7 billion. He added that Malaysia's commitment towards achieving a sustainable forestry management was proven with her agreeing to achieve the objective of the International Tropical Timber Organisation (ITTO) in 2000. To achieve this objective, the forestry department has undertaken steps to determine a forestry management unit, to legislate a sustainable forestry management indicator and criteria and to continue reforestation activity in each state, all of which has the capability to increase productivity (Bernama, 10/11/1998).

Such a statement indicates, however, that after a certain period when the trees are mature enough to be logged, the two policies will conflict, one policy asking the trees to be left standing, while the other wanting the trees to be converted to timber and consequently releases carbon dioxide into the air.

6.5.3 Agriculture Sector

The impact of GHG emissions can be viewed from two perspectives. Firstly, the emissions of GHGs such as methane and nitrous oxide as a by-product of wet paddy cultivation. Secondly, emissions of carbon dioxide through conversion of forest area into agriculture land. We will first deal with methane and nitrous oxide emissions. Methane and nitrous oxide from rice production is released through the utilisation of fertilisers. Methane is also produced during the growing season from the submerged soil and after harvesting through the anaerobic straw decomposition. It has been reported that methane flux is linearly related to the depth of water up to a maximum of about 10 cm in cold climates (Wassman *et al.* cited in Adger and Brown, 1994).

Rice is the staple diet of the population. The National Agricultural Policy targeted a minimum of 65% long-term self-sufficiency level (SSL) by the year 2010. However, in view of the country's lack of a comparative advantage in rice production, the SSL policy will be reviewed from time to time and sourcing of rice through offshore investments will be actively explored. As methane is produced naturally in wet paddy cultivation, it will be quite difficult to control the production of methane unless a new method of wet paddy cultivation is found. Nonetheless, if the government is to pursue rigorously its offshore investment in paddy cultivation then there is the possibility that methane emission can be reduced. However, the alternatives, which are more palatable, would be reduced usage of nitrogen-based fertilisers, introduction of better planting technology as well as better disposal of paddy straw. Since methane emission from paddy cultivation is not a major source of methane, a policy to reduce methane at the expense of paddy cultivation is definitely not viable.

The process of converting forests into agricultural land releases carbon dioxide into the atmosphere. However, the release of CO_2 is temporary since, once the land is replanted with agricultural crops, for instance with rubber and palm oil, it is restored again to a carbon dioxide sink. Here, climate change policy needs to address the very technical issue of how to minimise carbon dioxide emission during deforestation to make way for agricultural crops. Later the crops can continue the absorption activities of the now defunct forest. However, research on the efficiency of the carbon dioxide absorption of these agriculture crops compared to that of forest trees is much needed to lend increased support to the usage of agricultural crops as a carbon dioxide sink.

6.5.4 Transport Sector

On the transport sector front, matters are somewhat fuzzy. At present, there is no national transport policy like the one for the forest, agriculture and energy sectors. Although we are unable to identify the impact of climate change measures on the policy regarding transport, we can still see that the mitigation of GHG emissions is being enhanced by the change in the mode of transportation. In Kuala Lumpur and the Klang Valley, for instance, the new light rail transport (LRT) and commuter trains are two modes of transport that run on electricity instead of fossil fuel. If more urban dwellers are encouraged to use these forms of transport and reduce their dependence on cars, carbon dioxide emission can be gradually reduced.

The DoE regulation on the control of emission from diesel engines covers not only the emissions but also all aspects of the vehicle manufacture. The regulation on the control of emission from petrol engines requires the fitting of catalytic converters.

Motorcycles, whose large numbers are responsible for most of the air pollutants in the cities, are also regulated by specific regulations. Although these regulations are not specifically formulated to reduce carbon dioxide emission, the indirect result of maintaining clean, good engines is lower emissions of pollutants.

6.6 CONCLUSION

Although Malaysia was very active during the pre-UNCED era promoting a global climate change convention, she did not sign the UNFCCC during UNCED. Her positive perception towards the Convention fizzled out when the Convention did not provide a clear schedule for the reduction of greenhouse gases by the developed countries. Nonetheless, she is again active on the international scene after a short setback, indicating that she has perceived that being on board in international environmental co-operation is a better way to get her views heard instead of being a mere bystander.

At the national level, there are no efforts or measures implemented in direct response to the UNFCCC except for the establishment of an organisational framework and AIJ projects. The establishment of the National Climate Council, which is a direct response to Malaysia being a party to the UNFCCC, has managed to consolidate the national position towards the international stands of climate change issues. Nonetheless, it is believed that the Council has not made any visible progress towards the implementation of UNFCCC.

We have also seen that there are several sectoral policies which, although established for different reasons, in the end, their net result contributes to the reduction of GHG emissions. However, such approaches will not serve the country well in the future planning to reduce GHG emissions because policy makers need to

have a clear policy on GHGs issues to provide the direction forward and not have to use other policies which are meant for something else. The MOSTE as the lead agency on the GHGs issues should start to co-ordinate the various policies with the intention of having its own GHGs policy.

A consolidated national policy, which provides the direction and the strategy to address the emissions of GHGs is badly needed. This is because there are at present many individual policies which often conflict with each other, especially when the greenhouse gas issue also involves state jurisdiction. We have seen how complicated the GHGs emissions issue is because it involves different sectors under the jurisdiction of different ministries. For instance, on the one hand, the Ministry of Primary Industries and the Ministry of Agriculture formulate the acts and policies on forest and agriculture, on the other hand, the Federal Constitution lists land, forest and agriculture under the State power. The existence of the Forestry Act was only to promote uniformity between the states in forest management. Therefore, in this case, the real `power ' behind the utilisation of land for forest or agriculture is the state governments. Unless the Federal government can convince them of the need to conserve the forest, there is nothing much that can be done to avoid the state from logging the forest for their revenue collection. The other alternative is to assist in the logging activities by providing up to date advice and technology of how to log sustainably through reduced impact logging and also reforestation programmes. The policy to increase dependence on coal for power generation also calls for an urgent integrated policy on greenhouse gas emissions.

To conclude, implementation of UNFCCC in Malaysia transverses across three main sectors: forest, energy (power and transport) and agriculture. Each of these sectors is vital to the overall development of the country. Forest alone makes

up about 59% of the total land use but together with agriculture crops it makes up about 72%. The contribution of the forestry sector to the economy is enormous. Of the RM147.5 billion worth of manufactured products in 1995, 3.4% of these were wood products; of the RM31 billion worth of commodity exports, sawn timber and saw logs contributed RM6 billion (7MP). In 1999, the MPI reported that the timber industry contributed RM14.2 billion or 7% of the country's export earning. In addition, Malaysia's palm oil contributed 63% of the world trade in palm oil and the export earnings from palm oil and related products in 1997 amounted to RM12.89 billion. As for rubber, the total export earnings from the industry as a whole reached RM10.15 billion in 1997.

In the energy sector, fossil fuel remains the major source of fuel for both the power and the transport sectors and, at the same time, contributes 31% of the country's GHGs' emissions.

Therefore, when considering Malaysia's 0.1% contribution of GHGs to global warming it is difficult to justify the sacrifices of these sectors for such a very small amount. The correct approach would be to utilise the existing measures on sustainable forest management, congestion reduction, efficient energy utilisation and sustainable agricultural practice and turn these towards achieving the objectives of the UNFCCC.

CHAPTER SEVEN

ANALYSIS OF THE NATIONAL IMPLEMENTATION OF THE CONVENTION ON BIOLOGICAL DIVERSITY

7.1 INTRODUCTION

This chapter aims to analyse the factors that affect the national implementation of the Convention on Biological Diversity (CBD). The CBD does not differentiate between developed and developing countries but expects them to carry out the implementation of the Convention equally. However, the CBD has recognised that the extent to which developing country Parties will effectively implement their commitments will depend on the developed countries' commitments to provide financial resources and transfer of technology. The developing countries in their implementation measures are expected to give main priority to their economic and social development and the eradication of poverty. Malaysia as a developing country has the same obligations as other developing countries.

An analysis of the national implementation of the CBD will follow the same pattern as in the previous two chapters. The framework for the analysis of the implementation of the MEA in Figure 1.1 in Chapter One will be used here as a guide to identify and analyse the factors that affect the implementation of the CBD.

The analysis will look for the reasons why? and how the variables influence or constrain the implementation measures. In addition, the impact of the implementation measures on the national management of biological resources, economic growth and overall development of the country will also be investigated. The analysis will also look into how the various agencies interact with each other, why they differ or are similar in their action and what motivates them to act similarly or differently.

Hence to conform to the analysis process described above, the chapter commences with the historical background of the CBD to lay the foundation for the chapter. Then it discusses Malaysia's perceptions of the Convention; the position that she took during negotiations at the Conference of Parties (CoP); and the decisions of the CoP that affect or will affect Malaysia.

An analysis of Malaysia's perceptions and the position that she took is important to account for the policy and strategies undertaken by her. Later the chapter focuses on other factors that affect the implementation of the CBD, including policy formulation, organisational structuring, programmes, legislation and projects undertaken by Malaysia and developed countries with regard to various aspects of biological diversity. Finally, the chapter will identify the constraints faced during the implementation of the measures and investigate the impacts of the implementation of the Convention on the environment, economy and overall development of the country.

7.2 BACKGROUND

This section commences with a historical background to the Convention and its objectives. In addition, several important decisions of the CoP which have consequences on national implementation are also highlighted together with Malaysia's position as a country Party.

7.2.1 Convention on Biological Diversity

The UNEP during its first session of the governing council (1973), adopted an Action Plan on Programme Development and Priorities, which identified the "conservation of nature, wildlife and genetic resources" as a priority area. However, it was not until May 1989 that the UNEP established an Ad Hoc Working Group of

Experts on Biological Diversity to prepare an international legal instrument for the conservation and sustainable use of biological diversity. In February 1991, the Ad-hoc Working Group was renamed the Intergovernmental Negotiating Committee (INC) and held a series of seven working sessions which culminated in the adoption of the agreed text of the Convention on Biological Diversity (see **Box 7.1**).

Box 7.1: Convention on Biological Diversity

Art.1 Objectives

Shall conserve biological diversity, to sustainably use its components and to share fairly and equitably the benefits arising out of the utilisation of genetic resources

Art.6 General Measures for Conservation and Sustainable Use

Shall develop strategies, plans or programmes for the conservation and sustainable use of biological diversity and to integrate as far as possible the conservation and sustainable use of biological diversity into relevant sector or cross-sectoral plans, programmes and policies

Art.8 and 9 In-situ and Ex-Situ Conservation

Shall establish a system of protected areas or areas to conserve biological diversity and shall adopt measures for the ex-situ conservation and establish and maintain facilities for ex-situ conservation and research on plants, animals and micro-organisms

Art.11 Incentive Measures

Shall adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity.

Art.15 Access to Genetic Resources

Shall take legislative, administrative or policy measures with the aim of sharing in a fair and equitable way on mutually agreed terms the results of research and development and the benefits arising from the commercial and other utilisation of genetic resources

Art.16 Access To and Transfer of Technology

Developing countries shall be provided with access to and transfer of technology under fair and most favourable items including on concessional and preferential terms

The CBD was opened for signature on 5 June 1992 during the UNCED. It entered into force upon the thirtieth ratification (by Mongolia) on 29 December 1993. The CBD has held 4 CoP Meetings. The First CoP was held in Nassau, Bahamas (28 Nov-9 December 1994); the Second CoP in Jakarta, Indonesia (6-17 November 1995); the Third CoP in Buenos Aires, Argentina (4-15 November, 1996); and the Fourth CoP in Bratislava, Slovakia (4-15 May, 1998).

7.2.2 Conference of Parties (CoP)

The CoP continuously makes various decisions on the implementation of the CBD and reviews its implementation. The study will, however, focus on those decisions which are linked with specific implementation measures such as conservation, sustainable utilisation, access to biological resources and biosafety.

7.2.2.1 First Conference of Parties (CoP1), 1994

The first CoP made seven decisions but only one decision which affects the national implementation of the CBD is highlighted here. Decision I/3 was the decision to establish the Clearing-House Mechanism (CHM) to promote and facilitate technical and scientific co-operation operating under the authority of the CoP. The CHM was expected to play an important role in providing the Parties, especially developing countries, with information and access to important technical and scientific information. This was to enable transfer of technology to proceed smoothly.

Group "G77 and China" also made a statement on intellectual property rights (IPRs). Here, they expressed their deep concern that IPRs denied developing countries access to affordable technology and equitable benefits that accrue from the conservation and sustainable use of biological diversity. They argued that if the CBD

was to have any meaning beyond superficialities, then the removal of these distortions was crucial (UN 1995).

7.2.2.2 Second Conference of Parties (CoP2), 1995

CoP2 made 23 decisions. Among these was the decision to develop a biosafety protocol on the transboundary movement of any living modified organism resulting from modern biotechnology that may have an adverse effect on the conservation and sustainable use of biological diversity.

CoP2 also made a decision called the Jakarta Mandate on Marine and Coastal Biological Diversity, which gives special focus to the marine and coastal ecosystem. The CoP2 decided to establish and to strengthen institutional, administrative and legislative arrangements for the development of the integrated management of marine and coastal ecosystems, plans and strategies for marine and coastal areas, and their integration within the national development plan. The Parties were also asked to prevent physical alteration, destruction and degradation of vital habitats and to restore degraded habitats, including spawning areas and nurseries of stocks of living marine resources.

7.2.2.3 Third Conference of Parties (CoP3), 1996

CoP3 made 27 decisions. Among these, CoP urged Parties to include measures for the conservation of biological diversity in their national plans, strategies and legislation. The integration of biological diversity objectives in relevant sectoral policies was important to achieve conservation and sustainable use of biological diversity.

CoP3 revisited the subject of LMOs in conjunction with agrobiodiversity. If CoP2 emphasised the development of a protocol on biosafety at the international level, CoP3 focused on the national level. CoP3 urged Parties to establish or maintain means to regulate and manage the use and release of living modified organisms resulting from biotechnology.

7.2.2.4 Fourth Conference of Parties (CoP4), 1998

CoP4 made 19 decisions. Among the decisions was for governments to begin the process of conducting case studies based on socio-economic and ecological analyses of different land-use management options and to forward the case studies to the Executive Secretary. CoP4 urged Parties to give high priority to the allocation of resources to activities that advanced the objectives of the Convention in respect of forest biological diversity.

CoP4 also discussed the incentives necessary to induce the implementation of various measures required by CBD. CoP4 encouraged Parties to promote the design and implementation of appropriate incentive measures and to develop supportive legal and policy frameworks for the design and implementation of the measures. In addition, national governments were urged to identify perverse incentives and consider the removal or mitigation of their negative effects.

7.2.3 Malaysia as a Country Party

Malaysia signed the CBD on 12 June 1992 when it was opened for signatures during the UNCED. However, it took more than 2 years before she finally ratified the Convention on 24 June 1994. The implementation measures of the CBD affected Malaysia in several ways. Firstly, as one of the 12 megabiodiversity countries in the world, she has rich biological resources. The Minister of Science, Technology and

the Environment claimed that although Malaysia has only six per cent of the global tropical forest area, she accounts for at least 50% of rare fauna and flora species found in the world (NST, 28/7/1999). Her terrestrial and marine biological resources contribute to the economic development of the country. Therefore, any international effort to curtail her utilisation of these resources such as timber, other forest products, agricultural products and fisheries for the sake of conservation and global interest will not be seen in a positive light. On the other hand, if the ecosystems such as forest, which acts as a water catchment area, and mangrove swamps which act as spawning places for fishes and other marine animals, are not protected and conserved, the country's ecological balance will be disrupted and food production will be affected which may cause ecological disaster. Therefore, there is a need to balance the necessity to conserve and the need to utilise national biological resources.

Secondly, foreign countries through their multinational corporations are interested in local biological and genetic resources for the development of biotechnology industries. For instance, in the pharmaceutical sector and the food and agriculture industries, Malaysia, as a country Party, is required to provide access for these firms to her biological resources. At the same time, she needs to protect her own interest and to ensure she is able to have a share of the benefits accrued from such access and utilisation.

Thirdly, Malaysia needs to protect herself from the effect of the biotechnology industries either from foreign or local firms. Biotechnology is used to enhance the production of food especially in the agricultural sector through the production of genetically modified organisms (GMOs). These GMOs are designed to persist and perform functions in the environment, for instance, as agricultural products such as crops and biopesticides as well as live viral vaccines. The release of these organisms

into the local environment may present a considerable health hazard to the population and also to the environment. Therefore, as a party, Malaysia is expected to take the appropriate measures to ensure the safe handling of these GMOs and to ensure no adverse effect arises from such releases but, at the same time, she needs to be flexible to ensure the development of the biotechnology industries is not stunted and the transfer of technology not halted.

7.3 BIOLOGICAL DIVERSITY IN MALAYSIA

This section will briefly analyse Malaysia's biodiversity status which includes protected areas, types of ecosystem, number of flora and fauna species.

7.3.1 Protected Area and Forest Cover

Protected areas in Malaysia include wildlife reserves and sanctuaries, national and state parks, nature reserves and marine parks. The IUCN (The World Conservation Union) defined protected area as an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources, and managed through legal or effective means. According to the IUCN's categories, the protected areas are as shown in **Table 7.1** overleaf. The country's total area is 33,043,000 ha.

Table 7.1: Protected Areas in Malaysia

IUCN Category	Number	Area (ha)	% of Malaysia
Strict Protection (i.e. Strict Nature Reserves)	26	87,016.5	0.26
Ecosystem Conservation and Recreation (i.e. National Parks)			
Terrestrial	19	872,162	2.64
Marine (38 in Peninsular Malaysia)	41	20,622	0.06
Conservation of National Features (i.e. Natural Monument or Landmark)	0	0	0
Conservation through Active Management (i.e. Habitat/Species Management area)	22	553,824.4	1.68
Landscape/Seascape Conservation and Recreation (protected landscape/seascape)	2	38,686	0.12
Sustainable Use of Natural Ecosystem (i.e. managed Resource Protected Area)	1	39,000	0.12
Total	111	1,611,310.9	4.88

Source: Assessment of Biological Diversity in Malaysia, MOSTE 1997

The assessment conducted of the national parks and wildlife and bird sanctuaries revealed the following information as shown in **Table 7.2** below.

Table 7.2: National Parks, Wildlife and Bird Sanctuaries in Malaysia (million ha)

Region	National Park	Wildlife and Bird Sanctuaries	Total
Peninsular Malaysia	0.43	0.31	0.74
Sabah	0.25	0.14	0.39
Sarawak	0.08	0.18	0.26
Total	0.76	0.63	1.39

Source: Assessment of Biological Diversity in Malaysia, MOSTE, 1997

However, if the protected areas are to include those areas classified as permanent forest estates and state land the overall areas are as shown in **Table 7.3** below:

Table 7.3: Forest Cover in Malaysia 1997 (million hectares)

	Peninsular Malaysia	Sabah	Sarawak	Total
Permanent Forest Estates	4.68	3.60	6.00	14.28
i) Productive Forest	2.78	3.07	5.00	10.85
ii) Protection Forest	1.90	0.53	1.00	3.43
National and Wildlife Parks	0.74	0.38	1.00	2.12
Stateland Forest	0.43	0.47	1.61	2.51
Total	5.85	4.45	8.61	18.91

Note: the total land area is 32.86 million hectares

Source: National Report to the CoP4 of the CBD, 1998

The protected area above is termed in-situ conservation. In addition, there are about 3.43 million hectares of forest protected as water catchment areas. In August 1994, the Federal Government gazetted areas around 38 offshore islands in Peninsular Malaysia and Labuan as marine parks and the area around five other islands as "fisheries prohibited areas". Besides these in-situ conservation sites, there are several ex-situ conservation sites in Malaysia such as arboreta, zoological gardens, seed gene banks, in-vitro gene bank and field gene banks as shown in **Appendix 19**.

7.3.2 Flora and Fauna

The National Report to the CoP4 (1998) reported that the flora in Malaysia consisted of 12,500 species of flowering plants and more than 1,100 species of ferns and fern allies. It also estimated that there are 300 species of wild animals, 700-750

species of birds, 350 species of reptiles, 165 species of amphibians, more than 300 species of freshwater fish, about 4,000 species of marine fishes, about 1200 species of butterflies, about 12,000 species of moths and an estimated 100,000 or more species of invertebrates.

7.4 FACTORS AFFECTING THE IMPLEMENTATION MEASURES

This section analyses the factors that affect the implementation of the CBD. The specific implementation measures are conservation, access to biological and genetic resources, fair and equitable sharing of benefits and biosafety/biotechnology.

7.4.1 Governmental Factors

7.4.1.1.National Perception

The CBD addresses a variety of issues such as conservation, biotechnology, biosafety, sharing of benefits and financial resources. Each issue has elicited different perceptions from the country.

i. Conservation and Financial Resources

Malaysia has continuously linked conservation effort required by the international communities with finance. In 1992[1], Malaysia emphasised that the programme to improve the conservation of biological resources should include the quantification of costs and the identification of sources of funds needed to manage and conserve these agreed biogeographic areas. Ambassador Ting Wen Lian, one of Malaysia's negotiators for the CBD, argued that Malaysia was prepared to use her forest resources sustainably but she required financial resources and technology to carry out her environmental obligations (Ting, 1992). In fact, a few months earlier, the

[1] During the Working Group 1 Meeting of the 4th session of the Preparatory Committee for the UNCED

Prime Minister had stated that, *"We are fully aware of the role that the tropical forests are playing in preserving the delicate balance in the environment. We are aware too of the thousands of species of flora and fauna that are to be found only in our forests [...] But we are also acutely conscious that we are a developing country which needs the wealth afforded by our forests. If it is in the interests of the rich that we do not cut down our trees then they must compensate us for the loss of income* (Mahathir, 1992).

The Prime Minister did not stop there. At the UNCED, he further expressed Malaysia's perception of financial support for conservation programmes. Here, he chided the developed countries, which asked developing countries to preserve their forests and other genetic resources and yet did not extend any financial support. He stated, "*obviously the North wants to have a direct say in the management of forests in the poor South at next to no cost to themselves. The pittance they offer is much less than the loss of earnings by the poor countries and yet it is made out as generous concession*" (Mahathir, 1992a).

Therefore Malaysia was very relieved and glad when the text of the Convention recognised that how developing countries will effectively implement their commitments would depend on the commitment of developed countries to provide financial resources and transfer technologies. At the second CoP, the Minister of Science, Technology and the Environment iterated that " *capacity building, infrastructure building and technology transfer to fulfil obligations of the Convention are dependent on adequate funds being made available. I did not wish to belabour this point about adequate funds other than to state categorically that unless and until we are satisfied that the interim financial mechanism seriously addresses this issue, we do not see any use for a change in the status of the financial mechanism"* (Law, 1995). Even into CoP3, Malaysia continues to emphasise the need for financial

support and to call for new and additional resources including those from the private sector.

The importance that Malaysia attached to financial resources went beyond the assurance of financial support. She objected to the Global Environmental Facility (GEF) as a permanent financial mechanism for the CBD unless it restructured and became more transparent in its procedures. Furthermore, Malaysia feared that the GEF, administered jointly by the World Bank, UNEP and UNDP would provide grants/loans based purely on the financial and economic returns of projects rather than taking into account the objectives of the projects (for environmental protection) and the national priorities of developing countries. This explained Malaysia's objection to giving permanent status to the GEF, as stated by the Minister of Science, Technology and the Environment above. In fact, the Minister was echoing the declaration made by the Prime Minister when he signed the CBD at Rio. The Prime Minister then declared "*[...] the Malaysian delegation always maintained that they do not see any role for the GEF in this convention. It has always been our clear position that the Convention should have its own specific funds called the Biological Diversity fund. In view of that, we wish to express our reservations in the strongest terms that the GEF has been accepted into the draft convention, even on an interim basis. As we all know, in spite of our best efforts and intentions, these interim measures have the habit of becoming permanent features*" (CBD, 1992). Until today, the GEF still remains as an interim financial mechanism for the CBD.

ii. *Biosafety and Biotechnology*

Another issue that is on top of Malaysia's agenda is biosafety. The concern for biosafety is always made in conjunction with biotechnology. Malaysia takes pride in being the pioneer on this issue. It was reported that Malaysia had initiated the

move in 1991 to establish a biosafety protocol under the CBD. In fact, it was contended that biosafety and biotechnology did not receive further attention until Malaysia brought it up again (Raustiala, 1997). Since then the Group 77 and China, and some Nordic countries have strongly supported the initiatives (The Star, 10/7/1994). Hence, it was not surprising that the negotiators who returned from the ICCBD2 Working Group 1[2] meeting reported that they were amazed by Thailand aligning herself with the EU to produce the protocol in a step-by-step process whereas Malaysia had wanted immediate work to begin. In fact, it was reported that it was Thailand who had suggested the phrase "step-by-step". Furthermore, it was suggested that Thailand was actively wooing the Japanese for help to develop their own biotechnology industry and clearly does not wish to offend the Japanese who did not want to see a legally biding instrument on biosafety.

Although Thailand's position did not warrant any alarm as regards the national implementation of the CBD, it did prove that on certain occasions national interests were raised above regional or global needs. Malaysia continues to apply pressure so that a protocol on biosafety is established as soon as possible.

Martin Khor (1994) commenting on the ICCBD meeting in Nairobi reiterated that Malaysia introduced the issue of biosafety at the negotiating session in November 1991 because she was extremely concerned that adequate safety measures were lacking. Malaysia feels an urgent and immediate need for a biosafety protocol. Earth Negotiations Bulletin (1994) clearly indicated that Malaysia was concerned about transnational corporations using developing countries as a place to transfer and test living modified organisms (LMOs). This statement countered the contention made by the US delegation that Malaysia introduced the biosafety issue to kill the treaty (Raustiala, 1997).

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[2] Intergovernmental Committee on CBD Meeting on 20/6/94-1/7/94, Nairobi

Concerning the term "LMOs", Malaysia has never agreed to its usage because it connotes only living organisms and does not include all products of biotechnology. Therefore, during the signing of the CBD, Malaysia declared that while she concurred with the handling of biotechnology and the distribution of its benefits, she understood the term "living modified organisms " to mean "genetically modified organisms" (CBD, 1992).

However, there have been perceptions that Malaysia has backed down from a number of issues. For instance, Chee Yoke Lin (the legal advisor to the Third World Network, an NGO) wrote that Malaysia has not demanded a legally binding obligation to label transgenic food crops. Rather, she advocates voluntary action. The softening stand is probably for economic reasons. Malaysia is a major exporter of products like palm oil and rubber that have extensive biotechnological application. It is believed that a legally binding obligation could later be used as a form of trade barrier when the biosafety protocol comes into force. Therefore, Chee feels the government's hesitation to make an official stand has to do with its fear that its exports of palm oil and other commodities may be subject to scrutiny (The Star, 10/3/1999). Palm oil is an important source of export for Malaysia (producing about 25% of the world trade in oils and fats) and hence to label it as transgenic would bring adverse publicity and affect her dominant position in the world market. However, Chee's contention was refuted by the Minister of Primary Industries who asserted that the palm oil is GMO-free (NST, 29/4/1999).

Malaysia also believes that the transfer of technology is important if Malaysia and other developing countries are to benefit from their biological resources. She iterated that developing countries must be allowed direct access, if not easy access, to the transfer of technology. Therefore, she does not agree to the Convention allowing developing countries access to the transfer of technology subject to specific

conditions. Hence, she declared that the terms of the transfer of technology referred to in Article 16[3], paragraph 2 of the Convention do not fully reflect the position of Malaysia (CBD, 1992). Additionally, the Kuala Lumpur Declaration on the Environment and Development 1992, saw developing countries reiterating the fact that the CBD must include legally binding commitments to ensure the link between access to genetic materials and the transfer of biotechnology.

Another important issue related to biotechnology is the product itself. Biotechnology often results in the production of pest-resistant seeds, high yield crops and new drugs. The development of these resources into valuable products is a high risk, capital intensive and long-term venture which only large multinational firms are able to sustain. Government funded researches need to collaborate with these firms, which are well equipped with research capabilities such as up-to-date technology, sufficient funds and a large number of experts. Developing countries might not able to provide these resources but the important factor is, they provide the biological resources.

Based on this, developing countries have asked for a reasonable share of the profit accrued from the development of products from the biological resources that they have provided. Hence, for this reason, Malaysia did not address biotechnology in isolation but linked biotechnology, IPRs and compensation together. Thus, the Prime Minister during the UNCED said, " *denying them (developing countries) from their own resources will impoverish them and retard their development. Surely if something is discovered in their forests, they should be entitled to some return. But now we are told that the rich will not agree to compensate the poor for the sacrifices. The rich argue that the diversity of genes stored and safeguarded by the poor are of*

[3] Access to and transfer of technology [...] to developing countries shall be provided and/or facilitate under fair and most favourable terms, including on concessional and preferential terms where mutually agreed [...]

no value until the rich, through their superior intelligence, release the potential within. It is an intellectual property and must be copyrighted and protected" (Mahathir, 1992a).

7.4.1.2.System of Government and Politics

Biological diversity had been high on the national agenda long before the Convention on Biological Diversity came into the international arena. It had been given high priority because of its association with forest. As a source of revenue, forest and its products are major export items of the country. However, the forest is also a source of conflict since it is in the domain of state jurisdiction. This is a politically volatile issue because in the management of forest resources, the federal government has to confront state governments who are the guardians and owners of biological diversity.

The seriousness of this 'confrontation' was reflected during the Fifth National Land Council Meeting on 7 December 1981. The Deputy Prime Minister was reported to have then said that although the Council had accepted and agreed in 1977 to establish a 12.8 million hectare PFE in Peninsular Malaysia, several state governments had breached the agreement within that short time span. As a result about 700,000ha of PFE had been converted to agriculture (Vincent, 1997). Most recently, in May 1996, friction emerged between the MOSTE and the Selangor State Government when the state attempted to revoke the gazette of the Templer Park Wildlife Reserve because they wanted to develop the area. The MOSTE acted and informed the Cabinet of the state's intention to develop part of the park. The Cabinet agreed to the Selangor state government's request to change the Park from a recreational park and wildlife reserve to a recreational park only.

The decision was based on the realisation that encroaching development was making the park useless as a wildlife refuge. However, the Cabinet also decided not to allow the state to cut any trees or develop the Park. This resulted in an outburst from the Chief Minister of the State accusing the Minister of Science, Technology and the Environment of putting out a report which insinuated that the state government was destroying the reserve.

The volatility of the biological diversity issue is not confined to state and federal government but also within the federal government machinery itself. As stated earlier, biodiversity is synonymous with forest and forest is a commodity administered by the Ministry of Primary Industries. In fact, two forestry related departments, the Forest Research Institute of Malaysia and the Forest Department are answerable to the MPI. Nonetheless, the Cabinet on 12 August 1992 directed the MOSTE to be responsible for all matters relating to biological diversity. This directive was further enhanced when the Cabinet on December 1992 instructed the MOSTE to initiate the establishment of a National Botanical Garden in Sungai Buluh, Selangor. This has thus placed biodiversity firmly under the jurisdiction of the MOSTE. It has been said that the MPI had lobbied to be the co-ordinating agency since it has the institutional capability to manage the biodiversity issue. In contrast, the MOSTE has only the Department of Wildlife and National Parks (DWNP) that deals directly with biodiversity issues. Furthermore, the DWNP is more involved in fauna management than overall biodiversity. The DoE, which is another department under the MOSTE, deals indirectly with the forestry issue through the EIA requirement.

The basis for such a Cabinet decision is unknown but it can be postulated that MOSTE will be in a better position to co-ordinate measures on the biodiversity issue than the MPI for the following reasons: firstly, the MOSTE is more prone to carry out conservation measures since one of its objectives is to conserve the forest

area of important biological resources whereas the MPI looks at forest only as a commodity and its main objective of managing the forest is to ensure a sustainable supply of timber. Secondly, Cabinet designation of the MOSTE as the co-ordinating agency may be due to its function as the Ministry in charge of science and technology. Furthermore, biotechnology had been given high priority, as shown by the fact that during the period 1991-1995, 30%-40% of the RM590 million (US$236 million) under the IRPA[4] was channelled to biotech-related sectors. Therefore, linking these two areas, the MOSTE would be the more suitable of the two as co-ordinating agency. This was further strengthened by the Deputy Prime Minister who, in 1995 said that the Government had initiated a study on biodiversity and had formed a group to examine the implications of biotechnology and its commercialisation. He added that the Government recognised the importance of biotechnology and its potential application in agriculture, animal husbandry, health, the manufacturing industry, energy and the environment.

The politics of the subject apparently became more visible at the federal level. Although the states' comments were generally positive, the National Policy on Biological Diversity was finally approved by the Cabinet on 22 October 1997 only after the second submission. The first submission by the MOSTE in early 1997 did not receive the endorsement of the Cabinet when the MPI objected to certain items in the policy. In this regard, The Star (30/12/1997) reported that the MPI objected to the Policy fearing that it would lose its grip on forests. It was only after further clarification and information forwarded by the MOSTE to the Cabinet that the Policy finally got through. The whole affair was paradoxical, given that the political leverage given to biological diversity gave the impetus for the establishment of a National Policy on

[4] Intensification of Research in Priority Areas- a mechanism through which public sector research projects are funded. Managed by the National Council for Scientific Research and Development with the Secretariat at the MOSTE.

Biological Diversity in 1997, while at the same time it nearly put the Policy on the shelf because the interest of relevant Ministries was at stake.

Once Malaysia became a party to the CBD, biological diversity subsequently dominated both its national and international political agenda. Previously, biological diversity had been high on the political agenda because of the jurisdiction issue between state and federal government. However, when local biological resources became the subject of international interest the issue of jurisdiction was taken to a higher platform. Here, jurisdiction over biological diversity was translated into an issue of national sovereignty and this notion alone was sufficient to merit its place on the political agenda. Any attempt by the international community to intervene in the management of local biological diversity will be opposed. Throughout the negotiations, Malaysia had seriously objected to attempts to consider her biological diversity as the common heritage of mankind. Therefore, the CBD, taking into account reservations from many countries, acknowledged that the conservation of biological diversity is a common concern of humankind and did not mention it being the common heritage of mankind.

7.4.1.3 Policy Formulation

A veteran negotiator on the CBD, Zakri insisted that Malaysia had carried out biodiversity conservation and utilisation long before the conception of the Convention. Policy formulation on biological diversity had started quite some time before Malaysia ratified the Convention. Now she was trying to harmonise national action and international impediments (Zakri, 1998).

The formulation of the Policy took more than 6 years through several workshops at the national level and through the process of consultation with every state government. Some state governments took a long time before agreeing to the

draft Policy, which was anticipated due to the importance of biological resources to the states. The Star (30/12/1997) commented that some states never bothered to respond to the draft policy, which was circulated for comments in 1994. The Star cautioned that this reaction could not be taken lightly for it reflected the states' perceptions of the policy.

Although the national policy was approved recently, Malaysia had long ago provided for the implementation of her obligation to the CBD in her National Development Plans. She had long previously integrated conservation into national decision making. Hence, the CBD was just an extension of existent national policy to the international arena. The following sections will look at the macro and micro level policies, and the attention paid to biological diversity.

i. National Development Plans

3rd Malaysia Plan (1976-1980)

Policy on conservation managed to get on board the national development planning as early as the Third Malaysia Plan. It was made under the Chapter of Development and the Environment. The Plan's strategy to keep conservation and development in balance was to ensure that the benefits of development were not negated by the costs of environmental damage. The Plan acknowledged that land and resource development caused the steady depletion of natural forest habitats, which are essential for the preservation of wildlife and natural flora. The Plan implicitly went into in-situ conservation measures when it suggested that it was particularly important that representative samples of Malaysia's natural forest ecosystems with their constituent flora and fauna be preserved. The Plan proposed several areas to be designated as national parks, nature reserves and sanctuaries as shown in **Appendix 20.**

Another strategy was to manage the forests for wildlife as well as timber production. Hence, it promoted research for a compatible management system in forestry and wildlife to ensure that as far as possible the breeding populations of all known species were maintained in a natural state within the forests. The Plan recognised that the large areas of existing national parks were not able to preserve the wide range of differences existing in the country. Therefore, throughout the Plan period, surveys were carried out to provide the information for the establishment of a system of national parks, nature reserves, wildlife sanctuaries and virgin jungle reserves. As at 1973, the forest covered about 77% of the total land area as shown in **Table 7.4** below.

Table 7.4: Malaysia: Land Use, 1973 (million acres)

	Peninsular Malaysia	Sabah	Sarawak	Total
Total Area	32.5	17.8	30.7	81.0
Total Developed Area	9.2	2.6	6.7	18.5
Total Forest Area	23.3	15.2	24.0	62.5
Logged and disturbed forest	11.8	3.7	3.0	18.5
Virgin forest	11.5	11.5	21.0	44.0

Source: Third Malaysia Plan (1976-1980)

The Plan also made an important observation regarding genetic resources in the country. It believed lost genetic material contained in the thousands of species of organisms living in the forests was detrimental to plant breeding and the control of pests and diseases in agriculture and forestry. It was therefore apparent that Malaysia had recognised the importance of genetic material in the development of agriculture and forestry as early as the late 1970s although there were no concrete

measures suggested to check the loss of genetic resources. Hence, these issues were not new to Malaysia and the CBD in fact strengthened the need for specific measures to be taken to protect the erosion of genetic materials much later. In-situ and ex-situ conservation measures, identification, and monitoring of biological resources as required by the CBD were already in place.

The Third MP, however, made a `statement' which ran counter to Malaysia's current position on biological diversity. The Plan referred to Malaysia's natural forests as not only part of the national heritage but also part of the world heritage whereas Malaysia did not recognise attempts to classify her biological diversity as common heritage for mankind; she only affirmed her biological diversity as a main concern of mankind. However, the statement should be looked at in the spirit of her asking for financial or technical support to help conserve and protect her heritage. It should not be looked as asking for the `interference' of international communities in the management of her biological resources or at worst recognising global ownership of her biodiversity. The statement made by the Foreign Minister when he addressed the problem of haze in South East Asia at the 49th Session of the UNGA in New York was very clear on this issue. He said, *" [...] at the Rio Summit, the developed countries declared that the tropical forests belong to the whole world [...] if indeed the tropical forest is the heritage of mankind, the responsibility for its protection must necessarily be collective [...]* (Abdullah Badawi, 1994).

4th Malaysia Plan (1981-1985)

The Fourth Malaysia Plan was quite silent on conservation matters and did not make any strategies or plans except that two new national parks: the Endau-Rompin National Park and the Kuala Koh National Park were to be developed. A sum of RM13 millions (US$5 millions) was provided for wildlife management and

conservation activities. Furthermore, the focus on zoo and wildlife protection was made under the auspices of the Chapter of Culture, Community Development, Security and General Administration indicating the insignificance of the environment and hence conservation in the overall national development plan.

5th Malaysia Plan (1986-1990)

However, the issue was again picked up later in the Fifth Malaysia Plan although not as `enthusiastically' as in the Third Malaysia Plan. Here the environment was placed under its own chapter. The 5th MP designated 954,000 hectares of forest as national parks and wildlife reserves under the programme for the conservation and preservation of flora and fauna. In addition, the government also established three national parks and two state parks.

The Plan accorded priority to conservation strategies and greater co-ordination between policy formulation at the federal and state levels. The Plan was optimistic that prospects for more areas to be set aside for multipurpose parks and reserves were promising in view of the close collaboration between the federal and various state agencies in identifying and managing these areas.

6th Malaysia Plan (1991-1995)

The Sixth Malaysia Plan reported on the rehabilitation of 1.56 million hectares of permanent forest all over Malaysia. The Plan suggested the formulation of a National Conservation Strategy (NCS) to provide the framework for comprehensive resource management and utilisation. Although the NCS was finally completed in 1994, it was not officially endorsed by the Government. Various programmes were carried out to designate additional forest areas as forest reserves, animal sanctuaries and national recreational parks to ensure that the ecological balance was maintained,

environmental occurrences of degradation were minimised and essential habitats and biological diversity were preserved. To this effect 12 areas of wildlife sanctuaries and reserves (548,000 ha) were identified.

The Plan also addressed the impact of industrialisation on the environment. Many measures were carried out to ensure that industrialisation was pursued but not at the expense of the environment. Furthermore, the Plan categorically stated that the measures would be instituted without unduly resorting to subsidies or incentives. In the early 1990s, incentives to induce conservation were not yet in the mainstream of environmental enhancement. However, this approach was not consistent with the CoP2 decision which called for parties to adopt economically and socially sound measures to act as incentives for the sustainable use of components of biological diversity.

The Plan recognised the importance of states' roles to set aside states' lands for protected forests, wildlife sanctuaries and nature reserves for biodiversity protection. Hence, the Plan proposed to compensate for the potential loss of revenue from such states' resources and the cost of managing these proposed programmes and projects. The mechanism proposed was the sharing of the financial responsibility of environmental-related projects between the federal and state governments.

To improve the co-ordination of environment-related policies, strategies and programmes the Plan suggested the establishment of a National Council for the Environment. The 6th MP provided budgetary allocation to relevant ministries such as the MITI, the Ministry of Rural Development and the Ministry of Land and Co-operative Development to incorporate environmental aspects into their programmes and projects.

7th Malaysia Plan (1996-2000)

The Seventh Malaysia Plan gives due recognisance to the environment. Under the Plan, a chapter is dedicated to the environment and natural resources. The Plan recognises the importance of information in conservation measures. Hence, during the Plan period, effort will be intensified to document the species that exist. In-situ conservation is to be enhanced, permanent forest estates will be enlarged to create more biodiversity centres and critical habitats such as highland, mangrove, and peat swamps will be identified and declared for protection in gazettes. In addition, the ex-situ conservation of biodiversity will be intensified through the storage of germplasm in gene banks, the setting up of an arboretum and a botanical garden. The Plan also recognises that genetically modified organisms are a risk factor and have decided to address biosafety as an issue nationally. Biosafety is not the only biotechnology-related issue addressed by the Plan. Trade-related intellectual property rights (IPRs) are to be given due consideration although the mechanism to do so has not been detailed.

The focus on biological diversity seemed to have culminated in the Seventh Malaysia Plan. Here, every aspect of the provision of the CBD has been addressed, right from the basic conservation measures, through the need for access to information to complicated issues of biosafety and IPRs.

ii. Policies

Several policies are important in the implementation of the CBD. Most of these policies are linked with the management of resources such as forests and agriculture and are discussed in detail below.

National Forestry Policy

The Ministry of Primary Industries (MPI) is responsible for the formulation of policies on forests. Historically, the Forestry Policy was in place as early as 1952. It existed then as an interim Forestry Policy that emphasised the need to have forest areas permanently reserved for production and protection. In 1969, the National Land Council approved an interim national forestry policy for Peninsular Malaysia, which catered for developmental forestry and forest industries, consistent with the country's development. The interim policy was finally endorsed by the National Land Council and accepted as the National Forestry Policy on 19 April 1978. All the State Governments in Peninsular Malaysia later accepted the policy. The National Forest Policy ensures uniformity in the implementation of forest management, conservation and development strategies in order to achieve common objectives. Since the National Forestry Policy existed before the CBD, any reflection of biodiversity in the Policy prior to 1992 was on an incidental basis. Nevertheless, the Policy did not then explicitly implicate biological diversity as one of its objectives as shown in **Box 7.2** overleaf.

However, in 1992 an important amendment was made to the forest policy. In 1992, the MPI revised the National Forestry Policy to take into consideration recent developments both at the national and international levels. The Policy was revised on 19 November 1992 to take cognisance of the current concern expressed by the world community on the importance of biological diversity conservation and the sustainable utilisation of genetic resources. The MPI considered the acceptance of the Policy as a major breakthrough in strengthening the institutional base and enhancing the co-operation and understanding between the Federal and State Governments in the field of forestry sector development. The explicit inclusion of the term "biological

diversity" in the objective of the policy and also in the function of the protection forest signified the direction taken by the MPI.

Box 7.2: NATIONAL FORESTRY POLICY

The National Forest Policy 1978 is to ensure:

i. The sound climatic and physical condition of the country; the safe-guarding of water supplies and soil fertility; and the minimisation of damage by floods and erosion to rivers and agricultural land;

ii. The supply in perpetuity and at reasonable rates of forest produce for further processing, manufacturing and export; and

the conservation of adequate forest areas for recreation, education, research and protection of the country's flora and fauna.

The amended National Forestry Policy 1992 is:

i. To conserve and manage the nation's forest based on the principles of sustainable management.

ii. To protect the environment as well as to *conserve biological diversity*, genetic resources, and to enhance research and education.

Function of Permanent Forest Estate:

Protection Forest for ensuring favourable climatic and physical conditions of the country, safeguarding of water resources, soil fertility, environmental quality, *conservation of biological diversity* and the minimisation of damage by floods and erosion to rivers and agricultural lands;

Production Forest for the supply in perpetuity, at reasonable rates of all forms of forest produce which can be economically produced within the country and are required for agricultural, domestic, industrial purposes and for export.

Research and Education Forest for the conduct of research, education and *conservation of biological diversity*

Extracted from National Forestry Policy 1978, 1992

Analysing this development, we can postulate that the MPI was preparating to include biological diversity under its umbrella. If we recall, 1992 was the year when the Cabinet designated the MOSTE as the co-ordinating agency for biological diversity. It was also the year when the CBD was opened for signature at Rio.

Although the Cabinet made the decision in August 1992 and the Policy was officially revised in November 1992, it is understood that the process to formulate or amend the policy took years to complete. For instance, it took the MOSTE more than five years to finalise the National Biological Policy. Hence, from the actions taken by the MPI, it was believed that the MPI was making preparation to include the protection of biodiversity within its functions. Nonetheless, although the MPI did not become the co-ordinating agency for biological diversity it continues to place heavy emphasis on biological diversity, because in Malaysia forest is synonymous with biological diversity. Hence, forest policy indicates clearly that conservation of biological diversity is one of its objectives.

National Agricultural Policy

The National Agricultural Policy (NAP) has been revised twice. The first NAP was formulated in 1984 with the objective to maximise income through the revitalisation of the agriculture sector and the efficient use of resources. The abundance of land then allowed the government to pursue an expansionist policy on export crops, in particular oil palm and cocoa. The policy reduced large areas of forest through conversion into agricultural land as shown in **Table 7.5** overleaf.

Table 7.5: Major Land Use Systems in Peninsular Malaysia (1974-1995)

Land Use	Percentages of land Use to Total Land Area				% Change
	1974	1982	1990	1995	1974-1990
Urban Areas	0.6	1.0	1.3	1.6	0.7
Mixed Horticulture	1.7	1.9	2.1	2.2	0.4
Rubber	14.5	15.2	14.8	14.9	0.3
Oil Palm	3.7	8.3	12.1	15.2	8.4
Coconut	1.4	1.5	1.5	1.5	0.1
Paddy	3.1	3.2	3.2	3.2	0.1
Unimproved pasture, scrub, grass land	1.7	1.5	1.3	1.2	-0.4
Forest	55.0	50.4	47.4	44.5	-7.6
Scrub	3.8	3.3	3.6	3.5	-0.2
Cleared Land	2.6	1.9	1.2	0.7	-1.5
Swamps	8.1	7.6	6.8	6.3	-1.3
Roads, rivers, canals, etc	1.1	1.3	1.7	1.9	0.5
Other Uses	2.5	3.0	3.1	3.3	0.5
Total	100	100	100	100	0

Source: Department of Wildlife and National Parks (DWNP) (1996)

This situation was recognised early in the late 1970s when agricultural development had diminished the availability of lowland forest. This resulted in logging activities expanding into hill forest. At the same time, the government was seriously pursuing industrialisation programmes. With favourable policies towards industrialisation, the development emphasis shifted towards industrialisation, which contributed to the rapid development of the manufacturing sector. This resulted in an outflow of resources from the agriculture sector and hence created unfavourable investments in the sector. It was believed that the falling of agricultural returns brought about by industrialisation and urbanisation, contributed to the slow down of deforestation in the late 1980s (Vincent, 1997).

The NAP1 reported that a total of 782,179 hectares of new land were developed between 1984-1990. At the same time, there were about 725,000 hectares of idle land. The rehabilitation programme managed to develop 16% of the idle land only.

According to the NAP1, the agricultural sector continued to face several constraints. Among these were the increasing cost of new land development and relative land scarcity, which resulted from alternative uses that were more remunerative.

The NAP2 (1992) took into account concerns for the conservation of the environment and the sustainable use of agricultural resources. One of the objectives of NAP2 was to attain sustainable agricultural development. It is also important to recall the fact that the National Forestry Policy was also revised in 1992. The Forestry Policy explicitly placed greater emphasis on the importance of biological diversity. However, the NAP2 did not categorically emphasise biological resources although it was documented that one of the reasons for the revision was the concern for the conservation of the environment. Nevertheless, the NAP2 did address some issues raised by the CBD. For instance, the NAP2 indicated that genetic resources' exhaustion must be taken into consideration in the future development of forestry. It also called for the tightening and enforcement of laws and regulations pertaining to patent rights of agricultural technologies and the commercialisation of agricultural technologies. Hence, two important aspects of the CBD: genetic erosion and IPRs and biotechnology were raised by the NAP2.

The NAP3 (1998-2010) recently endorsed by the Government, sees the explicit incorporation of the forest issue into agricultural policy. With the forest issue imbedded in the NAP3, the focus on biological diversity in an agricultural policy becomes more intense. The approach was taken because forestry and agriculture are seen as mutually compatible and complementary. Their integration would provide a larger productive base for both sectors. The production of both agricultural and forestry products on the same land will mitigate demand for new arable land. Interestingly the approach is not new. In the late 1970s, the Third Malaysia Plan had

already stressed multi-usage management of forest for wildlife as well as timber production. The NAP3 also focuses on the development of biotechnology products and the extraction of natural chemicals from biological resources. The production of both agriculture and forestry products on the same land will directly lessen the pressure on the existing forest and hence provide the impetus for more concrete conservation effort. Hence, the latest agricultural policy has implicitly addressed the issue of the conservation of biological diversity. Nonetheless, although it focuses on biotechnology and technology transfer, the issue of biosafety, which is related to biotechnology, is however not addressed.

National Policy on Biological Diversity (NPBD)

The National Policy on Biological Diversity (NPBD) is the most comprehensive policy on biological diversity integrating both national interests and international obligations. It is the fruit of several years of negotiations and discussions, which involved inter-states agencies, federal agencies, research and academic institutions, various non-governmental organisations and private sector groups. Discussion between the MOSTE as a federal agency and state governments was as intense as its discussion with other federal agencies. The policy statement, its objectives, rationale and strategies indicates a heavy emphasis on the economic value of biological diversity as shown in **Box 7.3** overleaf.

Box 7.3: National Policy on Biological Diversity,1998

Policy Statement

To conserve Malaysia's biological diversity and to ensure that its components are utilised in a sustainable manner for the continued progress and socio-economic development of the nation.

Objectives

To optimise economic benefits from the sustainable utilisation of the components of biological diversity;

To ensure long-term food security for the nation;

To maintain and improve environmental stability for the proper functioning of ecological systems;

To ensure preservation of the unique biological heritage of the nation for the benefit of present and future generations;

To enhance scientific and technological knowledge, and educational, social, cultural and aesthetic values of biological diversity;

To emphasise biosafety considerations in the development of biotechnology

Biological diversity management is multi-sectoral and involves the jurisdiction of several agencies whose main functions are to enhance the economic growth and development of the country. Such agencies include the MPI, the MoA and the states' governments. Hence, emphasising the significance of biodiversity in terms of the country's economic development, it might bode well for the implementation of the Policy. This is in line with the opinion of the DG of the DoE who said, "we must play a more diplomatic role and seize every opportunity to convince the states' governments that this is not a policy of preserving the forest just for the sake of simply preserving it. We must be able to show them how beneficial is the biodiversity in the context of their everyday life, e.g. as an economic resource and ecological stability" (Rosnani, 1998).

By showing that conservation and the sustainable utilisation of biological resources are complementary to each other and enhance economic growth, the relevant agencies, in particular the MoA and the MPI, will more readily use the Policy as a guide in their planning. In fact, the Policy has the protection of biological resources for long term food security as one of its objectives, which is also the objective of the Agricultural Policy.

In general, the National Policy has incorporated various strategies together with their plans of action to achieve its objectives and the objectives of the Convention. In spite of the detailed strategies and plan of actions, the implementation of the Policy is very much dependent on other factors especially on the mechanisms to translate these strategies and action plan into reality. These will be discussed in detail below.

7.4.2. Implementing Instruments

7.4.2.1 Organisational Structures

The cross-sectoral nature of biological diversity makes its management very complex. In Malaysia, several components of biological diversity are solely under the jurisdiction of states and others in concurrence with the federal government. Within the federal government, the management of an individual component is further divided between several ministries. For instance, the MPI and the states are affected when forest is discussed while the MoA comes into picture when agrobiodiversity is on the agenda. While the MOSTE's involvement is as the co-ordinating agency on biodiversity, the MOFA is involved to ensure there is a consistency between foreign and domestic policy. In almost every CoP, officers from these agencies are in the delegation, although not all states are invited to send their representatives. The full strength of the Malaysian delegation in every CoP was indicative of the high priority

each agency placed on biological diversity. To reduce conflict between agencies a National Committee with the necessary supporting technical committees was established as detailed below.

i. *National Committee on Biological Diversity*

The Cabinet in 1992 directed the Ministry of Science, Technology and the Environment (MOSTE) to be responsible for all matters relating to biodiversity. The MOSTE realised that if it is to rely on its organisational capability alone, which lacks both human and financial resources, it will not be able to carry out the Cabinet's directive effectively. Hence, to ensure it has the co-operation of all the stakeholders involved in the management of biological diversity, the MOSTE in 1993 established a National Committee on Biological Diversity. The Secretariat of the Committee is the Conservation and Environmental Management Division within the Ministry itself. The first meeting was held on 15th January 1994. The national committee's objectives, among others, are to formulate policy, strategy and the national action plan regarding the conservation and sustainable usage of biodiversity. It is also responsible for the planning, execution and co-ordination of all national action towards the fulfilment of national obligation under the CBD. The structure of the National Committee is shown in **Appendix 21.**

ii. *National Technical Committee on Biological Diversity*

The National Committee is supported by the National Technical Committee. The situation surrounding the Technical Committee is unique because it existed much earlier than the National Committee, albeit under a different name. It was formerly called the National Committee on Genetic Resources. The Committee was established on 1 September 1987 under the auspices of National Council for

Scientific Research and Development (the MPKSN- the Secretariat is in the MOSTE). Its focus originally was on agriculture, the review of existing germplasm resources in the country, identifying neglected areas of work, endangered species, endangered cultivars, and advising the agricultural and strategic panels of the MPKSN on the management and status of Malaysia's plant genetic resources.

However, instead of creating a new committee, the MOSTE decided to utilise the existing organisational structure. The Technical Committee was restructured with additional members and focuses on every aspect of biological diversity rather than on agriculture only. The Technical Committee is chaired by the DG of the FRIM with its Biodiversity Division as the Secretariat.

iii. Genetic Modification Advisory Committee (GMAC)

Besides the Technical Committee, the National Committee also formed the Genetic Modification Advisory Committee (GMAC) in 1996. The objective of the GMAC is to oversee the development and use of an innovative genetic modification technique so that any biosafety risk factor associated with novel organisms are identified and managed. In addition, the GMAC is to advise the government on genetic modification technology and its application. The GMAC is chaired by the Vice Chancellor of the University Kebangsaan Malaysia (UKM) while the Secretariat is at the Centre of Gene Analysis and Technology, UKM. The GMAC is made up of representatives from relevant research institutes and universities.

The position of the GMAC in an institution of higher learning poses a different set of difficulties. Whereas the other two committees are in the MOSTE and the MPI which have the `muscle' to advance government policy, implement programmes and plans of action, the GMAC has none of these advantages. Furthermore being an

advisory body it is not meant to monitor the introduction of GMOs into the country. The Chairman himself reiterated the fact that the GMAC needs more government support and more campaigns to ensure the public knows of its existence. At present, only one or two companies seek the GMAC's advice. The reason is not lack of awareness but due to the fact that biotechnology is more confined to research institutions in the government sector than in the private. Furthermore, the GMAC does not want to be seen to curtail the development of biotechnology (Zakri, 1998). In addition, GMAC's role is also misunderstood by other government agencies. For instance, it was reported that the Deputy Health Minister informed the House of Representatives that the importation of the genetically modified soybean was only allowed after approval was given by the GMAC in MOSTE (Bernama, 29/4/1999). The reply given to the House is not right because the GMAC is an advisory body with no approval authority. Nonetheless, in a recent development, the Minister of Science, Technology and the Environment directed the GMAC to formulate a draft legislation on biosafety within three months (STAR, 25/3/1999). Hence, the GMAC is now taking up a more active role in the implementation of the Convention.

The recent introduction of the Monsanto Soybean[5] into the local market exposed the weakness of the existing organisational structures to handle biosafety issues. The introduction of the Monsanto soybean into the local environment raised some concerns because of reports of adverse effects the soybean could have on human health and the environment. The MITI was alerted by non-governmental organisations and the MITI in turn alerted the MOSTE.

[5] The Agricultural Group, Monsanto has developed soybean varieties through genetic manipulation. The new soybean varieties that are tolerant to glyphosate (soybeans with the Roundup Ready™ Gene) have been developed which provide new, efficacious, cost–effective weed control options to growers. Hence, engineering glyphosate tolerance into soybeans provides the grower with the means to control effectively the majority of annual and perennial grasses and broad-leaved weeds in a cost-effective manner.

Since no organisation has been set up to monitor biosafety issues in Malaysia, the GMAC is the best possible option. However, as stated earlier it is not well prepared for monitoring such activities. After the initial meeting of the GMAC, it was decided for MoA to take the lead to monitor the introduction of the Monsanto soybean into the country.

Finally, it was decided to allow the importation of the soybean on the condition that Monsanto was required to inform the DoA occasionally on any further development of the product. The crucial element here was the absence of a monitoring mechanism and a decision-making procedure. We cannot allow an ad-hoc manner of handling such incidents, particularly if the imported GMOs pose a considerable risk to human health and the environment.

iv. National Biotechnology Directorate (NBD)

The National Biotechnology Directorate was established as a division within the MOSTE which makes it different from the other three organisational structures. While the other two organisational structures are committees made up of members from different government agencies and the GMAC acts as an advisory entity only, the NBD is a division in itself with its own financial and human resources. Although it is a small division, it has its own specific objectives, functions and strategies. It was established in 1995 in response to increasing biotechnology-related activities and the need for a better co-ordination of these activities at the national level. The objectives of the NBD are to promote and to co ordinate R&D activities in biotechnology so that they are focussed towards meeting national R&D objectives. In spite of the fact that the NBD is R&D oriented, its role in the implementation of the CBD lies in the strategies of its research, development and commercialisation programmes. Here one of its strategies is to support and undertake research through potential

commercial collaborations with universities, research institutions and multinational companies. In addition, it seeks to ensure that the appropriate legal and scientific framework is in place in order to achieve effective operation of the research programmes and other activities.

v. *Policy Makers*

The National Committee, supported by the Technical Committee, has enabled the MOSTE to co-ordinate successfully and streamlines national stands on biological diversity. However, the MOSTE has not been able to effectively use the Committees to help it plan, execute and co-ordinate all national actions required for the fulfilment of national obligation under the CBD because of the shortage of manpower.

The Conservation and Environmental Management Division (CEMD) is manned by officers of the Administrative and Diplomatic Service who are trained managers and expected to be well versed in policy matters. Nevertheless, the CEMD, which is also the Secretariat to the National Committee, is likewise undermanned and this situation has severely undermined the MOSTE's effort to use the National Committee to its full advantage. The shortage of staff even caught the eye of the media when The Star (30/12/1997) raised the question of who would implement the Biodiversity Policy. It reported that the Biodiversity Convention comes under the Science, Technology and the Environment Ministry, but the Ministry's Conservation and Environment Management Division has only three staff members. In addition, these managers are not permanently attached to the CEMD and after few years, they are posted to other agencies. Hence, every few years the CEMD will have new managers. However, this is not a crucial factor since, at any one time there will be a mixture of experienced and inexperienced managers.

The CEMD is responsible only for the formulation of policies, strategies, programmes and plans of action on biological diversity and hence does not need a large number of human resources. Nevertheless, there must be an optimum number of staff to carry out its activities efficiently. In order to evaluate the need to strengthen the CEMD's manpower, a comparison will be undertaken between it and the DWNP and the Forest Department. As at June 1996, there were about 108 officers and 383 rangers besides other supporting staff in the DWNP. The Forest Department as at 1993 had 144 officers with 5,499 supporting staff. Even the Biodiversity Division of the Forest Research Institute of Malaysia, which is the Secretariat for the National Technical Biodiversity Committee had 15 graduate officers. From such comparisons, we can perceive that the CEMD is under staffed.

The lack of manpower has compelled the MOSTE to carry out implementation measures in an ad-hoc manner. Emerging issues such as biosafety, access to genetic resources and benefit sharing are given priority. To deal with such issues the MOSTE, through the National Council has created several more sub-committees. For instance, an ad-hoc committee on the revision of laws and an ad-hoc task force on genetic resources have been formed to specifically address the two issues. These task forces, which are chaired by the Deputy Vice Chancellor of the UKM with members from all the relevant agencies, besides providing important and relevant input, will indirectly ease the workload of the MOSTE. Although any final decision must be taken by the MOSTE, the creation of sub-committees has enabled actions to be taken simultaneously, leading to faster and better results.

Besides manpower, the ability and expertise of policy makers also plays an important role in the implementation of CBD. The policy makers need to be well versed both in English language as well as with the legal and the scientific issues forwarded during the CoP's meetings and the meetings of the subsidiary bodies of

the Convention in order to be involved actively in the discussions. For instance, the existence of the terms such as `LMOs' (living modified organisms) instead of GMOs (genetically modified organisms) and AIA (advance informed Agreement) instead of PIC (prior informed consent) are testimonial of such complexities. Ting Wen Lian (the former Malaysian Ambassador to Italy), one of the active negotiators of the CBD, at a Conference, argued, "[...] environmental debates in not only about trees! For instance, on the Convention on Biodiversity, we are obliged to deal with a whole range of issues from biotechnology to biosafety and from IPRs to the knowledge of indigenous peoples.[...] as far as the foreign service is concerned we no longer have the luxury of neither pure diplomacy, nor the grandeur and pomp of diplomatic posturing. [...] One must know and understand the subjects discussed whether it is to do with plant genetics, IPRs or forest management. Knowledge of scientific and technical issues and a foreign affair background can be a very effective combination. And on the other hand I have seen the politicisation of my scientific and technical colleagues, and they too have become effective in environmental meetings" (Ting, 1998).

7.4.2.2 Legal and Regulative Framework

Earlier it was stated that the CBD was regarded as an extension of national policy to the international arena. This statement was made in cognisance of the fact that policies that address biological diversity or its components existed long before the CBD came into existence. Furthermore, there is a legal and regulative framework to support the policies. In fact, it seems that various acts and regulations that address different components of biological diversity have existed since the early 1900s.

Unlike the Environmental Quality Act 1974 which focuses on pollution from specific industries and sites, biological diversity related laws are ecologically based and linked to land and water. These elements of the environment fall under the jurisdiction of the states. Hence, before we analyse individual laws and regulations we must highlight the role of the Federal Constitution in biological diversity agreement. The provisions under Article 74 of the Federal Constitution influence Malaysia's legal infrastructure in respect of conservation and the sustainable use of biodiversity. Article 74 lists the Ninth Schedule, which details the subjects on which the federal authority and the state has power to make law.

The absence of terminology on biological diversity in the Federal Constitution gives power to the state to make laws on this matter by virtue of Article 77. However, looking at the context of international co-operation, any law enacted in pursuance of an international agreement can be made under Article 76 of the Federal Constitution. Theoretically under the said provision the federal government can make any law pertaining to the implementation of the CBD (**Appendix 22**).

Nonetheless, the Attorney General's Chamber argued that whilst the federal authority is the proper authority to decide entry into international obligation under the CBD, most legislative and implementing authority with respect to biological diversity rests with the state. Hence, this poses several difficulties with respect to the implementation of the CBD.

We will now analyse each of the legal instruments to examine whether they complement and support the CBD or hinder its implementation. Since biological diversity covers a wide range of subjects, we will proceed by looking at the legal instruments in the context of different issues.

i. Conservation

In general, legislation to conserve biological diversity in Malaysia is divided into two types: firstly, to protect habitat such as the Forestry Act and the National Parks Act and, secondly, to protect species of flora and fauna such as the Protection of Wildlife Act. Although these Acts are under different authorities in some instances they protect the same area. The Forestry Act (1984) and the Protection of Wildlife Act (1972) are known to gazette the same area by what is termed overlapping or double gazettement. A recent study found that double gazettement affected more than a fifth of the declared protected area (DWNP, 1996). Double gazettement occurs when the area is gazetted first as a wildlife reserve and then later as a PFE or vice versa. Out of 14 areas of double gazettement, five areas[6] were found to be first gazetted as wild life reserves and later as PFEs while another 9 were first gazetted as PFEs and then later as wild life reserves. However, according to the DWNP's study almost all of these areas are managed as production forest even though they are first gazetted as wildlife reserves. In either case this will affect the management of an area because a wildlife reserve gives a total protection to the flora and fauna whereas an area classified as PFE allows logging activities. In addition, an area which is supposed to be classified as a wildlife reserve is under the jurisdiction of the MOSTE whereas a PFE is under the MPI.

National Forestry Act 1984

The National Forestry Act 1984 (**Appendix 23**) seeks to enhance the implementation of the National Forestry Policy. This was formulated under Article 76(1)(b) of the Federal Constitution to harmonise and update the forest enactment of various states. The Article endeavours to ensure the uniformity of laws of the

[6] These 5 areas covered an area of 110,979 ha out of a total 117,158 ha of double gazetted area.

different states with respect to the administration, management and conservation of forests and forestry development. Under this provision each state needs to adopt the National Forestry Act as state legislation before it can implemented in the state. At present, all the states in the Peninsular have adopted the Act except the state of Perlis.

The Act addresses the well being of one of the components of biological diversity, the forest. The objective of the Act is in line with two of the objectives of the CBD, that is, the conservation of biological diversity and the sustainable use of its components. The conservation measure is spelt out clearly through the gazette of land as permanent forest estate. Here, the conservation measure is enforced through the issuance of licences or permits for the taking of forest produce or for entry into the PFE. Sustainable use of the forest is implicitly notified through the forest management plan whereby the programmes prescribed, secure the orderly taking, renewal and conservation of trees in accordance with the principle of sustainable yield. Nevertheless, the terminology "permanent forest estates (PFEs)" to some people might connote a permanently conserved forest, a misleading notion.

As stated earlier in Chapter 6, PFEs are divided into production and protection forests. Production forests as indicated by the term, are meant for timber production while the protection forests are protected against other development activities. Nonetheless, PFEs are managed and financed by the state governments which can withdraw these areas for other purposes without negotiating with the federal government. Moreover, PFEs in the context of the Forestry Act connote different classes of forest. Out of the eleven classes only two are directly linked to biodiversity conservation while the others are protected for their functions. Nevertheless, forests are further protected when the National Forestry Council in

December 1998 agreed to gazette all forest reserves at an altitude of 1,000m and above as protected forests (The Star, 30/1/1999).

The Forestry Act made to protect the forest did not really help to support the efforts by the Federal Government to harmonise with those required by the CBD, in particular, in the matter of conservation. Theoretically, there should not be a decrease in the acreage of any PFE because there is a "compensation mechanism" within the Act whereby the State Government is required to replace any land excised from the PFE with that of the same size. Nonetheless, there is a continual decrease in areas of PFEs clearly indicating that this is not being observed. One of the main reasons given by the states for not being able to put aside replacement land is the difficulty of finding new suitable land for conservation purposes.

According to the Forestry Department Annual Report 1997, a total of 35,106ha of forest were gazetted as PFE in 1997 while in 1996 there were 2,291ha of forest which had been de-gazetted. However only three states showed an increase in PFE from 1995 to 1997, two remained unchanged and the remainder showed a decline. In total only 44.5% of the total land area in the Peninsular is covered in forest compared to 45% in 1995 (The Star, 19/1/1999). An analysis of the change of land use over a span of 16 years indicated that the majority of degazetted PFEs were converted into agricultural usage as shown in **Table 7.6** overleaf.

Table 7.6: Loss of Forest Reserves (PFE) to other Land Uses (ha), 1978-1994

State	Total Degazetted	Agriculture	State Parks	Township/ Resettlement	Reservoirs	Highway	Others*
Johor	136,432	86,432	48,905	80	-	-	1,015
Kedah	5,200	3,851	-	-	-	-	1,349
Kelantan	68,190	52,670	-	134	-	-	15,386
Malacca	1,076	339	-	-	-	-	737
N.Sembilan	16,794	4,219	-	1,392	-	-	11,183
Pahang	291,212	258,591	-	5,075	-	60	27,486
Perak	58,636	57,379	-	1,209	-	48	-
Perlis	6,101	5,771	-	120	-	-	210
Penang	135	-	-	106	-	-	29
Selangor	30,732	12,937	-	1,682	-	-	16,113
Trengganu	84,272	77,969	-	-	5,257	-	1,046
Fed. Territory	1	-	-	-	-	-	1
Pen. Malaysia	698,781	560,158	48,905	9,798	5,257	108	74,555
Sabah	431,826	431,826	-	-	-	-	-
Sarawak	262,505	238,545	8,720	194	-	-	14,591
Malaysia	1,392,657	1,230,529	57,625	9,992	5,257	108	89,146

- includes army reserves, tourism development, mineral exploitation, quarrying, golf courses, landfills, land alienation and others.

Sources: Forest Department in MOSTE, 1997

Environmental Quality Act 1974

This Act plays a unique role in the implementation of the CBD. The Act was formulated on the basis of protecting public health. Public health falls under the Concurrent List of which both the Federal and State Government have jurisdiction. It was never meant to be used as an instrument to promote the conservation of biological diversity although one of its objectives to enhance the environment could possibly include conservation. It was established for the prevention, abatement and

control of pollution and enhancement of the environment. Nonetheless, the Act exerts its role in conservation measures through the Environmental Quality (Prescribed Activities)(Environmental Impact Assessment) Order, 1987 (**Appendix 24**). Under this Order, 19 development activities are prescribed as activities that require EIA to be undertaken before the activities can proceed. Among the controlled activities is the development of forest into other land use. Hence, indirectly this Act complements the Forestry Act in the conservation of forest by subjecting development activities in the forest areas to more demanding conditions.

Land Conservation Act 1960

The Land Conservation Act of 1960 seeks to conserve hill land and protect soil from erosion and the inroad of silt. This is a federal Act created to ensure that there is uniform legislation to protect a specific ecosystem: hill land. As provided under the Federal constitution the Act needs to be adopted by each individual state before it can be implemented and enforced. The main element in the Act is the need for land to be gazetted as hill land to protect and conserve it. The gazettement prohibits any planting of short-term crops, and any clearing and cultivation. Although all states have adopted the Act, none has gazetted hill land except the States of Pahang and Penang (Ghani *et al.*, 1996). This has resulted in the loss of many hills to other development activities such as agriculture, recreation and housing. The present researcher is of the opinion that state governments prefer to use other types of measures to control the development of hillsides, for example through environmental impact assessment (EIA) rather than by means of this Act. When a land is gazetted as hill land, no type of development can take place, however, under EIA some part of the hill can still be developed and the state will therefore still derive some benefit.

Analysing this Act from the CBD perspective, there is no reason to believe that it is totally inadequate as a legal instrument to protect other types of ecosystems beside the forest from the encroachment of development activities. Nonetheless, because of politics and states' governments' interests, the Act is not able to fully utilise its vast potential as a conservation instrument.

Fisheries Act 1985

In the context of the CBD, the Fisheries Act addresses an important issue: the conservation of marine biological diversity. A decision called the Jakarta Mandate made during the 2nd CoP called for the establishment and strengthening of legislative arrangements for the development of the integrated management of the marine and coastal ecosystem. The Act provides for the conservation of aquatic flora and fauna through the establishment of marine parks or marine reserves. The Prime Minister as early as 1983 had directed the MoA to be responsible for the establishment and management of marine parks in Malaysia. The Fisheries Act 1985 legalised the Prime Minister's directive with a proviso for the establishment of marine parks or marine reserves. The objectives are to conserve and protect the marine ecosystem, especially the coral reef, as natural heritage, from exploitation and to conserve and protect the marine ecosystem for biodiversity research, educational purposes, and recreation. Nonetheless, it was only in 1994 that an Order called the Establishment of Marine Parks Malaysia came into effect with the designation of 38 islands as marine parks.

ii. Wildlife Management and National Parks

Wildlife management and national parks are the only aspects of biological diversity that fall under the legal jurisdiction of the MOSTE in contrast to previous biological components which fall under the legal jurisdiction of the MPI and MoA consecutively. The MOSTE's jurisdiction over these is made possible through the DWNP, which operates within the ambit of the Protection of Wild Life Act 1972, and the National Parks Act, 1980, both of which are federal Acts. Furthermore, under the Constitution there is an important difference between forest and agriculture and wild life management and national parks. Whereas forest and agriculture fall under the State List, wild life management and national parks fall under the Concurrent List. This means that both the State and Federal Government can make laws in respect of these two subjects and if there is inconsistencies between them, the federal law will prevail. The conservation of species is enforced through the issuance of licences or permits for the hunting of wild animals and a list of protected animals, birds and insects. In addition to the Act's focus on animals, it also prohibits the disturbance, cutting or removal of any timber or vegetation.

However, and most important, just like the Forestry Act it enhances conservation through the control of entry into wild life sanctuaries or reserves. Nevertheless, wild animals and plants are not confined to wild life reserves and sanctuaries only. They are also found in PFEs and state lands. The disappearance of these protected and unprotected forests threatens the existence of the animals and plants. This is supported by data provided by the DWNP. Between 1986 to 1996, every 4.8 months a mammal species was added to the threatened species list while every 2.8 months a bird species was added to it (MOSTE, 1997). A total of 138 animal species were listed as threatened in 1995 (DWNP, 1996).

National Parks Act 1980

This Act provides for the establishment and control of National Parks. The establishment of such parks is to preserve and protect wildlife and plant life **(Appendix 25).** Although this is a federal Act, it works through persuasion. The establishment of a national park is only successful if the states' authorities agree to reserve any of its land for this purpose. Once an area is gazetted as a national park the state cannot degazette the area without written permission from the Minister of Science, Technology and the Environment.

The national park is placed under the supervision of a Committee with the State's Secretary acting as Chairman. This can be perceived as an arrangement between the State and the Federal government whereby the State is not totally denied of its rights over the land that was once its.

However, to date, no national park has been established under this Act for the reason that no state wishes to relinquish their rights over land matters. The `Taman Negara National Park' (TMNP) which exists today was not created under this Act and hence this Act is not applicable to the TMNP. In spite of the fact that the TMNP belongs to three states, it is managed by the DWNP because the states did not have the human resources and expertise to manage the TMNP (**Appendix 25**). The right of the DWNP to manage the TMNP was given as early as 1948[7]. Although no national park has been established under the federal Act, some states have their own state parks. For example, the state of Johor has her own state park (48,905 ha) established under the National Park Corporation Enactment (Johor) 1989. This method allows states to have state parks and at the same time maintain their control over the forest.

[7] Federation of Malaya Government Gazette: The King George V National Park Enactment of the States of Pahang, Kelantan and Trengganu (April 29,1948).

Protection of Wild Life Act 1972

This Act consolidates the laws relating to, and to further provide, the protection of wild life. There have been various laws to protect wild life, the earliest as far back as 1902. However, these were state laws which were replaced by the Protection of Wild Life Act in 1972 (**Appendix 26**). Because of this consolidation measure, all management of previously gazetted wildlife reserves is now under the jurisdiction of the DWNP. The Protection of Wild Life Act 1972 works in a similar manner to the National Parks Act, that is, through persuasion. Here, the Ruler or the Governor of a state after consultation with the Minister, by notification in the gazette may declare any state land to be a wild life reserve or a wild life sanctuary.

However, this Act has suffered the same fate as the National Parks Act, 1980. There has been no wildlife reserve gazetted using this Act. The DWNP continues to administer only those reserves which it took over from the states. Lack of information and enforcement has allowed vast areas of wildlife reserves to be degazetted without the knowledge of the DWNP. However, from legal aspect, the degazettement exercise by states can be construed as illegal since all degazettement of wildlife reserves needs prior consultation and endorsement by the Minister of Science, Technology and the Environment.

In some instances, wildlife reserves have become a source of income for states due to their natural habitats which are tourists' attraction. For example, the Tanjung Tuan Wildlife Reserve in Melaka is a tourist attraction because it is a transit for almost 300,000 migratory birds of about 60 species from China, India, Russia, Australia and New Zealand. Tanjung Tuan with an area of about 99.6 hectares was gazetted as a bird protection area in 1921 and as a Wildlife Sanctuary in 1971. The fact that it attracts tourists led the State Government in 1998 to endeavour to build a recreation centre on 28.8 ha of land as part of a tourism project. It was only through

the intervention of the Cabinet that the project was shifted to another place (BH, 27/8/1998).

iii. Utilisation of Biological Resources

Malaysia's legal framework does not impose absolute restrictions on access and utilisation of her biological resources. In the context of the CBD, access to genetic resources is tied to the benefits obtained from the use of genetic resources particularly in the development of biotechnology. Biotechnology in turn is tied to biosafety.

Access to Biological Resources

There are no specific legal instruments to facilitate access to the country's biological resources for the commercial utilisation of her genetic resources. Access to the nation's biological resources is under the control of several laws. For instance, the Customs (Prohibition of Exports) Order 1988 requires an export licence for the export of any species of plant or any plant part[8], which is alive and can be propagated. Rubber wood, rubber seeds, all oil palm and living tissues, pineapple slips and aquatic plants are excluded. In addition, the Customs (Prohibition of Exports) Order 1988 is also used to restrict the export of turtle eggs and rattan. However, the export of specific plants and species of specific plants are prohibited except on a governmental basis and for research purposes only.

The other legal instruments such as the National Forestry Act (1984); the National Parks Act (1980); the Fisheries Act (1985); and the Protection of Wildlife Act (1972) prohibit the taking out of biological resources from an area under gazette or to

[8] This includes the stem, branch, tuber, bulb, corm, rhizome, stock, budwood, cutting, layer, slip, sucker, root, flower, fruit, seed or any other part such as pollen, spores, meristem tissue, callus tissue in culture medium or cryogenically preserved.

destroy them except with permission (licence, permit). As regards academic research, the Economic Planning Unit requires researchers involved in the collection and analysis of biological resources to engage in partnership with local learning institution as well as to deposit samples of biological specimens with local institutions.

These Acts have effectively provided the legal framework to protect the biological resources from illegal activities such as logging and poaching. However, the crucial legal framework needed is one that can prevent foreign countries or multinational corporations from utilising the resources without giving due compensation to the country or at a least a share of the benefits. Here, the element of access is linked with benefit sharing as provided in the objectives of the CBD. The difficulty of imposing such legislation is deeply rooted in the fact that a biological resource such as the forest is owned by the state. The absence of any legal requirement which requires the states to ask for Federal Government permission or endorsement before any such venture takes place provides easy access to foreign firms to these resources, for instance, the joint venture between the Cancer Research Institute of the USA with the Sarawak Government to explore the possibility of producing a drug from the Bintangor Plant to the treat HIV/AIDS virus (see **Box 7.4** overleaf).

The partnership has drawn criticism from several organisations. For instance, the Association of Natural Compounds Malaysia registered their displeasure with the venture, which signified too easy access to the nation's genetic material by a foreign firm. In addition, they contended that Malaysia is denied transfer of technology and profit from future commercialisation of the drug. The Association urged the MOSTE to formulate laws and regulations to control access to the country's biological

resources by another country and to ensure a mechanism is in place to guarantee profit sharing.

Box 7.4: New Drug to Treat the HIV/AIDS Virus

In 1987 a plant researcher from the University of Illinois-Chicago, DD Soejarto discovered that the latex from the Bintangor Plant (*Calophyllum Lanigerum*) contained a compound that can stop the growth of the AIDS virus. Proceeding from this discovery the National Cancer Institute of the USA formed a partnership with the Sarawak government to explore this venture. It was reported that the research on the extract of the plant is now at the clinical stage and is expected to produce a new drug to treat HIV. An American Company and the Sarawak Government is expected to apply for patent right from the FDA, USA (Patent No 5,591,1770 Calanolide A and Related Antiretroviral Compounds, Compositions and Uses Thereof). To protect the tree, the Sarawak Government in June 1993 enforced a prohibition order to stop any felling of the tree and export of the tree or any part of it.

Source: MOSTE,1998

The Association's stand was further strengthened by an unfavourable report from a group of Australian scientists on the NCI's motives. They accused the NCI of trying to monopolise the benefit from the products (**Appendix 27**). Rebutting this allegation, the National Cancer Institute stated that the agreement made with the Sarawak State was fair and equitable.

In fact, this issue has been raised during the Second National Workshop on Biodiversity in 1994. A representative from a local university charged that Sarawak had come into agreement with the Government of the USA on terms fostered by the USA and as a result had lost her right over the plant. However, the Forestry Department of Sarawak refuted such allegations. It reiterated that an agreement

between Sarawak and the USA had been made which allows for joint development of the Bitangor trees and subsequently both parties will have rights over the final product.

Biosafety

Although Malaysia is a strong advocate for a biosafety protocol, she does not have specific biosafety regulations. Gurdial Singh Nijar a legal advisor to the Third World Network (NGO) believed that Malaysia's strong global position on biosafety should not be negated by weak national legislation that does not adequately protect citizens and affects the nation's credibility abroad (NST, 28/3/1998). The importance of the biosafety issue has been highlighted by the Minister of Science, Technology and the Environment who has asked the GMAC to come up with a draft regulation on biosafety within three months (The Star, 25/3/1999).

At present the importation of plants into the country is controlled by the Plant Quarantine Act 1976 and the Plant Quarantine Regulations 1981. The main purpose of issuing the import permit is to regulate the entry of plant and plant products to prevent the entry and spread of pests and diseases from imported materials. Within the scope of this legislation, the focus is on `natural plants' and the necessity to prevent pests and diseases spreading into the country and affecting the agricultural sector. In contrast, the CBD requires states to protect the environment and humans from genetically modified organisms (plants and animals). However, with modification to the definition of the word plants to include GMOs as control items, the Plant quarantine Act could be used to cover GMOs, as well. Nonetheless, there are views that a new piece of legislation is needed to control the GMOs instead of utilising the existing acts.

Another piece of legislation which has great potential to control genetically modified organisms and consequently address biosafety is the Environmental Quality Act, 1974. In 1996, the government introduced new terminology into the amended Act (see **Box 7.5**).

Box 7.5: Environmental Quality (Amendment) Act 1996

"Environmentally hazardous substances" means any natural or artificial substances including raw material, whether in a solid, semi-solid or liquid form, or in the form of gas or vapour, or in a mixture of at least two of these substance, or any living organism intended for any environmental protection, conservation and control activity, which can cause pollution.

"environmental risk" means any risk, hazard or changes of bad consequences that may be brought upon the environment

"Pollution" means any direct or indirect alteration of the physical, thermal, chemical or biological properties of any part of the environment by discharging, emitting, or depositing wastes so as to affect any beneficial use adversely, to cause a condition which is hazardous or potentially hazardous to public health, safety, or welfare, or to animals, birds, wildlife, fish or aquatic life, or to plants or to cause a contravention of any conditions, limitation or restriction to which a licence under this Act is subject.

The term "environmentally hazardous substances" widens the scope of control on harmful substances to include any living organism, which can cause pollution. However, the amendment was not undertaken to implement the CBD. Instead, the basis of the amendment was to provide a definition to overcome future difficulties in drafting new regulation under the parent act. Together with this new terminology, another new item "environmental risk" is also introduced.

With these amendments, the EQA is able to provide the foundation for the formulation of more detailed regulations needed to address the biosafety issue. Malaysia can learn from the UK's experience which uses the Environmental

Protection Act (1990) to deal with GMOs. In the UK, the proposal to introduce the regulation started as early as the 1980s but it was opposed by the HSE and industries (Levidow and Carr 1996). The Environment Protection Act (1990) was enacted with Part VI of the Act to deal specifically with GMOs. The detailed regulation came into force in 1993 with the DoE sharing its authority with the Health and Safety Executive (HSE) and the Ministry of Agriculture, Fisheries and Food. Malaysia is fortunate that there is not as much concern expressed by the biotechnology industry about the biosafety issue as in the UK most probably because the local biotechnology industries are not as developed as in the UK.

7.5 IMPACTS OF THE IMPLEMENTATION MEASURES

As one of the twelve megabiodiversity countries, Malaysia expresses great interest in the CBD and its development. With a tree cover of over 70 per cent and her timber industry the second biggest non-oil and gas export earner (US$8.3 billion of forestry products in 1998) after textiles (FEER, 14/1/1999), any implementation measures required by the Convention will definitely affect national interest. The effect of the governmental system, politics, policy, organisational structure and legislative framework on the implementation of the CBD have been analysed in the previous sections. The study will next analyse the impacts of the implementation measures on several sectors below.

7.5.1 Conservation

The Convention recognised the importance of biological diversity for the evolution and maintenance of the life sustaining systems of the biosphere. To achieve its objective, the CBD requests Malaysia as a country Party to contribute to the global effort by undertaking conservation measures through the creation of a

system of protected areas. At the same time, the utilisation of biological resources is to be carried out in a sustainable manner. However, it is interesting to examine the impact of these conservation measures on national planning.

As shown earlier, most of the instruments are in place to enhance conservation measures required by the CBD. As a result many protected areas such as wildlife reserves, permanent forest reserves and marine parks are established as in-situ conservation areas as required by the Convention. These protected areas which are created under different policies, different legal instruments and different federal government and state agencies enable the perpetuation of important biological resources. In addition, sensitive ecosystems, which act as water catchment areas, flood mitigation and erosion controls are protected. Hence, by protecting the biological resources and the ecosystems, these measures enhance the quality of the local environment and consequently contribute to the well being of the overall global environment. In addition the continual supply of genetic resources for future generations is also assured.

However, the conservation policies and programmes are subject to more controversy than other development policies. We have previously seen that many protected areas are logged for timber. Although Permanent Forest Estates are classified as production, protection and research forests to differentiate between those forest to be logged and those to be conserved, such classification does not protect the "protection forest". In fact, the forest department itself views land classification as sanctioning the accelerated conversion of virgin forests into production forests (Abdul Ghaffar and Salleh in Vincent *et al.* 1997). A PFE will see the end of its status once it is seen to be more economically beneficial to use it in other ways.

According to a study undertaken in 1992, about 2.5 million hectares (84.2%) of the production forest (2.97million hectares) was logged (GTZ, 1992). Of the 4.87 million hectares of PFE only 1.9 million hectares were classified as protection forest. Here we see the difficulties of implementing conservation measures within the parameters of forestry policy and the forestry Act. Although both the policy and the Act provide for the conservation of biological diversity, the economic benefit of the forest always takes precedence over conservation. The State Governments need only two reasons to declassify a protection forest, i.e. the forest is no longer required for conservation and it is more beneficial to utilise it in some other way. These two reasons must have been very easily satisfied because of the decreasing acreage of PFE. Therefore, unless the federal government is able to compensate states for opportunities lost, developmental considerations will override any conservation effort. That is why Malaysia keeps on pressuring the international community for a compensation mechanism for countries which conserve their forests for the benefit of the globe as a whole.

The MPI which administered the policy and Act, definitely finds it very complicated to pursue two objectives within the same policy and Act which are not only different but do not complement each other. Malaysia is encouraging tropical-plywood exports and to be able to do this is pursuing sustainable forest management. Nevertheless, despite the fact that the MPI has seriously embarked on reforestation and afforestation programmes, vast areas of Protection Forest continue to be declassified. Furthermore, the high cost of reforestation programmes (see **Table 7.7** overleaf) contributes to the continuous loss of forest.

Table 7.7: Plantation Areas and Expenditure for the Compensatory Plantation Programme 1983-1991

Year	Planted Area (ha)	Expenditures (RM)	Expenditure/ha
1983	473	1 004 506	2 124
1984	477	1 324 039	2 813
1985	4 390	5 346 786	1 217
1986	4 100	6 843 053	1 669
1987	5 771	12 865 796	2 229
1988	15 246	14 029 202	920
1989	7 171	7 936 774	1 107
1990	2 392	7 216 108	3 017
1991	5 348	11 742 783	2 195
1983-1991	45 368	68 327 047	1 506

Source: GTZ (1992)

Under the MoA, forest too is given high priority in Agricultural Policy. With the NAP3 pursuing an agroforestry approach it is expected that pressure on forest areas will lessen. However, results can only be presently seen from 1998 onwards since the NAP3 became effective from 1998, and with an increasing population and its need for food it would appear that forest area will continue to be turned into agricultural land. The rapid transformation of tropical forest areas, including peat swamps and mangroves into agriculture and fishery farms has begun to worry the Federal Government (NST, 28/7/1999).

It was reported that the chief cause of deforestation in the 1970s and 1980s was agricultural expansion when forest was converted into land settlement schemes for planting oil palm and rubber as part of a poverty alleviation scheme to give land to the poor. The forest was `saved' by industrial development when the focus shifted to manufacturing and the decision was made not to clear the forest further to open up new agricultural land. Here, the 7th MP no longer allows FELDA to open new agricultural land further, while during the 6th MP most of the 15 thousand hectares of

new land development was in Sabah leaving the Peninsular free from this form of land use. This again showed clearly that biological diversity is not protected under the conservation banner but is totally dependent on overall development strategy.

However, to be fair, measures taken solely under the conservation policy have borne some results. Forests, which were gazetted under the Protection of Wildlife Act 1972 and managed by the DWNP, have been protected throughout the years. This is because the DWNP under the MOSTE operates under one objective that is to ensure wildlife is protected. This differs from the Forest Department under the MPI, which has two conflicting objectives: on the one hand the MPI is promoting the export of timber and timber based products while, on the other hand, it wants to conserve the forest. The two objectives, which are miles apart, can be achieved if there is a clear demarcation between conservation and utilisation. If conservation measures initiated by the MPI are to be successful, the protected areas should not be converted to production forest once economic benefit has gained the upper hand.

7.5.2 Access to Genetic Resources

The CBD requires Malaysia to facilitate access to her genetic resources. However, as mentioned in earlier paragraphs, Malaysia imposed restrictions to protect her genetic resources. There are merits to imposing legally binding instruments as these ensure foreign firms do not have easy access to the nation's biological resources although the gist of such legislation is not to deny foreign firms or countries access to the nation's biological resources but to make certain that any benefits accrued from the usage are shared in a fair and equitable manner between the parties concern. The delicate balance between protectionism and commercial partnership needs to be achieved so as not to scare away potential investors or

researchers. Important lessons can be drawn from the two collaborations described below.

Firstly, we look at a project carried out between the Japanese Government and Malaysia in 1996 to conduct research and development pertaining to the utilisation of biological resources. An important aspect of the project was to explore the commercial possibilities arising from the research results. Since there was no legal instrument available to provide the necessary framework for the collaboration, a Memorandum of Understanding was drawn up to facilitate the research and protect each party's interests. At first, discussions surrounding the MOU almost jeopardised the project since both parties were overcautious in protecting their own interests. Although there were various other disagreements over the MOU, the significance of it all was Malaysia's insistence on including in the MOU a referral provision to Article 15 of the CBD [9].

Malaysia's position was that the provision of fair and equitable sharing should take place at the time of granting access. If not, it would take a long time to arrive at a decision. At first the Japanese negotiators did not want to include such a provision but after lengthy negotiation, which lasted for almost a year, both parties agreed and the project is now being carried out.

The second project was not as successful as the earlier venture. Under an umbrella bilateral co-operation between Denmark and Malaysia, a project, which involved bioprospecting[10] for potential compounds was to be carried out in 1997 in collaboration with a multinational pharmaceutical firm. The Malaysian negotiators drafted a very detailed contractual agreement to cover every aspect of the CBD.

[9] Provision Access to Genetic Resources which includes the sharing of benefits arising from commercial and other utilisation of genetic resources.
[10] Biodiversity Prospecting describes the collection, screening and commercialisation of natural products.

Furthermore, this agreement was to be signed with a commercial firm compared to the earlier MOU signed between two governments. Hence, Malaysia was more defensive knowing that a government entity can be more easily held accountable for future development whereas a private entity points to a more complex process. However, not everybody on the Malaysian side agreed to a very detailed contract. The scientists and technical personnel eager to acquire advanced knowledge and technology asked for only a basic and flexible document to ensure the venture could proceed. In contrast the legal side anxious to protect the nation's interests, wanted a detailed agreement while the actual policy makers did not play an active role in negotiations.

Therefore, as expected, the firm refused to be tied down to a very detailed and complicated agreement. The firm expressed the view that co-operation could not practically function based on such a contract and suggested an adjustment and simplification of the contract. After years of long negotiation, the deal fell through and the country lost the opportunity to acquire advanced biotechnology and the expertise which comes with it.

These incidents highlight the danger of not being able to balance the need to put in place a substantive legal requirement to protect the country's biological resources and the much-needed modern biotechnology. Zakri (1998) argued that the project with Japan was undertaken within a framework agreement while the latter project was too specific. Of the later project Zakri was of the opinion that the Malaysian side was too cautious and a step by step process would have been a more reasonable way of dealing with the issue of benefit sharing and access to genetic resources. He added that the agreement between Malaysia and the pharmaceutical firm was a unique contractual agreement between two parties and therefore should not have been a document imposed on the other party.

7.6 CONCLUSION

Malaysia's involvement in the CBD has remained active from the initial negotiation of the Convention until the present day. Her perceptions of the CBD are markedly influenced by the economics of biological diversity. As a country that depends on commodities such as timber, timber products and agricultural products, Malaysia obviously needs to protect her biological resources from foreign intervention. Even her stand on the issue of biosafety can be seen to be influenced by her economic interests. The perceptions she has of the different issues markedly affect her implementation of the CBD in the respective areas. For instance, her perception that conservation must be linked with financial assistance has resulted in conservation measures mostly driven by the necessity to protect national interests and not global needs. As for biosafety, her perception that the country would be used as a `testing' ground for GMOs by international corporations, has made her actively take measures to introduce national biosafety legislation.

It has also been shown that the system of government and political interests exert constraints on the implementation of the Convention. Federal and state jurisdiction over biological resources does not help efforts to increase protected areas. Although the MOSTE has had various negotiations with several state governments regarding the establishment of national parks and wildlife reserves there have been no further national parks or wildlife reserves as indicated by the data presented earlier. The Fifth and Sixth Development Plan promised closer collaboration between state governments and the federal authorities, however, the hope for compensation mechanism has not materialised. Without such compensation, no state will be willing to concede any of their land to the federal government for conservation purposes. Hence, the total area under conservation remains unchanged. In addition, it is found within the federal machinery that the

political interests of each Ministry often leads them to give low priority to conservation measures.

Turning to the development plans it is found that collectively the development plans, both the macro and micro level policies, do not pose as constraints on the implementation measures for the CBD. Theoretically each Plan and Policy complements each other. However, the elements of the Plan do not seem to be carried out and translated into action. The proposed national parks according to the 3rd MP have never been implemented and the call for better co-operation between the Federal and State Governments has not materialised into more fruitful products such as increased national parks. The reason may be because the compensation mechanism as proposed in the 6th MP has not been seriously pursued. In addition, the Government has not endorsed the completed National Conservation Strategy proposed by the Sixth MP.

Although the CBD addresses many different issues such as conservation, benefit sharing and the sustainable utilisation of biological resources, national policies seem to concentrate mainly on conservation measures. Nevertheless, despite the emphasis on conservation, the forests and swamps that are components of biological diversity continue to decrease in acreage. From the data presented, it seems that the presence of macro and micro level policies on biological diversity although not curtailing conservation measures do not help much in retaining or expanding the forest area. Instead agriculture land expands at the expanse of forest area.

It is believed that the absence of a central co-ordinating body and the division of power and interest over the biological diversity issue will result in the weak management of resources. Therefore, the decision to appoint the MOSTE as the co-ordinating agency will hopefully streamline various policies and ensure the smooth

implementation of different programmes and plans of action. The MOSTE in turn has established the National Committee and the Technical Committee to help achieve these objectives. The agencies involved in the management of biological diversity are well represented on the National Committee and its Technical Committee. Hence, the National Committee is a suitable forum for formulating any policies, strategies and plans of action, since all interested parties are present to offer their opinions and consent. Nevertheless, the implementation of the CBD does not depend entirely on the capability of the National Committee, but also on the CEMD, which is the catalyst to ensure all the measures are carried out by the relevant agencies. However, the lack of human resources has prevented CEMD from functioning effectively. Therefore, the National Committee and the MOSTE seem to be better prepared to consolidate the national stand at CoP meetings rather than carry out the actual national implementation of the CBD.

The present legislative framework has different effects on the various implementation measures. In term of conservation, there are ample laws and regulations to protect the biological resources. However, some law such as the Protection of Wildlife Act, 1972 and the National Parks Act, 1984 are not mandatory and are therefore unable to protect more areas because the states cannot be persuaded to give up forest lands for protection under these two laws. As regards access to biological resources, biotechnology and benefit sharing, the legislative framework is still premature. There is no national biosafety law to protect the environment and public health from foreign introduced or locally produced GMOs and the country's biological resources are not protected against foreign commercial exploitation.

At present, the implementation of the CBD has only a small impact on the conservation of biological resources in Malaysia because the government has continuously carried out national conservation measures. The implementation measures that she has carried out under the CBD are in parallel with her national planning. Nonetheless, in other areas such as providing access to her genetic resources, the impact on the country is significant as there is no balance between the protection of national biological resources and the need to acquire new technology. While seeking to protect the country's biological resources, it is important not to lose the opportunity to acquire modern technology and new knowledge.

CHAPTER EIGHT

COMPARATIVE ANALYSIS OF THE IMPLEMENTATION OF THE AGREEMENTS

8.1 INTRODUCTION

Many studies have been carried out to compare and analyse the implementation of environmental policies between countries. Research studies carried out to identify the differences and similarities between regulatory policies of different nations are said to be stimulated by the growing importance of environmental problems that transcend national boundaries (Vogel, 1987). Vogel believed that by examining how different nations cope with roughly similar problems within a single timeframe, we can enrich our understanding of the relationship between a nation's distinctive political culture and legal constitutional structures, and the way problems emerging from these relatively new policy areas are addressed. Heidenheimer *et al.* (1983) also argued that an understanding of why some governments fare better than others at coping with the same problem provides a deeper insight into government institutions and political processes. Hence the authors classified comparative public policy as the study of how, why and to what effect different governments pursue particular courses of actions or inaction.

In the previous chapters, the present researcher has sought to analyse the effect of different factors (agreement structure, governmental factors and implementing instruments) on the individual implementation of the MP, the UNFCCC and the CBD, and the impacts of each implementation on Malaysia. In this chapter, the researcher proceeds to compare the effect of these factors on the implementation of the different multilateral environmental agreements (the MP, the

UNFCCC and the CBD). The present researcher believes that by understanding the similarities or differences of how, why and to what extent each factor affects the implementation of the three multilateral environmental agreements, Malaysia will in the future be able to put in place the necessary measures before ratifying any MEAs. Hence, the comparative analysis pursued in this chapter does not compare the implementation of a MEA in different countries, instead, it compares the implementation of different agreements within Malaysia against a set of factors. The factors as shown in the framework of the implementation of a MEA (**Figure 1.1** in Chapter One) are categorised into agreement structure, governmental factors and implementing instruments. But first it is necessary to look at the tractability or complexity of problems to determine the ease of implementing of a MEA. This will be undertaken in the following sections.

8.2 TRACTABILITY OF THE PROBLEMS

Certain problems have criteria which make it more complex to address them than other problems. A problem is more complex if there is no technology to overcome it or if the change of behaviour needed is too big or the target group is too diverse. Therefore, theoretically, the implementation of a MEA will be much easier if there is available technology to solve the problem, an inexpensive method of measurement of the problems, and minimal variation in the behavioural practices that cause the problem. Hence, this section will analyse whether the problems which are addressed by one MEA, are more complex than others, and whether the complexity will affect the implementation process of the MEAs in Malaysia. Complexity, as defined earlier, includes the complexity of the problem itself, the level of technology needed and the diverse nature of the problem.

8.2.1 Montreal Protocol on Substances that Deplete the Ozone Layer

The Montreal Protocol is the most mature of the three environmental agreements under investigation. It is a simple agreement with a definite problem to be solved and a clear target. The problem to be addressed is the thinning of the ozone layer and the objective of the Protocol is to control and reduce ozone depleting substances. The measures to reduce the emission of ODSs are expected to halt the continual thinning of the ozone layer. The Protocol is clear on the substances that it intends to reduce and has produced a list of all these substances. In addition, each country Party is given a timetable to follow and the level of consumption of ODSs allowed to them. Obviously, this information has enabled Malaysia to identify the substances she is required to control and reduce. Thus, she is more focused on the types of measures that she wants to implement. Furthermore, Malaysia imports all of her ODSs' and therefore the control of the substances can easily be done through import regulations. Nonetheless, the complexity of this issue arises not from import control but how to ensure that the industries make a smooth transition from ozone depleting-based technology to ODSs-free technology without incurring heavy losses. Fortunately, the 10 years' grace period given to her to make the necessary adjustments is being fully utilised by local industries with assistance from the government and the international institutions. The assistance is in the form of funding or facilitating the access to modern technology.

8.2.2 United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC addresses global warming resulting from the emissions of greenhouse gases. The objective of the Convention is to stabilise the greenhouse gases at a level that will prevent dangerous anthropogenic interference with the climate system. The problem of global warming seems at first hand to be as clear as the depletion of the ozone layer. However, it is easier for Malaysia to control ODSs' consumption than to reduce GHGs' emissions because whilst the MP controls products from industries, the UNFCCC is expected to control gases, which are mostly by-products of industrial, agricultural and waste disposal activities.

It is also easier for Malaysia to implement the MP because she can either limit the importation of ODSs or use alternatives in her manufacturing sectors. For her to control the emissions of GHGs she needs to identify the activities that emit the GHGs and the quantities that are released. Most important she needs to acquire the technology needed to reduce or limit emissions of the GHGs from the industries concerned. In addition, GHGs such as methane and nitrous oxide are also produced from the usage of fertilisers and paddy cultivation which are traditional agricultural practices. All these factors point to the complexity of the problems Malaysia has to address. In addition, there is no national inventory on GHGs' emissions. Therefore, instead of controlling the sources of greenhouse gases it would be much easier to conserve the forest as a carbon dioxide sink.

8.2.3 Convention on Biological Diversity (CBD)

The problems to be addressed by the Convention on Biological Diversity are not as straightforward as the problems addressed by the MP and the UNFCCC. Both the MP and the UNFCCC have single focus problems, that is, thinning of the ozone

layer and global warming respectively. The CBD, on the other hand, involves diverse issues, some of which are more complex than others. For instance, Malaysia has no difficulties in identifying measures to conserve her biological diversity since conservation is not a new theme in the country. However, whether the conservation measures are able to be effectively executed or not is a different issue altogether. This is because conservation at the national level is a controversial element, which involves state and federal jurisdiction, and overlapping interests among federal agencies. Conservation at the national level becomes more controversial when the international community enforces standards or indicators of what constitutes viable conservation measures.

The other two objectives of the CBD are more complex than the conservation issues. Here, the CBD calls for sustainable utilisation of biological diversity and requires benefit from the utilisation of the biological component to be shared fairly and equitably between those countries providing the biological resources and those countries that are utilising the resources. As far as Malaysia is concerned, she is already practising sustainable management of her forest. Nonetheless, forest is only one of the components of terrestrial biological diversity for biological diversity also includes the marine environment. In addition, the sustainable management of marine resources requires greater resources, both financial, scientific and technological expertise. Therefore, as indicated in Chapter Seven, except for the gazette of 38 islands as marine parks, the sustainable management of marine resources has not been as advanced as management of forest resources.

While sustainable utilisation has been implemented in certain areas, the concept of a fair and equitable sharing of benefits is quite new to be well understood. The term "fair and equitable" is difficult for Malaysia to grasp, especially when she

has to deal with foreign multinational corporations, as shown by the aborted co-operation attempt between Malaysia and a foreign pharmaceutical firm. Unless there is international agreement on what is fair and equitable the parties concerned will experience much hassle as they attempts to define the item.

Summary

The control of the consumption of ODSs is not too complex for Malaysia to address. There are sufficient financial resources and technology transfer provided for under the MP and the problem is relatively straightforward with minimal behavioural changes needed from industries. Therefore, Malaysia has no difficulties to date in implementing the MP. This situation is demonstrated by the number of measures which have been carried out as illustrated in Chapter Five. The findings show that the implementation of the MP is quite successful, that Malaysia is confident that by the year 2000 she will be able to completely phase out CFCs. The year 2000 is very significant because Malaysia will be able to phase out her CFCs at the same time as the developed countries and 10 years ahead of other developing countries.

As regards the UNFCCC, reduction of GHGs' emissions in Malaysia has proved to be more complex than mitigating her ODSs' consumption. As indicated earlier, the implementation suffers from lack of information on activities that emit GHGs, diversity of targets (sources of emission), and industries' lack of state of the art technology to reduce greenhouse gases.

The three objectives of the CBD illustrate their own degree of complexity. Although the conservation and sustainable management of biological diversity itself does not require sophisticated methods, the complexity of the conservation is inherent in the enabling instruments such as the legislation needed to enforce the

conservation measures and financial resources. In addition, the huge diversity of biological components makes conservation effort difficult. As for the other two objectives, the absence of a clear and standardised meaning of the term "fair and equitable sharing", makes the issue even more complex.

Based on the explanations above, it can be acknowledged that the complexity of problems addressed by the MEAs affect their implementation process in Malaysia.

8.3. GOVERNMENTAL FACTORS AND IMPLEMENTING INSTRUMENTS

The complexity of the problems as discussed earlier is one of the categories of factors that affect the implementation process as illustrated in Chapter One. The other categories of factors are governmental factors and implementing instruments. The previous section demonstrated that the complexity of the problems affects the implementation process of the MEAs. Nevertheless, how far does the complexity of the problems affects the implementation of the agreements in Malaysia compared to the other factors? Regarding this issue, Weiss (1992) emphasised the credibility of institutions rather than the complexity of the problem. She believed that the success of MEAs is determined by the ability of the institutions to act through political and legal means. The role of institutions and their relationship with one another in the implementation process has received attention from many authors as demonstrated in Chapters One and Two. Hence, this section will compare the effects of governmental factors and the implementing instruments on the implementation of the three MEAs. Implementing instruments are made up of organisational capabilities, legal and regulative framework, and national development plans and policies. The governmental factors include perception, and governmental system and politics.

8.3.1 National Perception

Perception is the first element categorised under governmental factors believed to influence the implementation process of the MEAs. It can be seen from the previous chapters that Malaysia's perceptions of the three agreements are influenced by the way the subjects affect the country's interest, particularly her economic growth.

The ozone depleting substances, which are controlled by the MP, are important to the industrial sector. Hence, any effort to deprive forcefully Malaysia of these substances without giving due recognition to her impediment will be looked upon as trying to institute a barrier to fair-trading. Malaysia also believes that the developed countries are trying to create markets for their products used as alternatives to ODSs. At the same time, Malaysia also recognises that she cannot stop the phasing out of ODSs which will soon deprive her of necessary raw material. Therefore, taking into consideration her present and future interests, Malaysia continues to implement the Protocol. At the same time, she tries to gain as much benefit as she can in terms of financial assistance and technology transfer to counter any shortfall from the implementation activities.

When comparing the ODSs' issue, the emissions of GHGs has no visible and direct impact on the country's industrial interests. This perception is based on the fact that greenhouse gases are by-products of Malaysia's industries, especially her energy sector and agricultural practices, but are not vital for the continual growth of industries and the agricultural sector whereas, in the case of the MP, Malaysia depends on foreign supplies of ODSs for her industries and the MP can disrupt these supplies. Furthermore, the implementation of the UNFCCC is based on the principle of common but differentiated responsibility and developed countries are expected to

take the lead. However, efforts to reduce greenhouse gas emissions from her industries, in particular the power generation sector, would entail extra cost and curtail the momentum of her development. Therefore, without pressure to conform to any form of target and timetable, the national implementation of the UNFCCC lags behind that of the MP. Malaysia therefore considers there is no urgency for the country to carry out any voluntary measures and this has turned complacency into `inaction'. The immediate establishment of a National Climate Council might be seen as a visible measure. However, its establishment is more to consolidate the country's international position than to implement nationally the Convention. This belief is reflected by the fact that the Council has yet to come out with any visible and concrete plans, and strategies to address climate change issues.

In contrast to the other two agreements, the CBD does not have one single objective. Accordingly, the perception that the country has of the CBD differs with each objective. Malaysia has a considerable interest in conserving her biological resources although this is not for the sake of conservation alone. She has conserved some of her forest to ensure that there is a continual supply of timber and to protect important ecological functions such as water catchment areas. Concerning its objective on conservation, the Convention is looked upon as trying to exert international pressure on Malaysia to conserve her biological diversity. Yet, no compensation is promised for carrying out the conservation measures. This she perceives as ironic because she believes the conservation of biological resources as pursued by the CBD to be for global benefit. Hence, every opportunity she gets, Malaysia insists on financial support or some form of compensation if she is to conserve her biological diversity under this Convention. At the same time, she insists that she should share in any benefits that accrue from the use of her biological

resources. Therefore, compared to conservation measures, she is more active in pursuing the formulation of laws and regulations on fair and equitable sharing of benefits. She wants to ensure that the country benefits from any joint venture project, which utilises her biological resources for commercial purposes. Malaysia also perceives the CBD as an important instrument to protect the country from being used as a place to test and release genetically modified organisms. Therefore, she is in the forefront of the international effort to produce a biosafety protocol and at the same time actively seeking to produce a national biosafety regulation.

Summary

In summary, it can be seen that the perception Malaysia has of the agreements influences her responses in the implementation process. She perceives the MP as affecting her manufacturing industries but at the same time, providing her with the opportunity to gain financial and technological assistance in her ODSs' phase out programmes. Therefore, when seeking to implement the MP she also makes full use of any available assistance to reduce the impact on her industries. As regards UNFCCC, she does not take this matter too seriously because she of the opinion that the developed countries should be in the forefront leading the reduction in the emission of greenhouse gases. Furthermore, she perceives that the measures to reduce these gases will affect, in particular, her energy sector and consequently her development plans. Therefore, there are no concrete plans and strategies in place to reduce emission of greenhouse gases in the country. As for the CBD, her different perceptions of the three objectives have resulted in different progress levels. She is of the opinion that any conservation measures taken under the Convention which affect her interests must be adequately compensated. However,

there is no such compensation regime yet, hence, there are no conservation measures that can actually be said to have been taken under the CBD. Instead, there are vigorous efforts taken to ensure the implementation of a fair and equitable sharing of benefits and to produce a biosafety regulation, since she perceives these issues to be important to her national interests.

8.3.2 System of Government and Politics

As stated earlier, the system of government and the political nature of the subjects influence the implementation of the agreements. However, it is interesting to examine whether there are similarities or differences in the manner these two factors affect the three agreements. Here, it is necessary to recall that Malaysia has a federal system of government where land, agriculture and forests are placed under the jurisdiction of the state government whereas trade, commerce and industry are under federal government jurisdiction. Besides the very distinct federal and state lists, there are other related items which are under the jurisdiction of both governments, such as the protection of wild animals and wild birds, national parks and public health.

The Montreal Protocol as an international agreement, falls under the purview of the Federal Government and the production, import and export of ozone depleting substances also falls under the federal list. Although it is an environmental agreement, the implementation measures involve controlling industrial activities. Hence, there is minor involvement of states' agencies and most involvement centres around federal agencies such as the MITI, MHLC and MOSTE. With the states' involvement out of the way, the politics of the implementation of the MP lies between the MITI as the proponent of industrial growth and the MOSTE as the protector of

the environment. Nonetheless, with the interest of the industries being protected through the assistance of the MP Multilateral Fund, MITI has no objection to the phase out programmes. In addition, the ability of Malaysia to secure substantial amounts of funds from the Montreal Protocol funding mechanism has protected her industries' competitiveness because the extra cost added on to the products are being buffered by the MP funding mechanism. Therefore, ozone depleting substances have not generated sufficient political significance to initiate any conflict of interest between the MOSTE and the MITI, to affect the implementation of the MP.

Similarly, the UNFCCC as an international treaty also falls under the jurisdiction of Federal Government. The UNFCCC deals with global warming and the subject of scrutiny is the emissions of GHGs. Most emissions of GHGs are from power generation plants, industries, vehicles and waste disposal while some gases such as methane and nitrous oxide are also released through agricultural activities. Forest, on the one hand, is well known as a sink for carbon dioxide absorption; on the other hand, it emits high carbon dioxide levels through deforestation activities such as logging and during the conversion process to other land use. While the treaty itself is a federal responsibility, the national implementation of the UNFCCC sees both state and federal jurisdiction being invoked.

Federal jurisdiction is involved when the government deals with GHGs emissions from industries such as the power and transport sectors, whereas states' jurisdictions are activated when agricultural and forestry sectors are affected. Unfortunately, the constraints in the UNFCCC implementation not only involve state-federal confrontation but also between federal agencies as elaborated in Chapter Six. Therefore, compared with the implementation of the Montreal Protocol, which is an entirely federal affair, the implementation of the UNFCCC is more complicated

because it involves both the state and federal governments. While the federal government can control emissions from the industrial sector, it has no absolute control over logging activities, which release carbon dioxide into the atmosphere. Here, the states exert more influence because their control over land and forest is guaranteed under the Constitution.

The political nature of the climate change issue further complicates the already complex implementation of the UNFCCC. Whereas ozone-depleting substances are of no political significance to the states, the forests on the other hand contain highly marketable commodities that are unambiguously under the control of the state. In addition, the purview of the Minister of Primary Industries over forests and not the Minister of Science, Technology and the Environment who is responsible for biological diversity in the country also makes forests highly politicised even in the context of federal agencies alone.

The CBD is also under the responsibility of the Federal Government. At a glance, the implementation of the Convention seems to indicate that it only deals with an item under state jurisdiction. The fact that biological diversity is not listed under the federal or the state list does not make it an `unwanted' item. Instead, it is automatically placed under states' jurisdiction by virtue of the residual power[1] provided under the Constitution. Nonetheless, when biological diversity is detailed into individual components such as forest, agriculture and wildlife, there is mixed jurisdiction of federal and state. Agriculture and forest fall under the states' jurisdictions, whereas wild animals fall under the concurrent list of which both the

1 Article 77. Residual power of legislation: The legislature of a state shall have a power to make law with respect to any matter not enumerated in any of the Lists set out in the Ninth Schedule, not being a matter in respect of which Parliament has power to make laws.

federal and states have power. In addition, issues such as intellectual property rights and transfer of technology are likely to involve federal intervention.

The interaction of federal and state jurisdiction regarding the implementation of the CBD reflect the similar problems and issues facing the UNFCCC. In addition, states' involvement with foreign entities as in the case of the state of Sarawak and the National Cancer Institute (USA), further complicate implementation processes. Therefore, compared with the other two agreements, the CBD demonstrates that the more the states are involved in an international environmental agreement the more difficult and complicated the implementation measures will be in Malaysia. The political significance of biological diversity to the state and to the MPI and the MoA as a revenue generating resource has transformed the Convention into the most controversial among the three MEAs. Therefore, the DG of the DoE stated that in order to persuade the states of the need to implement the CBD, it was necessary for the federal government to diplomatically convince states' governments that it was not a matter of just preserving the forest simply for the sake of preserving it, but because its biological diversity was beneficial for everyday life, for example, as resources for traditional and modern medicine, and the sustainability of water supply (Rosnani, 1998).

Summary

The arguments above clearly show that the federal system of government and politics have great influence over the three MEAs. When the implementation of the agreements touches upon both the federal and states' jurisdiction, the implementation will become more complicated. This is demonstrated in the implementation of the MP, which is only slightly affected because it involves only

federal jurisdiction. The implementation of the UNFCCC and the CBD is greatly affected because these agreements infringe on both state and federal jurisdiction. In addition, the political significance of the forest to both the state and federal agencies as a revenue generating resource is also detrimental to the smooth implementation of the UNFCCC and the CBD.

8.3.3 Policy Formulation

The formulation of policies to implement the three agreements differs greatly. Malaysia became a party to the Montreal Protocol in 1989 and her involvement in the global agreement was consequently addressed in the Sixth MP (1991-1995) and later in the 7th MP (1996-2000). However, it was not mentioned in the 2nd Industrial Master Plan (1996-2005) although ODSs are important components in the electronic, automobile, refrigeration, aerosol propellants and halon industries. Moreover, apart from the development plan, there are no national policies formulated to control ODSs' consumption signifying the narrow regard with which this issue is held in term of the overall development of the country.

In contrast, despite the fact that Malaysia only ratified the UNFCCC in 1994, her 6th Malaysia Plan had already highlighted the issue of carbon dioxide emission. Nonetheless, although the 7thMP highlighted the effect of JI on Malaysia, it did not provide further direction for the implementation of the UNFCCC.

The UNFCCC therefore suffers the same fate as the MP in that there is no national policy enacted to control GHGs' emissions. Nonetheless, in spite of this similarity, it differs from the MP due to the fact that other policies such as the Forestry Policy and Agricultural Policy have contributed to the achievement of the objectives of the UNFCCC. However, the effects of these policies have been

negated by the policy taken by the MECM to utilise coal as fuel source. The increased usage of coal as fuel in either power generation or the industrial sector, such as in the cement industries, will directly increase the emissions of GHGs.

As for the CBD, Malaysia became a party to the Convention on Biological Diversity in 1994. Biological diversity as a terminology was only categorically mentioned in the 6thMP. However, as early as the 3rdMP (1976-1980) various aspects of the Convention, such as genetic erosion and conservation were already in the mainstream of national development plans. Furthermore, recent development has seen the integration of biological diversity in various policies such as the Forestry Policy and Agricultural Policy. The National Policy on Biological Diversity looks at biodiversity in a holistic manner covering economic, security, environmental stability, scientific and biosafety aspect. Thus, in the case of the CBD, policy formulation to address biological issues at the national level does not derive its momentum from the MEA, instead, the CBD has acted as a catalyst to enhance national policy formulation.

It is now necessary to examine the need to reconcile national policies with the objectives and the implementation of the three multilateral environmental agreements. It was shown that the problem of reconciling national policies with international environment co-operation is exacerbated when international commitments and national policies conflict or have the potential to conflict. This is always difficult to address since there are instances where there are already national policies in existence for some issues, while for others the MEAs are addressing new frontiers. For instance, Chapter Six has shown that except for the MOSTE other relevant ministries have not attached due importance to GHGs' emissions and hence have not considered climate change as an issue in their agencies' policy-making

process. The MECM and DoE for instance, has looked into environmental pollution from fossil fuel in the context of other pollutants such as sulphur emission and not greenhouse gases emissions.

The MPI in the implementation of reforestation and afforestation programmes looks at the sustainability of timber supply and ecological stability. The MoT looks at the various modes of transportation as ways to ease congestion in the cities. None of these agencies have considered these measures as ways to reduce emissions of GHGs or to expand the carbon dioxide sink. Nonetheless, the results contributed to the reduction of GHGs emissions and an expansion of the carbon dioxide sink. Moreover, it might be true that without a place on the political agenda, GHGs' mitigation will not be in the policy of these ministries. However, does this matter when the result of some of the measures such as reforestation and new modes of transportation (light rail transit and commuter train) have reduced GHGs emissions? Therefore, even if these Ministries do not have the climate change issue on their agendas, the MOSTE as the lead agency through the National Climate Council should be able to identify policies which, when pursued by the Ministries concerned will indirectly support the objectives of the UNFCCC. Through such an approach the Council will not only achieve its function but also avoid any direct confrontation with the other Ministries.

As for the implementation of the MP, there seems to have been reconciliation between national policies and international commitment as reflected in the drastic change in policy from ODSs' consumption to usage of alternatives. However, such a change cannot be attributed solely to the need for reconciliation, rather it is more for the future benefit of the industries concerned.

In the implementation of the CBD, there is no indication that there are moves to reconcile any national policies with international commitments, or, perhaps there is nothing to reconcile since the conservation measures required by the CBD are measures that are also required by the national agenda. The same goes for the commitment to the sustainable utilisation of biological resources.

Summary

The MP has not received great coverage in the development plans and the industrial master plan. There is also no national policy on the ozone layer. Furthermore, although ODSs are crucial for the industrial sector, the narrow coverage that the subject commands does not necessitate the formulation of a national policy. A micro level policy at the Ministry level is adequate to address this issue. Similarly, the UNFCCC, which has a wider coverage than the MP also suffers the same fate with no national policy in place. Nonetheless, other national policies such as the forestry policy indirectly control the emissions of greenhouse gases, especially carbon dioxide release. In contrast with the other two MEAs, there is a national policy on biological diversity to provide direction for the implementation of the CBD. However, the national policy owes its formulation to the fact that biological diversity had already been addressed in the national development plans and the CBD only enhances its formulation.

8.3.4 Organisation

This section seeks to compare the effect of organisation on the implementation of the three MEAs. The section is divided into two sub-sections. First, it will compare the organisational structures that are set up to address the implementation of each of the three MEAs. Second, it will discuss the role of the policy makers within the organisational structures in the implementation of the agreements.

8.3.4.1Organisational Structures

The MOSTE is given the responsibilities as the lead agency to negotiate and ensure the implementation of the three agreements. Consequently, the approach that it has taken to ensure the national implementation of the agreements has followed a similar pattern. The first step that it took was to establish National Steering Committees followed by the creation of Technical Committees.

The National Steering Committee for the MP is chaired by the Secretary General of the MOSTE but the Secretariat for the Committee is the DoE. The DoE has not only become the Secretariat but also has a structured unit to manage the Protocol. In addition, the DG of the Department is also the Chairperson for the Technical Committee with the Department as the Secretariat.

The DoE is supposed to be an implementing agency while the MOSTE provides the policy directions. However, the DoE has been given a more independent role to exercise control over the policy regarding the implementation of the MP. As an enforcement agency backed with the necessary Act of Parliament to carry out its function, the DoE is able to implement mitigation measures to reduce consumption of ozone deleting substances and to enforce the relevant legislation on

ODSs. In addition, as the technical organisation responsible for MP implementation, the DoE is able to play its part effectively by becoming the Secretariat to the Technical Committee.

The MOSTE also established a National Committee to ensure the national implementation of the UNFCCC. It appointed the MSD to be the Secretariat of the National Committee with the Secretary General of MOSTE presiding as chairman. The MSD is also the Secretariat of the Technical Committees and the DG or Deputy DG of the MSD chaired the TCs. However, the MSD is not an enforcement agency and hence is without any force of law. It is a service-oriented department. Its mission among others is to observe and understand the weather and climate, and to provide meteorological, seismological and physical oceanographic services in support of national social-economic activities and development. Hence, the MSD's role is only as the Secretariat of the National Climate Council meetings. Moreover, the MSD does not have a dedicated unit to implement the Convention. Furthermore, all policies on climate change are decided by the CEMD with advice from the MSD. The organisational set up for the implementation of the UNFCCC suffers further setback because both the technical committees are also placed under the MSD. This move has completely `sidelined' the Ministry of Energy, Communications and Multimedia, and the Ministry of Primary Industries. Both these Ministries are the main players in the emission of greenhouse gases through their jurisdiction over power generation and forest respectively. Hence, this arrangement is completely opposite to the organisational set up for the implementation of the MP.

The implementation for the CBD is co-ordinated by the CEMD of the MOSTE. The CEMD acts as the Secretariat of the National Steering Committee which is chaired by the Secretary General of the MOSTE. The CEMD also formulates

policies, strategies, programmes and plans of action. Although the CEMD is a dedicated division with permanent staffing, its function is not only directed toward ensuring the implementation of the CBD but also the implementation of various other agreements together with other environmental issues. It should be emphasised that the CEMD is not responsible for carrying out the practical implementation of all the measures because it does not have legal authority over all biological issues. However through the DWNP, the MOSTE is able to ensure that conservation of wildlife (flora and fauna) as one aspect of the CBD is carried out.

The Technical Committee for the implementation of the CBD is chaired by the DG of the FRIM. The Biodiversity Division of the FRIM is the Secretariat of the TC. The FRIM is under the jurisdiction of the MPI. This organisational set up is completely different from the organisational set up for the implementation of the previous agreements. Here the MOSTE has identified a department, which is not under its jurisdiction, to be the TC. The advantage of this arrangement is that the MPI as the Ministry in charge of forest issues, is brought into the mainstream implementation of the CBD. This arrangement is more similar to the arrangement made for the MP than for the UNFCCC.

8.3.4.2 The Policy Makers

As stated in Chapter Two, Caldwell (1988) argued that one of the reasons for the failure to implement MEAs is that the officials and organisations which are involved in the international negotiation differ from those who implement the MEAs locally. Related to this, Lane (1995) pointed out that the actors who decide on a policy are different from the actors responsible for the implementation of that policy. The findings of this study regarding the representation of organisations and officials

are as follows: in the case of the MP and the CBD, the negotiators and implementors are almost the same officials and from the same organisations; whereas for the UNFCCC, the officials who participated in the negotiations were all from the MOFA and the MOSTE and no officials from the MPI, MECM or MOT were present. The latter, are, in fact, very much needed to implement measures to mitigate GHGs emissions. Hence, the UNFCCC represents a situation where the implementors are left out from the negotiation process while both the CBD and the MP represent a situation where the negotiators and the implementors are made up of the same officials.

The absence of the implementors in the negotiating team did not mean that they were left out of the policy making process and had to carry out the implementation measures without being a party to it. Here Malaysia circumvented such an impediment by establishing National Steering Committees (NSCs) which bring together the negotiators and implementors.

The NSCs are supposed to act as conduits between the negotiators and the implementors. Before the negotiators go to the CoP the committees are expected to provide the direction and mandate for negotiation. This is done through forwarding to the Cabinet for endorsement the list of members of the delegation and the issues to be discussed. After the CoP, the Cabinet is again informed of the outcomes and the NSCs then channel the decisions for implementation, thus making sure that there is no gap between what the negotiator has negotiated and the government interest. Hence, in the implementation of the UNFCCC, creating a NSC involves those implementors who were not in the original negotiating team in the policy-making process. Although the implementors were not in the original negotiating team, they are brought together through the NSC and hence become part of the policy-making

mechanism. Thus, the NSC serves as a forum to `straighten things out' and ensure the implementation of the MEAs to proceed. Therefore, in the implementation of the three MEAs in the Malaysian context the negotiators are also the implementors.

However, does the lack of representation of the implementors in the negotiations really have an impact on the implementation of the three agreements as contended by Caldwell? In the case of the UNFCCC, if Caldwell's assertion is right, then the implementation process will suffer since the negotiators of the UNFCCC are not those who carry out the implementation measures and the implementors are left out of the negotiation process. As for the MP and the CBD, the implementation processes of these agreements will be expected to progress since the negotiators and the implementors are from similar agencies.

However, as discussed earlier, in all three agreements, the officials who are involved in the negotiations are also involved in the implementation of the agreements. If not, as in the case of the UNFCCC, the implementors are brought together with the negotiators in the NSC. Hence, the implementors are not in actual fact separated from the negotiating team. Nonetheless, the role of the NSC in the implementation of the UNFCCC is becoming more important because there are negative perceptions of the negotiators. It has been noted that those negotiators who attend the CoP Meetings failed to come back and deliver all the important decisions for follow up action (Rosnani, 1998).

Now we will analyse the implementation of the CBD and the MP where both have negotiators and implementors in the negotiating team. The success of the implementation of the MP does not point to the fact that this is dependent on the negotiating team having both negotiators and implementors. The implementation of the CBD is similar. The CBD in particular shows that the real constraint is not

exclusion of officers involved in the implementation measure from the negotiation party, but whether they will proceed to implement decisions that might hinder their efforts to achieve their organisational agenda. For instance, when a substantial area of forest is gazetted for conservation purposes under the National Parks Act, 1984, this means that the MOSTE will have increased jurisdiction over natural resources which in turn will reduce the MPI's sources of `power'. It does not therefore matter whether the officers are involved in the negotiating team or not, what matters here is whether the top management of the Ministry concerned regard such measures as usurping their power or not. The complexity increases when it comes to involve states' land because excision not only reduces the state's jurisdiction over the land matters but also its income. Hence, all are very sensitive matters and require a lot of concessions between stakeholders.

Summary

The effect of organisational capabilities on the implementation of the three MEAs can be attributed to the organisational setting and policy makers in the organisations. Although all three MEAs are under the jurisdiction of the MOSTE, the secretariats for the Agreements are located in different agencies. The DoE is the secretariat for the MP, the MSD for the UNFCCC and the CEMD for the CBD. Nonetheless, the technical committees for the MP and the CBD are situated within organisations that are related to the agencies involved in the implementation of the MEAs while for the UNFCCC, the technical committee remains under the auspices of the MSD.

The comparison made between the three agreements illustrates the importance of the organisational set-up in the implementation of the MEAs. The National Steering Committees make it possible for negotiators and implementors of the agreements to meet and consolidate their positions. The organisational structures that are set-up also highlight another important point. The misrepresentation of officials in the negotiating team is not important since they can be called to be members of the NSCs or Technical Committees. What is important is whether the officials in the different agencies are willing to sacrifice their agencies' objectives to fulfil the objectives of the MOSTE as the environmental agency. It seems that the officials are more keen to protect their agencies interests as shown by their reluctance to release forest for gazetting as national parks or wildlife sanctuaries under the jurisdiction of the MOSTE.

8.3.5 Legislative Framework

The legislative frameworks, which implement the MEAs, are at different stages of development. The acts and regulations for the control of ozone depleting substances were formulated after Malaysia became a party. Most of the Acts and regulations for the implementation of the Montreal Protocol are derived and amended from existing laws and regulations. For example, all the three orders and regulations[2] which prohibit the use of CFCs and halons are enacted under the Environmental Quality Act, 1974 and the Customs Duty (Amendment)(No.35) Order 1989 was made under the parent Act, Customs Act 1976. The implementation of the laws and regulations does not encounter resistance from the states and the industrial

2 Environmental Quality (Prohibition on the Use of CFC and other gases as propellants and blowing agents) Order, 1993, Environmental Quality (Refrigerant Management) Regulations, 1999 and Environmental Quality (Halon Management) Regulations, 1999.

sector because the MP does not encroach on the states' jurisdiction and the industries are well represented in the main stream of decision-making.

As for the implementation of the UNFCCC, there are no specific measures carried out to mitigate GHGs' emissions. Consequently, with no measures to enforce, no specific laws and regulations are purportedly formulated or enacted. Nonetheless, the absence of specific laws and regulation does not really constitute a constraint to the implementation of the UNFCCC since there are various other Acts and regulations that are already in place if there is a need to utilise them. The emissions of greenhouse gases from non-industrial activities are indirectly controlled through the enforcement of the National Forestry Act (1984) that prohibits logging in protected areas. The Protection of Wildlife Act (1972) which prohibits the cutting or disturbance of vegetation in the wildlife reserves and sanctuaries is another means to control carbon dioxide emission. The Forestry Act (1984), National Parks Act (1980), and the Protection of Wildlife Act (1972) in their own ways can be used to protect and increase the carbon dioxide sink. Furthermore, emissions of greenhouse gases from the industrial sector, power generation plants, transport sector and waste disposal can be controlled through the EQA (1974). However, there is much to be done to the Environmental Quality Act (1974) if it is to be used effectively as a control mechanism. For instance, standard and level of emission as well as the enforcement procedure need to be set. This requires further research and study.

The objectives of the CBD can be achieved through several Acts and regulations which were enacted before the country became a party to the Convention. The conservation measures required by the CBD are assumed to be easily pursued because the relevant acts and regulation are already in place such as the National Parks Act (1980), the Forestry Act (1984) and the Protection of Wildlife

Act (1972). However, this has not happened. As regards those areas already protected under the federal law, conservation activities are carried out without many constraints; whereas to bring those forests, which are under the states' jurisdiction, into the existing conservation law is a mammoth task as explained in Chapter Seven. The legislation on conservation is well developed but the legislation on fair and equitable sharing of benefit is not fully developed. As regards regulation of genetically modified organisms, the Environment Quality Act 1974 has in place the necessary provision but this has yet to be invoked. On the other hand, the Plant Quarantine Regulation 1981 under the Ministry of Agriculture was used to approve the importation of the Monsanto Soybean (a GMO) in 1996. Nevertheless, there are on-going efforts to introduce new legislation on the control of GMOs.

Summary

The comparative analysis of the legislative framework for the implementation of the three MEAs reflected three scenarios. As regards the implementation of the MP, there are well-established laws and regulations to enforce the implementation measures. As for the UNFCCC, there are no laws and regulations since there are no activities to mitigate GHGs' emissions. However, other Acts such as the Forestry Act (1984) and the Protection of Wildlife Act (1972), indirectly control the emission of carbon dioxide by limiting deforestation activities. With regard to the CBD, there are already in place, several laws and regulations to enforce conservation measures. However, in other areas such as to ensure fair and equitable sharing of benefits and the control of GMOs, there are no laws and regulations to implement the CBD objectives.

The situations above also indicate that the mere presence of national laws is insufficient to ensure the smooth implementation of MEAs. The presence of the law just translates political commitment into realities. For a federation like Malaysia, it is crucial that legislation is enforceable on the states. If the applicability of the law is subjected to further negotiation and persuasion it is doubtful whether the law will ever be implemented. Hence, incidents like the National Parks Act, 1980 and the Protection of Wildlife Act, 1972 (where no new land has been gazetted under these Acts) will keep on recurring. The Customs Act, 1976 and the Environmental Quality Act, 1974 are examples of legislation that are easily implemented without worrying about non-compliance from the states.

The analysis has also indicated that several laws seem able to satisfy more than one MEA. The Forestry Act (1984), the Protection of Wildlife Act (1972), and the National Parks Act (1984) are able to implement the objectives of the UNFCCC and the CBD, whereas the Environmental Quality Act (1974) can be used to address the objectives of all three MEAs.

8.4 IMPACTS OF IMPLEMENTATION MEASURES

It was mentioned in Chapter One that Sabatier and Mazmanian (1981) divided actual impacts into intended and unintended impacts. The reduction of ODSs and GHGs emissions is the intended impact from the implementation of the MP and the UNFCC whereas the unintended impacts are the increase cost suffered by the industries which cast shadows over the intended impacts. Malaysia contributes handsomely towards the protection of the ozone layer and the climate. However, in so doing, she experiences side effects or unintended impacts in the form of additional cost to her industries.

As regards the implementation of the MP, the authorities are anxious about the side effects of the implementation on industrial activities. Therefore, the main concern is to help the relevant industries acquire the alternatives or substitutes to ODSs and to provide them with the financial and technological assistance to move to ODSs-free technology. Hence, the impacts are heavily inclined on industrial growth, particularly in the refrigeration and electronic industries. In contrast, the impact of national ODSs' reduction on the global environment is small. Data provided by the UNEP estimated that Malaysia's consumption of CFCs in 1998 was only about 0.01% of all developing countries' consumption (UNEP, 23/11/1998). Hence, we can see that the national consumption of ODSs is small compared to that of the other developing countries. However, the impacts of the implementation of the MP on the manufacturing industries, particularly the two sectors mentioned above, are significant as indicated in Chapter Five. The industries are reported to incur a cost of at least US$270 millions to convert to ODSs-free technology. Therefore, Malaysia hopes to receive sufficient funding and will strongly negotiate for further funding for the phase out programme in the next CoP (Aminah, 1999). This is to absorb some of the incurred cost.

Another unintended impact is generated by the usage of alternatives such as HCFCs (an alternative for CFCs). Although HCFCs are non-ODSs, they are greenhouse gases and contribute to the warming of the earth. Hence, industries, which have switched to using these substances, will in the near future be required to change to other substances. Therefore, this unintended impact is not one that is appreciated by Malaysia since her industries have invested substantial amount of money in HCFCs' technology.

As regards the implementation of the UNFCCC, there is no visible impact on the country. This is because in contrast to the MP, the country has not made any commitment to implement measures to mitigate GHGs' emissions. Hence, as iterated in Chapter Six, the discussion will focus on the potential impact of the implementation measures on Malaysia's development. The first impact would be on the energy sector. As illustrated in Chapter Six, the country is embarking on more coal fired power generation plants.

Therefore any future regime, which is likely to impose reduction targets of greenhouse gases, would inevitably require local industries to acquire up-to-date technology and hence an increase in expenditure. This will in turn result in higher costs for electricity production and affect those manufacturing industries which depend heavily on electricity for their production. Other than manufacturing industries, timber based industries can also be affected if the conservation measures resulted in the reduction of timber production.

Agricultural activities need to utilise non-forest land, practise more intensive farming and new and modern agricultural practise to support food production and other agricultural produce, to keep forest for conservation purposes. In addition, traditional agricultural practices need to be changed. Fertilisers known to release a greenhouse gas (nitrous oxide) may need to be substituted with other fertilisers. These practices might incur additional expenditure on the part of the farmers.

Therefore, compared to the implementation of the MP whose unintended impact affects only specific industries, the impact of the UNFCCC implementation covers a wider sphere. The national implementation of the UNFCCC has the potential to have a significant impact on the forest sector, energy sector and the agricultural sector compared to her very small emissions of greenhouse gases.

According to existing data, Malaysia's contribution to greenhouse gases is only 0.1% of the total global emission. The timber industry, which is bound to be affected if conservation measures are taken to the extreme limit, contributed RM14.2 billion or 7% of the country's export earnings and provided about 250,000 employment opportunities or 3% of the country's labour force in 1998 (MPI, 1999).

The implementation of the CBD, on the other hand, should not theoretically exhibit any unintended impacts because conservation and sustainable management of forest are not new measures. Both were already in place with or without the CBD. The situation surrounding the implementation of the CBD therefore differ from that surrounding the MP since no measures to reduce ODSs existed before the MP came into being and also it differ from the implementation of UNFCCC which have no measures directly instituted to reduce GHGs emission. Nonetheless, the first unintended impact of the implementation of the CBD can be seen in the form of attitude changes by the agencies concerned. Before the MOSTE was made the agency responsible for all matters relating to biological diversity, issues pertaining biological diversity were addressed by different agencies. These agencies expressed no great concern about the conservation of biological diversity because there was very little pressure on them to conserve the biodiversity. However, when the management of biological diversity came under the auspices of the MOSTE, these agencies feared that previous inactivity on their part would leave them with less control over these resources. Therefore, these agencies, in particular the MPI, are now very conscious of, and anxious about the steps taken by the MOSTE and hence take a more active interest in conservation measures.

Secondly, the CBD is in a unique position because there were already national efforts to conserve biological diversity even before the CBD came into force. Since conservation measures are an on-going process, with or without the CBD, no issue of unintended impact should arise. However, the objective of the CBD to ensure fair and equitable sharing of benefit has given rise to a somewhat unwelcome and unintended impact. As illustrated in Chapter Seven, the authorities in their enthusiasm to achieve the above objective could well drive away potential scientific collaboration through their strict formulation of and adherence to any collaboration agreement.

Finally, the impacts illustrated above of the three agreements demonstrate the interconnection between the three agreements. The MP is linked to the UNFCCC through the control of HCFCs, which are non-ODSs but greenhouse gases. The UNFCCC in turn, connected to the CBD through forest (a carbon dioxide sink). Forest is a component of biological diversity. Hence, by conserving the forest, both the CBD and the UNFCCC are satisfied, although for different reasons. Therefore, it is important that policy makers understand this inter phase clearly so that any programmes to bring about the implementation of one of these agreements does not run counter to the objectives of the other two.

8.5 CONCLUSION

This chapter has attempted to compare the effect of certain factors (tractability of problems, governmental factors and implementing instruments) on the implementation of the three MEAs. The findings have illustrated that each of the factors initiates different reactions in the implementation of the agreements. Firstly, it was shown that the difficulties implementing a MEA increase with the complexity of

the problems that the MEA addresses. The implementation of the CBD in Malaysia is more difficult than the implementation of the UNFCCC because the issues that it addresses, such as conservation, fair and equitable sharing of benefits and biosafety are more complex than the mitigation of greenhouse gases emissions. On the other hand, the implementation of the UNFCCC is more difficult than the implementation of the MP because the mitigation of GHGs emissions is more complex than the reduction of ODSs' consumption. The complexity of the problems, as illustrated in the chapter, is subject to diversity of targets, availability of financial resources and technology, and the obscurity of objectives of the MEAs.

Secondly, Malaysia's perceptions of the MEAs affect their implementations in different ways. Regarding the MP, the government reacted quickly because it perceived that the implementation of the MP would affect Malaysia's industries and at the same time provide her with valuable financial and technological assistance. Hence, by taking quick action, the country is able to benefit from the assistance provided by the MP and at the same time reduce the negative impact of the implementation of the MP on her industries. As for the UNFCCC, the implementation is very slow because Malaysia is of the opinion that the developed countries should take the lead and, as a developing country, Malaysia need not at present, be actively taking mitigation measures. With regard to the CBD, Malaysia holds the belief that the international community should adequately compensate for the implementation of the conservation measures required by the CBD. However, no conservation measures have actually been taken under the auspices of the Convention. Instead, on-going conservation measures are carried out under national environmental protection measures. Nonetheless, Malaysia has undertaken vigorous efforts to

ensure fair and equitable sharing of benefits and to implement the biosafety issue, since she perceives these issues are important to the national interest.

Thirdly, the governmental system acts as a constraint to the implementation of an MEA when the MEA involves the jurisdictions of both federal and state governments. The implementations of the CBD and the UNFCCC which involve both the state and federal jurisdictions, are therefore more constrained than the implementation of the MP. Moreover, the CBD and UNFCCC address environmental issues which are politically significant to the federal and state agencies and this further complicates the implementation process because they attract the interests of many more agencies. As more agencies become involved, the process becomes more complex due to the many linkages present as indicated by Pressman and Wildavsky (1973). As for the MP, fewer agencies are involved and it has been shown that there is less complication in its implementation.

Fourthly, there are no national policies specifically established to address the implementations of the MP and the UNFCCC. The implementation of the MP is guided by a micro policy at a Ministry level whereas for the implementation of the UNFCCC, there is no policy at present to mitigate greenhouse gases emissions. As regards the implementation of the CBD, a national policy is in place to provide the overall direction, strategies and plans of action. However, the absence of specific national policies does not seem at present to seriously affect the implementation of the MP or the UNFCCC.

Fifthly, the comparison indicates that the establishment of the National Committees is important to the implementation of all three MEAs because the Committees provide a platform for the negotiators and implementors to meet and consolidate their positions. However, the analysis also indicates that although the

Committees provide the opportunity for the implementors to become involved in the decision making process, the willingness of the implementors to translate the policies into actions depends on how important the measures are and how they affect their agencies interest.

The comparative analysis also indicates that the implementation of the MP and CBD is enhanced by the presence of legislation to enforce ODSs phase out and conservation measures. As regard the implementation of UNFCCC there are no law and regulation to mitigate GHGs' emissions since there are no GHGs' reduction activities. However, various other laws such as the Forestry Act, 1984 and National Parks Act, 1980 indirectly control GHGs' emissions through the protection of forests. In addition, the study has also shown that law such as the Environmental Quality Act, 1974 can be used to satisfy the objective of all three MEAs.

Finally, the findings demonstrate that the implementation of some measures affect Malaysia in different ways. For instance, the measures to protect the forest for its capacity as a carbon dioxide sink and to preserve its biological resources have the potential to deprive the country of her valuable export items. Similarly, the measures to protect the ozone layer are undertaken at the expense of the certain industries using ODSs as their raw materials, have incurred cost of RM270 million through necessary changes in manufacturing processes. The findings therefore reflect the intricacy and inter linkages that need to be considered and addressed when implementing the MEAs.

CHAPTER NINE

IMPLEMENTATION AND THE IMPACTS

9.1 INTRODUCTION

This chapter concludes the study. It addresses the five objectives, highlighted in Chapter One, which were as follows:

i. To identify the implementation measures that Malaysia has undertaken.

ii. To determine the factors that affect the implementation process.

iii. To examine the impact of the implementation of the MEAs on Malaysia's environmental management and development.

iv. To refine and develop environmental policy analysis.

v. To assess Malaysia's commitments to the MEAs and make recommendations for enhanced implementation of MEAs in Malaysia.

During the process of concluding the study, the chapter will discuss the findings vis-à-vis the implementation theories in Chapters One and Two. The discussion also seeks to find out whether they are sufficiently comparable to allow the development of analytic schemes for multilateral agreement implementation that are useful in directing theoretical and empirical work. Hence, this will satisfy the study's fourth objective mentioned above.

The chapter is structured as follows. Firstly, it summarises the measures taken by Malaysia as a party to the MEAs, thus achieving the first objective. Secondly, it summarises the factors that affect the implementation of the MEAs hence accomplishing the second objective. The chapter will then proceed to analyse

the impacts of the implementation of the agreements on the country, thus accomplishing objective three. Fourthly, it analyses the various implementation theories vis-à-vis the findings. Lastly, it assesses the country's commitments towards multilateral environmental co-operation, concludes the overall study and proposes recommendations to enhance the implementation of MEAs in Malaysia, thus achieving the last objective.

We would like to recall that the implementation framework for the analysis of a MEA categorised the factors believed to affect implementation of the multilateral environmental agreements into three broad categories, namely, governmental factor, implementing instruments and the agreement structure (see Figure 1.1 page 30). The impacts of the implementation measures that the present study has focused on have been environmental management, development and industrial factors.

The three MEAs used to represent the many MEAs enforced in Malaysia have been the Montreal Protocol on Substances that deplete the Ozone Layer (MP), the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD).

The sources of information used in the analysis have been derived from primary sources, particularly administrative records such as official minutes, memoranda, meeting proceedings, speeches, reports of the Conference of Parties and interviews with civil servants. The interviews conducted were of a semi-structured type where interviewees are asked directly about their involvement in the implementation of the multilateral environmental agreements and their views regarding the implementation. In the Malaysian context, the subject under study is so specialised and the implementation of the MEAs of concern to only a few agencies, that only a small number of civil servants are involved and therefore were

interviewed. Secondary sources also formed important resources to provide information particularly on the country's participation in international negotiations.

9.2 SUMMARY OF THE FINDINGS

This section summarises the measures taken by the country, the factors that affect the implementation of the MEAs and the impact of the implementation on the country.

9.2.1 Measures Taken

The Montreal Protocol on Substances that Deplete the Ozone Layer, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity individually urged country Parties to carry out their obligations within two contexts. Firstly, country Parties are required to formulate policies, strategies, programmes, plans of actions and legislation to facilitate the implementation of the objectives of the respective MEAs. Secondly, the country parties are requested to carry out physical measures to implement the objectives of the agreements. For example, undertaking projects to phase out the usage of ODSs, to establish protected areas to conserve biological diversity, to reduce emission of greenhouse gases and to establish the relevant organisations necessary. This section will summarise the measures taken by Malaysia.

9.2.1.1 Projects and Programmes

The implementation of the MP seems to be more advanced than the other two MEAs. Several projects and programmes have been carried out such as ODSs phase out projects under the multilateral fund and the creation of the Halon bank, due to two factors as follow. Firstly, historically the MP was implemented much

earlier than the other two agreements. Secondly, the scope of implementation is much more focused and this allows specific projects to be carried out easily.

The implementation of the UNFCCC does not demonstrate any explicit programme undertaken by MOSTE to reduce greenhouse gases, only piggy riding on other programmes such as reforestation programmes and project on "reduce impact logging", which are meant to achieve other objectives e.g. the sustainable supply of timber. At present there is no direct financial support given to Malaysia to carry out programmes to mitigate greenhouse gases emissions. Instead, joint venture projects under AIJ between a local company in Sarawak and the NEES of the USA and the FACE foundation of the Netherlands are the only projects funded by foreign countries to reduce greenhouse gases emissions and expand the carbon dioxide sink.

As for biological diversity, there are already programmes, such as the establishment of national parks and wildlife sanctuaries, which address the conservation issue. However, the programmes are not undertaken to fulfil the Convention's objectives instead, their existence is to fulfil national needs. Hence, under the CBD there are no physical projects presently undertaken to fulfil its conservation objectives. However, with regard to its implementation, it is difficult to distinguish between national inspiration and international commitment since in implementing her national measures, Malaysia also satisfies her international obligations.

9.2.1.2 Organisational Structuring

As illustrated in earlier chapters, the first measure that the government embarked upon was the establishment of several committees for each of the MEAs. The committees are National Steering Committees and their Technical Committees. The Committees formulate, co-ordinate and monitor the various policies,

programmes and action plans. However, except for the implementation of the MP, where a unit at the DoE has been established for the specific purpose of managing the implementation of the MP, the Ozone Protection Unit, the other two MEAs do not have structured units specifically to manage their implementation. Although in the implementation of the CBD there is no organisation which resembles the Ozone Protection Unit, there is nevertheless the Directorate of Biotechnology with permanent manpower to address biotechnology issues. The Genetic Modification Advisory Committee also has a more or less permanent manpower to advise the government on biosafety issues.

9.2.1.3 Policy Formulation

The findings have indicated that the government has not included policy statements in the national development plans to guide the implementation of the MP, the UNFCCC and the CBD. Furthermore, there are also no national policies to provide direction for the implementation of the MP and the UNFCCC. However, there is a National Policy on Biological Diversity.

Despite the fact that the CBD was not explicitly identified in the national development plans, various elements of the agreement such as intellectual property rights and genetic erosion were already highlighted as early as the Third and in subsequent Malaysia Plans.

Nonetheless, at the micro level the findings have demonstrated that there are various policy statement which guide the implementation of the MP, although for the UNFCCC there are no visible policy statements. However, the interesting feature regarding the implementation of the UNFCCC is that there are many other sectoral policies which, when pursued, inevitably lead to the reduction of greenhouse gases emissions, such as national policies on forestry and biological diversity.

The implementation of the CBD, as stated earlier, saw visible action on the part of the authorities to establish a National Policy on Biological Diversity. In addition, policies such as the National Forestry Policy and the National Agriculture Policy have explicitly addressed the importance of biological diversity and the need to conserve it.

9.2.1.4. Legal and Regulative Framework

The findings have revealed that several new laws and regulations have been formulated and existing laws amended to support the ODSs' phase out measures. Laws have been enforced to reduce the import of controlled substances, to stop the usage of CFCs in manufacturing sectors and to replace ODSs in existing appliances and facilities. However, most of the laws and regulations to implement the MP are trade related, such as the Customs Act 1974, import duty reduction and the MIDA Administrative Order. There are only three legislation which have been made under the Environmental Quality Act 1974.

As for the UNFCCC, there is no new legislation nor has any existing Act been amended to fulfil the country's commitment to the Convention.

As regards the implementation of the CBD, there are existing laws and regulations to promote conservation measures which are meant for local needs but indirectly cater to the legal requirements of the CBD. These laws include the National Forestry Act (1984), the National Parks Act (1980) and the Protection of Wildlife Act (1972). As regards the issue of biosafety, no legislation has been specifically drafted although existing laws such as the Environmental Quality Act, 1974 has the potential to provide the necessary legal framework for future work on this item. It is the same for the provision of fair and equitable sharing of benefit where no formulation of an over arching legal instrument exists. Nonetheless, specific contract agreements

pertaining to joint venture projects are in place as trial cases, such as the contract agreement between the state of Sarawak and the National Cancer Institute (USA) and between NEDO Japan and the MOSTE.

9.2.2 Factors that Affect the Implementation Process

The study has identified and analysed the variables which affect the implementation of the three MEAs. The variables are perception, system of government and politics, policy and policy makers, organisational structures and legislative framework. This section will summarise and draw conclusions as to how these variables affect the implementation process.

9.2.2.1 Perception

Firstly, the study has recognised that Malaysia perceives the global environmental problems addressed by the three MEAs in the context of economic development. The MP was perceived as a trade barrier when it imposed a consumption limit of only 0.3kg per capita of CFCs and Halon on Malaysia. Malaysia believed that such a limitation would deprive her industries of their crucial ODSs. Consequently, her perception affected the manner in which the authorities reacted. The authorities made great effort to ensure the Protocol was used to provide financial and technological support to the country instead of working against the country's interests. Hence, the authorities forged ahead with various measures, including deriving as much benefit from the Protocol to upgrade Malaysia's industries' capabilities.

As for the UNFCCC, Malaysia's perception that it is the developed countries which should be taking urgent measures to limit greenhouse gases emissions, has resulted in her `cool' response at the national level. Thus, we can see no visible

programmes initiated at the national level to mitigate greenhouse gases emissions compared with efforts taken under the MP.

The implementation of the CBD, on the other hand has elicited mixed perceptions. Conservation is a normal national activity. However, when conservation is pursued under the Convention it is perceived that international pressure is exerted on the country to force her to conserve biological resources. Thus, the findings have demonstrated that at every available opportunity Malaysia seeks to be compensated for the conservation measures taken under the Convention. As for other objectives such as biosafety, she perceives that the developed countries are using developing countries as dumping sites for their GMOs and hence has insisted on the urgent establishment of a biosafety protocol to protect her interests. In the meantime, she has established the GMAC to provide her with professional advice.

9.2.2.2. System of Government and Politics

The study has highlighted the division of power between the federal and state governments over the subject of MEAs and shown how this has affected their implementation. The demarcation between state and federal jurisdiction which is supposed to provide a clear direction for state and federal agencies to take whatever action is needed has not helped in the implementation of the agreements. This is because the Constitution has provided a legitimate power for the states to protect their sovereignty and to pursue their own agenda, while the Federal government only has power of persuasion over the states on matters in the state list. On most occasions it has not successfully persuaded state governments to carry out the programmes, that would satisfy the national obligations to implement these agreements, such as to gazette the forest under the National Parks Act, 1980 which would have satisfied the country's obligation to implement the CBD.

It was shown that when the implementation of the agreement involves only the Federal or State agencies, the implementation of the agreement would be much easier. For instance, there was smooth implementation of the MP because there was no involvement of state only federal agencies' involvement, in contrast to the implementation of the UNFCCC and the CBD where both the state and federal governments had jurisdiction either collectively or individually over certain elements of the agreements.

In addition to the `disharmony' created by the federal system, the study has also demonstrated that the political nature of the subjects brings about a conflict of interests within the state and federal agencies. When the MEA concerns a subject that is economically important as an income generator or as a basis of power, its political significance also increases. Hence, it was shown that the CBD and the UNFCCC are politically important to the state and federal agencies because forest, which is the centre of attention, is economically important as a source of income as well as a symbol of power. In contrast, the MP dealing with industrial matters is politically significant to federal agencies only because the states have no jurisdiction over such issues. This finding thus illustrates an important link between the political significance of an environmental issue and the system of government and politics. It seems that the political importance of the MEAs is guided or limited by the constitutional framework which forms the basis of the governmental system in Malaysia. For instance, the political significance of the MP is limited to federal agencies only because industrial activities are under the jurisdiction of federal government as stipulated in the federal constitution. Whereas the MP is not a contentious subject to the states' agencies it is a politically sensitive subject to the federal agencies which have conflicting interests, for example, the MITI manages industrial activities and the MOSTE is concerned with the overall environment.

9.2.2.3 Policies

The study showed that the policies to address the implementation of MEAs are not well integrated within the ambit of national planning. International environmental issues seem to be separated from national issues although there are clear indications that both national and international interests are often interwoven with one another. Consequently, national development plans such as the Five Year Malaysia Plans have merely made passing references to Malaysia's involvement in the three MEAs.

It has also been shown that there has been no national policy on ODSs before or after Malaysia became a party to the MP. However, implementation measures have proceeded at a considerable pace, based on policy statements alone and the country is able to abide to the target set by the MP. As regards the CBD, it was only late in 1998 that a national policy on biological diversity was finally established. Nevertheless, there were already policy statements on conservation as early as the late 1970s. As for the UNFCCC, there has been no national policy or policy statements on the reduction of greenhouse gases before or after Malaysia ratified the Convention.

The findings have also demonstrated the fact that the policy-making process affects the implementation of the MEAs. First, national development plans provide the broad policy objectives for the whole country, hence, the absence of any policy on the implementation of MEAs, especially at the macro level (in the national development plans) results in a much-compartmentalised approach. The implementation of MEAs is looked at within the narrow context of environmental protection and is not integrated with other development issues such as economics and trade. Second, state governments are not sensitised to the implementation of the MEAs while other federal agencies will expect the MOSTE to carry out the

implementation measures. Consequently, there is no explicit understanding that the responsibility for implementing the MEAs should be shared between the state and federal agencies. Lastly, the presence of policy statements and other subject-related policies such as forestry and agriculture facilitate the implementation of these MEAs, especially the UNFCCC. However, the presence of specific policies on these three subjects would certainly enhance implementation measures because they would provide clear direction and well-defined strategies and action plans rather than the implementation of ad-hoc programmes. For instance, the National Policy of Biological Diversity possesses an integrated national and international perspective and provides long term and short-term strategies and plans of action to implement the three objectives of the CBD. By means of these definite strategies and programmes, limited available resources can be fully utilised.

9.2.2.4 Organisational Structures and Policy Makers

The findings have demonstrated that the MOSTE is the lead agency in the implementation of the three agreements. The cross sectoral nature of the agreements has compelled the MOSTE to establish National Steering Committees and Technical Committees to help it in the implementation process of each agreement. The Committees are able to provide the MOSTE with the platform it needs to pull together all the relevant agencies' expertise and human resources. Therefore, the Committees are able to make up for the MOSTE's manpower shortage and shortfall in expertise.

There are different Secretariats for each national committee. The DoE is the Secretariat for the MP while the MSD is the Secretariat for the UNFCCC. The CEMD is the Secretariat for the CBD. The DoE Ozone Protection Unit, which functions as the secretariat to the MP, has both staff and budget allocation. In addition, it is

involved in the enforcement of legislation and phase out programmes. As for the MSD, the study highlighted the fact that the Department is not physically involved in the implementation of the Convention. It only provides secretariat support to the National Committee. Regarding biological diversity issues, although the CEMD is a division by itself, it does not have a permanent unit such as the Ozone Protection Unit nor does it perform like the MSD. This is because the CEMD is a policy making body and as well as being a Secretariat to the National Committee it also has to co-ordinate and monitor the implementation of the CBD.

The findings have also shown that the bureaucrats play an important role in the implementation of the agreements. Their expertise and their `loyalty' to their parent organisations shape the pattern of their decisions regarding the implementation of the agreements. The bureaucrats in Malaysia tend to protect their patch overzealously although they may agree to the principles of the MEAs. The findings also found that the negotiators for the MP and the CBD were also involved in the implementation process of the agreements whereas the UNFCCC saw the exclusion of implementors from the negotiation exercise. Nonetheless, implementors are brought into the National Committee and help shape the country's stance at international meetings. However, the absence of certain key players such as personnel from the MECM and the MoT from the negotiation team, has resulted in these players oblivious of the measures needed at national level and therefore not playing an active role in the implementation of the UNFCCC. It was only recently that the MECM began to become involved in energy efficiency programmes to reduce greenhouse gas emissions.

9.2.2.5 Legislation

The national implementation of an MEA requires laws and regulations if it is going to be enforceable. The findings have illustrated that there are various laws and regulations which facilitate the implementation of the MEAs locally. The findings have also shown that the formulation of the laws and regulations is duly constrained by the Federal Constitution. In this regard the federal government can only make laws on matters under the Federal and Concurrent List except in certain situations as indicated in Chapter Three. Hence for the implementation of the MP there are several laws involved. These are federal laws such as the EQA, 1974 and the Customs Act 1976, which are implemented without much constraint, because the control of ODSs' consumption is a federal matter. On the other hand, the Protection of Wild Life Act 1972, the National Parks Act 1980 and the Forestry Act, 1984, does not enhance the implementation of the CBD and the UNFCC because these Acts do not have the legitimacy to conserve forest without prior agreement from the states.

While the Constitution restricts the sectors in which the federal government can legislate, the process of formulation is itself influenced by the actors involved in the formulation exercise. Findings in the study have indicated that often legislation takes a few years to complete although it is entirely within federal government jurisdiction. This is due to the inability of the drafters, who are made up of policy makers, scientists and legal officers, to understand each other's needs. Thus, the process of formulation affects in turn the implementation of the MEAs.

9.2.3 The Impacts of the Implementation

The main objective of the MEAs is to enhance the quality of the global environment. However, it has not been the focus of this study to ascertain whether there has an improvement of the global or local environment. Instead, the study, as

demonstrated in earlier chapters has sought to elaborate and discuss the impact of the implementation of the MEAs on environmental management and the development of the country. The implementation of each of the MEAs produces specific impacts on the country. For example, the implementation of the MP has managed to reduce ODSs' consumption but at the same time industries have incurred additional costs. The carrying out of certain measures to implement the UNFCCC is expected to affect the generation of energy contributing to higher costs of production, to affect trade on timber and timber product, and to affect the agricultural sector through the utilisation of non-forest land for agricultural crops and change in agricultural practices. As for the implementation of the CBD, national conservation measures will be enhanced but biotechnology advancement will be stifled if policy makers are overzealous in protecting the nation's biological resources. Nevertheless, the CBD has alerted the country to the possible risks arising from the introduction of genetically modified organisms which would not have happened quickly had there been no CBD.

Individually, the implementation of each MEA has generated impacts on specific sectors. However, we are going to discuss and conclude the impacts of the implementation of the MEAs on the country from two perspectives, firstly, in general terms of environmental management and, then secondly, on the specific sectors elaborated in the previous chapters.

9.2.3.1 Environmental Management

Environmental management in the country, as demonstrated in Chapter Three, is characterised by the policy framework, organisational framework and, lastly, by the legislative framework. The implementation of the three multilateral

environmental agreements has had an impact on all three elements of environmental management in Malaysia and vice versa.

Firstly, it has been shown that the impact which the implementation of the MEAs has had on national environmental management, has shown up the inadequacies of the policy framework. The existing policy framework does not seem to cater sufficiently for the implementation of multilateral environmental agreements due to the lack of integration between international obligations and national interests. The framework needs to be consolidated to provide a continuous policy direction right from the macro context down to the micro perspective. The national development plans, including macro and micro policies, must address environmental issues both from the international and national point of view, taking into consideration the impact one sectoral policy has upon another sectoral policy. Such a consolidated approach will enable the planners and the implementing agencies to direct their strategies and plans of action towards achieving common objectives via the different modes of agencies' functions and missions. For instance, the MPI in trying to boost forest product exports and the MOA in trying to achieve sustainable food production must not exploit and deplete biological resources and their habitats and hence act contrary to the country's obligations to the CBD or the UNFCCC.

The second impact of the implementation process appears to expose the fact that the traditional roles of organisations within the organisational framework no longer seem germane in implementing the MEAs. The implementation of the three MEAs has illustrated the point that organisations' roles are no longer confined to specific sectors of the economy and development but overlap the roles of other organisations. In the light of these developments, the MOSTE as the environmental agency entrusted to co-ordinate the implementation of most environmental agreements in the country must now become more aware of international

developments and be increasingly critical of environmental issues vis-à-vis global economics and industrial development. Furthermore, it will require the co-operation of other agencies more than ever before because of the wide range of issues involved. Hence there is the need for the establishment of new committees or organisations. Without these new organisations or committees, Malaysia will only be paying lip service to her commitments at international fora. However, the creation of new organisations will, in turn, result in additional manpower and financial resources requirements. The study has not explicitly gone into presenting the amount of funds allocated for new organisation such as the Ozone Protection Unit, however, it is obvious that in a government administrative structure, any new post and extra human resources will entail additional expenditure unless there is reallocation of resources. Therefore, the best alternative is to take advantage of the already existent national committees and generate more co-operation between existing organisations as was done in the implementation of the MP.

Finally, national environmental management is also affected by the implementation of the MEAs through its impact on the legislative framework. Pollution control and abatement in Malaysia is primarily enforced through the EQA (1974) under the jurisdiction of the DoE. Although the EQA is also used to protect and conserve the environment through its EIA requirement, conservation measures are primarily taken under the Protection of Wildlife Act 1972 and the National Parks Act 1980, and enforced by the DWNP.

Before Malaysia's involvement in the Montreal Protocol, most regulations to control pollution were made under Section 51 of the EQA, 1974. As demonstrated in Appendix 9, Section 51 is used to make regulation to prescribe standards or criteria, prohibit discharge of effluents, prohibit or regulate the use of specified fuel, and specify conditions for industrial installations such as manufacturing plants and

machinery. However, as a result of enforcing Malaysia's commitments to the MP, the DoE has for the first time invoked Section 30 of the Act, which prohibits the use of any materials for any process, trade or industry. This measure is construed as venturing into the manufacturing process itself, dictating what chemicals and substances should be used or not be used. The aim of these measures is to protect the ozone layer, whose depletion although real is not as visible and immediate as the effects of sulphur dioxide and carbon monoxide emissions. Besides this action, the DoE is also making use of legislation under different agencies such as the Customs Act 1976 to control the consumption of ozone depleting substances.

This situation is a reflection of likely future developments especially in the implementation of the UNFCCC which addresses the long-term effects of the GHGs on the global environment. For instance, will the DoE in future be prescribing the type of fuel to be used in power generation plants or will it stop short at prescribing only the emission standards for the atmospheric pollutants arising from the burning of the fossil fuels? On the other hand, should the DoE interfere in the agriculture sector to stop the usage of fertilisers that emit methane or other greenhouse gases or leave it to the agriculture agency to control the agricultural activities? The impending international carbon taxes also look to the day when the environment agency will utilise legislation from trade related agencies such as MITI and the MOF to achieve their international commitments.

As for managing biological diversity, the main priority is to protect the flora, fauna and the habitats for national interest. However, the implementation of the CBD requires the management of biological diversity to be extensively changed and expanded. There is the possibility that the Environmental Quality Act 1974, intended to address pollution issues, will be utilised to control GMOs. When this happens the nature of the environmental management practised by the DoE will obviously need to

be revamped because it will no longer be confined to addressing pollution but food and agriculture issues also.

To conclude, the impact of the implementation of the MEAs in Malaysia reflects the needs to revolutionise national environmental management because of the requirement to protect the local environment and the need to conform to her obligations to the international community. Furthermore, the authorities need to consider non-environmental legislation to also achieve her commitment to the international community.

9.2.3.2. Industrial Sector

The implementation of the multilateral environmental agreements has had a great impact on the country's economy. The implementation of the MP alone cost the ODSs related industries US$270 million over a period of five years to convert to non-CFCs technology. Furthermore, the end of this additional expenditure is not yet in sight. Other ODSs such as the HFCFs (alternatives to CFCs) and methyl bromide are soon to be phased out which will also add to the cost.

At this stage of development, the implementation of the UNFCCC has not shown any direct impact on the industrial sector. Firstly, Malaysia has not been taking any direct physical measures to reduce greenhouse gas emissions from her industries. The Clean Air Regulation under the Environmental Quality Act, 1974 and the recent Environmental Quality (Control of Emissions from Diesel Engines) Regulations 1996 did not include any greenhouse gases in their list of pollutants. Therefore, there has been no additional cost to industries as a result of implementing the UNFCCC. However, in the near future when industries will have to install greenhouse gases mitigation measures, the same process that the industries experienced in the implementation of the MP will be seen again. Secondly, the

indirect impact on the timber industry will be manifested in terms of decreased timber supply as conservation measures are increasingly applied.

The implementation of the CBD at this stage has no significant impact on the industrial sectors, in particular the biotechnology industry, which incidentally is not well developed. However, in the future its impact on the agrobased industries will be more keenly felt as the intellectual property rights issue starts to impinge on the palm oil and rubber industries.

9.2.3.3. Energy and Transport Sectors

The findings have shown that the implementation of the MP and the CBD has no significant impact on the energy sector. However, it is believed that in the future the energy sector will be on a collision course with the implementation of the UNFCCC when it increases its dependency on coal. Coal is been increasingly used in power generation with the building of more coal-fired power plants. The increased usage of coal signals the emissions of more greenhouse gases, in particular carbon dioxide.

The impact from the implementation of the MEAs on the transport sector seems to be limited to the implementation of the UNFCCC only. Since the transport sector has been identified as the second largest contributor of greenhouse gas emissions in the country, the implementation of the UNFCCC, which requires the reduction of greenhouse gas emissions from vehicles will have a major impact on the future mode of transportation. The impact will influence the types of fuel used and possibly lead to an increase in gas (liquidified petroleum gas) driven vehicles.

9.2.3.4.The Agricultural and Forestry Sectors

The study has shown that the implementation of the UNFCCC and the CBD will affect these two sectors significantly. Both the UNFCCC and the CBD focus on conservation measures to achieve their objectives. The UNFCCC utilises the conservation of forest to reduce the release of carbon dioxide and increase the sink for carbon dioxide absorption while the CBD seeks to protect the biological diversity. Hence, the impact from the implementation of both the UNFCCC and the CBD on these two sectors will be a decrease in deforestation and less forestland available for agricultural activities.

9.3. RELATING THE FINDINGS TO THE IMPLEMENTATION THEORIES

The study has analysed the implementation of the three multilateral environmental agreements. It has identified the various measures that Malaysia has undertaken, the factors that affect the implementation and the impacts of the implementation on the country. This section will now discuss how the findings relating to the implementation of the multilateral environmental agreements could enhance the refinement and development of environmental policy analysis. The focus will be on establishing a connection between the findings and the implementation theories in chapters one and two.

9.3.1 The Two Tier Process

It is reiterated here that the implementation of an MEA involves a two tier process and thus differs from the implementation of domestic legislation, which is a one-tier process. Rosendal (1994) in the context of the CBD defined the implementation of a MEA as Parties' activities in relation to the text of the Convention, although she did not emphasise the demarcation between international

negotiation and agreement and national implementation. However, by describing the implementation of MEAs as "parties activities" she implicitly acknowledged the implementation of a MEA as the concern of nations. Additionally, Wallace (1984) in Chapter One explained that implementation encompasses both the adoption of the MEA within domestic law and the active process of making it operationally effective.

Here we would like to emphasise the fact that the multilateral environmental agreement (MEA) contains a collective policy decision of sovereign nations. This decision identifies the problem to be addressed, objectives to be pursued and the structures or methodology of implementation. The MEA also establishes the intergovernmental bodies with powers (CoP) to pursue its implementation. The CoP has power to amend the MEA from time to time in order to implement new policy decisions. Hence, policy making is done both during the formulation of the MEAs and in the meeting of the CoP. The Montreal Protocol exhibits this clearly. The Protocol, which was agreed during its formulation in 1987, is continuously amended during the Meeting of Parties (see **Table 5.1** page 133). Each amendment is done taking into consideration the implementation progress taken by each country party vis-à-vis their implementing capabilities.

This shows that there is a continual process between implementation and policy making: the implementation of the Protocol to phase out ODSs continues while the policy decisions within the Protocol are constantly amended and reformulated. Thus, this can be seen to concur with the views of Hill (1972); Hill and Barrett (1984); Richardson (1979) and Hill (1997) who described implementation and policy making as an integrated part of the policy process. Here implementation is described as a chain within which issues are solidified increasingly, making it difficult to identify when policy-making stops and implementation begins. Although showing the validity of the various theories regarding implementation, the event just discussed is,

however, an event that takes place at international fora. We will therefore discuss whether the findings from the study validate the theory that policy making and implementation of a MEA are an integrated part of a policy process at national level.

As we illustrated earlier, there are two tiers in the implementation of a MEA. Initially, the process of implementation concerns Malaysia and the CoP of the MEAs. Then, it concerns the process of implementation within the country. In contrast to national policy where implementation is straight forward, the implementation of a MEA is not. The policy makers and implementors of a national policy are easily recognised and its implementation does not command the formulation of another policy or policies to implement it. In contrast, the implementation of a MEA is a complex process. Firstly, Malaysia as a country is simultaneously the policy maker and the implementor in the context of the international arena, where as a member of the CoP, which is the policymaking body, she is the policy maker. At the same time, she is also required to ensure the decision made by the CoP is implemented. In other words she now assumes the role of the implementor.

At the national level, the issue of policy maker and implementor again surfaces. For instance, in the implementation of the UNFCCC, officials from the MOSTE who attended the CoP, are also the policymakers while the implementors are the officials from the MECM and the MPI. However, it is not necessarily the case that the policy makers and the implementors are different. In the case of the MP, the DoE's officials who implemented the MP were also the policy makers. In addition, the findings have demonstrated that MEA issues are addressed at three levels of policy making. Firstly, in the national development plans. Secondly, in the macro policies and, lastly, within the sectoral policies. The interconnecting features of policy making and the implementation of the MEAs can be seen through the continual adjustment of the national development plans and sectoral policies (agricultural and forestry policy

for the CBD), and the amendment of relevant legislation (Environmental Quality Act, 1974 for the MP) vis-à-vis the implementation exercise.

9.3.2 Politics, Perception and Implementation

In Chapter Two, Harrison (1997) argued that environmental issues and conflicts will not bring about a formulation of policy unless these two factors get on to the political agenda. Buhrs and Bartlett (1993) also emphasised that policy is politics. They suggested that environmental 'problem' is not a problem if it has not been on the political agenda. Thus, when the environmental 'problem' is not a problem it will not bring about policy formulation. However, the implementation of MEAs involves international and national political agendas. While Harrison (1997) and Buhrs *et al.* (1993) emphasised the importance of political agenda in policy formulation, they however did not differentiate between the local and international environment. It was Brookfield (1993) as stated in Chapter Two who pointed out that the adherence to international standards and co-operation in environmental matters are elements in the foreign policy of any country. In these regards, the Foreign Minister of Malaysia as in Chapter Two also reiterated that both external development and internal factors determine international direction [policy]. Nevertheless, Weale (1992) in Chapter Two questioned if the distinction between international and domestic politics can still be maintained.

The analysis on the implementation of the UNFCCC demonstrated that the climate change issue is high on the country's international political agenda because Malaysia strongly supported the principles of common but differentiated responsibilities which require the developed countries to first carry out measures to reduce their greenhouse gas emissions. Hence, Malaysia goes all out to ensure that such principles are followed resulting in a lopsided situation with the international

front being given heavier emphasis than the home front. Although the issue of emissions of GHGs is very high on Malaysia's international political agenda, it did not bring about the formulation of a national policy on climate change.

As for the implementation of the Montreal Protocol, the issue of ODSs' reduction is also high on Malaysia's international agenda. There was great perception that the agreement will deprive the country of her essential raw material. Hence, identical to the climate change issue, vigorous efforts are also directed to international fora to ensure that the supply is not disrupted and that Malaysia is provided with the necessary funds to help her in the implementation measures. Nonetheless, similar to the climate change issue, Malaysia does not have a national policy specifically formed to address the ODSs issue. At the national level, there was no requirement to formulate specific policy to address ODSs' consumption because the issue is restricted to particular industries only. Thus, it is sufficient to have a general policy for which the targets and timetables had already been set at the international fora. It is again demonstrated that although ODSs issues managed to get on to the international political agenda of Malaysia, it still does not bring about a formulation of a national policy.

The CBD on the other hand, dominated both the national and international political agenda. As indicated in Chapter Seven, the CBD can be regarded as an extension of national policy. Firstly, two of its three objectives (conservation and sustainable utilisation) had already been pursued at the national level even before the country became a party to the Convention. It is high on the national political agenda because biological resources are frequently the subjects of tussle between federal and states governments and among federal agencies. Secondly, the subject in question is about national resources, which are to be subjected to international scrutiny. National policy alone is not enough to response to such a situation.

Therefore, biological diversity remains an important element in foreign policy to safeguard the national resources and to ensure issues such as biosafety to be taken on board during the CoP meetings. In addition, she is also continuously seeking financial support for local conservation measures.

Jordan (1998) as pointed out in Chapter One suggested that policy making and implementation were interconnected. He nonetheless attributed the linkages to politics. He believed that implementation involves political interaction between those who frame the policy in the first place and those charged with implementing it. He was not alone in suggesting that politics has a role to play in the policy process. Barret and Hill (1984) as stated in Chapter One regarded the implementation process as a political process characterised by negotiation, bargaining and compromise between groups seeking to influence each other. Furthermore, Hogwood and Gunn (1984) considered the pattern of power and influence between and within organisations (groups) to be political in nature.

To illustrate this we recall that among the factors shown by the findings as affecting the implementation of the multilateral environmental agreement were perception and politics. It can be seen that these factors affect the implementation of the MEA through the power they exert. Firstly, the findings verified that by getting onto the political agenda, perception is able to influence the decision-making process in Malaysia. Speeches and statements delivered during the Conferences of Parties and decisions by the heads of delegations who are either politicians or high-level government officials are often the reflections of the perceptions of the policy makers.

The influence of the policy makers' perceptions has been apparent during the formulation of the MEA, during the CoP's meetings and during the subsequent implementation of the MEA. For instance, Malaysia's perception that the MP is a trade barrier coerced her to criticise the 0.3kg per capita consumption limit for CFCs

and halon imposed on developing countries. As illustrated in Chapter Five, the negotiators from the fifth MoP reported that according to their perceptions certain countries supported the control of transitional substances such as HCFCs because they wanted to provide a market for their own products. Hence, Malaysia continued to influence the policy making process during every Meeting of Parties and, together with other like-minded countries, managed to prevent the immediate phase out of HCFCs and methyl bromide. It seems that perception was made into an important political tool in the implementation of the MP in Malaysia. Perception also made her `fight' for financial support to phase out ODSs and to up-grade her industrial technology so as not to lose her competitiveness.

Perception also played an important role in the formulation and implementation of the CBD. Chapter Seven highlighted the fact that the Malaysian negotiators who attended the ICCBD2 meeting in 1994 reported that Thailand did not support the idea to introduce a biosafety protocol immediately. The negotiators believed that Thailand was actively wooing the Japanese to aid in the development of her biotechnology industry. The report based on perceptions, reinforced Malaysia's cognisance of the CBD as trade related and hence induced her to undertake more negotiating and bargaining at the CoP meeting. At the national level the perception of biological diversity as a source of political power and income engenders continual negotiation and persuasion between state and federal governments, and within federal government among the federal agencies such as between the MOSTE and the MPI. Therefore, it has been shown that when the perception of an issue goes to the top of the political agenda it will affect the implementation process at the national level as well as the policy making process during the Meeting of Parties.

Jordan (1998) when making reference to the political interaction between those who framed the policy in the first place and those charged with implementing it seemed to indicate that the negotiators and the implementors of the policy are separate groups of people. However, this situation cannot be generalised since findings related to the implementation of the CBD and the MP have demonstrated that the negotiators and the implementors of the two MEAs belonged to the same agencies. Thus, the question of political interaction meaning the exertion of power and influence between two groups, did not arise. Nevertheless, in the implementation of the UNFCCC, the implementors of the UNFCCC were excluded during the negotiation exercise. Consequently, in certain sectors such as the energy sector, the presence of contradictory policies as illustrated in the findings will generate intense political interaction for example between the MOSTE responsible for negotiating the UNFCCC and the MPI and the MECM, which will implement the UNFCCC.

The implementation of the MEAs is also subject to continuous negotiation and bargaining between the federal and states' governments. The federal Constitution clearly demarcates between state and federal government jurisdiction over several items. Hence, the separation of power affects the implementation of the MEAs, in particular the CBD, because the federal government has to enter into tireless negotiations and compromises with the states' governments for the sake of conservation. For instance, the process of seeking the state governments' co-operation to gazette their forest as wildlife sanctuaries is still ongoing. This continuous process of negotiation and compromise is essentially what Barrett and Hill (1984) earlier considered to be the political process. Hence, it seems that the presence of politics is not only felt during the formulation of the multilateral environmental agreements as illustrated by several authors in Chapter Two but also in the national implementation stages.

The analysis of the implementation of the three multilateral environmental agreements in Malaysia provides empirical evidence that the implementation process and policy making are continuously linked together. It has been shown that while implementation of the MEAs is still ongoing, the Conference of Parties continually reformulates and amends the MEAs as illustrated in the case of the MP. At the same time the national authorities still come up with policies in response to recent developments at national and international fora and modify the implementation process of the MEAs at the domestic level. The implementation process is itself politicised when it has to undergo the process of negotiation, bargaining, influencing and compromise which takes place both at the national and international levels. Hence, to conclude the analysis of the implementation of MEAs it is clearly shown that implementation and policy making are one continuous process and cannot be separated within the context of policy analysis.

9.3.3 Interdependency

The formation of the National Steering Committees to facilitate the implementation of the three MEAs illustrates the need to have a high level of co-operation between different institutions. Any decision which tends to encroach on another agency's jurisdiction will only be taken after the members concerned have been consulted and agreed to it. Hence, the function of the Committees unmistakably displayed the notions of shared responsibilities and duties which emphasised a good relationship between officials from different organisations to effectively implement the MEAs. The National Committee as an inter-organisational setting provides an avenue for these officers to communicate and plan for the implementation of the MEAs. This analysis supports the views of Barrett and Hill (1984) in Chapter One that implementation is the relationship between actors. The formation of national

committees helps to reduce the number of linkages between the policy maker and the implementor, which Pressman and Wildavsky (1973) contended to be undermining the effectiveness of implementation action.

As stated earlier, the MOSTE is the main agency involved in the implementation of the three agreements. However, the implementation of the three agreements involved many other agencies such as the MITI, the MECM and the MPI. These agencies in term of hierarchy are ranked higher than the MOSTE based on the fact that the Ministers in these Ministries are senior politicians, and even the post of Secretary General of these Ministries are graded higher than the Secretary General of the MOSTE. Although these agencies are `unequal' in their ranking, and relationships sometimes suffered from minor disagreements, the MOSTE nevertheless is able to enjoy the support needed to implement the MEAs. For instance, in the implementation of the MP, on the one hand, the DoE is likely to give the MITI the assurance that the regulations to enforce the ODSs' phase out will be legislated only when the industries are ready. The MITI on the other hand, gives its support to enable the proposed legislation to be approved by the Cabinet. The results from the interdependent relationship are mirrored in the various implemented measures as illustrated in the relevant chapters. The situation seems to support the argument of Hogwood and Gunn (1984) that governmental bodies are interdependent even if one is subordinate to another since each will have something that the other wanted. Therefore, each will have at least some discretion over implementation process of the MEAs.

9.3.4 The Influence of Self Interest

After analysing the effect of different variables on the implementation of the three agreements, we will now analyse the relationship between the globalisation of environmental problems and Malaysia's involvement in international environmental co-operation vis-à-vis the three agreements. Laferriere (1994) stated that globalisation of environmental problems stems both from the transboundary nature of pollution and from the reliance on co-operative mechanisms for problem solving. Axelford (1984) suggested that countries co-operate when it suits their own self-interest. Cameron (1996) also believed that the compliance by nations to MEAs is more of a convergence of international and domestic self-interest than respect to international law. Here we can safely say that the need to rely on more than 170 MEAs as an international mechanism to solve global environmental problems signifies the globalisation of environmental problems but the question now is: did Malaysia became a party to these agreements to pursue her own self interest?

With regard to the Montreal Protocol, Malaysia illustrated a clear example of Axelford's and Cameron's contention when at every MOP she vehemently protested against any suggestion that would harm her industries. By becoming a party she has also managed to secure funding and technological support for local industries to make the transition from ODSs-technology to ODSs-free technology. Her lack of participation in the early phase of negotiation of the Protocol has been regarded as `unwise'. During that period, Abu Bakar (1987) claimed that "we had been had" because the MP has deprived her of the opportunity to forestall the decision to allocate to developing countries, which included Malaysia, a ODSs' consumption limit of 0.3 kg per capita. Hence by co-operating actively now she is able to use the Meetings of Parties as platforms to promote and safeguard her interests especially those of her industries.

Malaysia's participation in the UNFCCC was unique because in general terms she does not have much self-interest to safeguard in the UNFCCC context. Malaysia is not expected at this early stage to reduce her greenhouse gas emissions. After all, many studies undertaken have shown that Malaysia contributes only about 0.1% to global greenhouse gas emissions. Nonetheless she still became a country party to the Convention which was a signal that she was willing to co-operate to address global climate change. In the foregoing analysis it was found that Malaysia had carried out measures in relation to the greenhouse gas issue to satisfy her own local environmental concerns which had nothing to do with conforming to the UNFCCC objectives. The measures were an extension of the policy, and legal and regulative frameworks that had been in existence to address issues not directly linked to the UNFCCC. However, by satisfying the national policy and legal requirement, Malaysia unwittingly contributed to an overall reduction in greenhouse gases as well as increasing her sink.

As regards the climate change issue it was shown that Malaysia's power sector is the major source of CO_2 emissions in the country. As for carbon dioxide absorption her tropical forest is considered a most important sink. Hence the probable interest that Malaysia has, if any, is to protect her forest, which is her income earner, to be able to utilise coal as an alternative source to her other fossil fuels, and to ensure her development is not restrained through the adoption of international regulation. Looking at the point in question through this perspective, then it is true that she did become a party to the Convention to pursue her own self-interest.

Malaysia's co-operation in the UNFCCC is also to ensure that the principle of common and differentiated responsibility is put into practice. She did not shy away from her responsibility to reduce greenhouse gas emissions but she wanted to do so

in a fair manner. Being only a small contributor to their emissions, Malaysia expects to play a small role compared to the major polluters. As her energy supplies are essential for her future development, Malaysia is very conscious of any international measure that would curtail her production of energy either through the unavailability of fossil fuel or high production costs.

Malaysia's involvement in the CBD seems to follow the same lines as the other two agreements but with much greater intensity. If her involvement in the MP is just to protect her industries and in the UNFCCC to protect her forest, energy and industrial sectors, her involvement in the CBD is to ensure her biological diversity is protected from the exploitation of foreign countries. If her biological resources are to be protected for the benefit of the world, she wants adequate compensation for taking the necessary measures to protect them. Hence Chapter Seven illustrated many instances where Malaysia used the international fora to put forward her views and comments in this regard.

9.3.5 Free-Ride

Malaysia's co-operation in the three agreements to pursue her self-interests has also shed some light on the issue of the 'free-ride'. By becoming a party, Malaysia has also demonstrated that she did not succumb to `free-riding', although Barret (1991) argued that there are strong incentives for nations not to co-operate internationally if they can `free-ride'. It has been assumed that countries would not become party to any co-operation if they could benefit from the collective action of others without participating. However, the free-ride issue is irrelevant in the case of the implementation of the MP since those countries who are not parties to this Agreement will be subject to sanctions which will prevent them importing ODSs from country Parties or exporting ODSs to them, hence, Malaysia's participation in the MP

cannot be used to demonstrate the free-ride phenomenon. Nonetheless, her involvement in the UNFCCC and the CBD provide excellent examples of this.

The UNFCCC has no provisions as yet for sanctioning non-parties. In fact, as a developing country Malaysia has no emission targets and timetables and this allows her ample opportunity, if she wants to free ride at the expense of developed countries. It is exactly the same for the CBD. However, as we have seen, she did become party to these Conventions. The reason was that Malaysia considered it more advantageous to be involved in deciding the directions of the agreements, although she could free ride on both Conventions. By becoming a party, she can try to prevent the international community from imposing measures that are disadvantageous to her interests. This has been done through negotiation and lobbying for support from peer groups such as the ASEAN and the G77 and China. For instance at the 7th ASEAN Ministerial Meeting for the Environment at Jakarta, Indonesia (16-18 September 1997), ASEAN adopted a common stand on the UNFCCC. Johnson[1] (1993) also reported instances where Malaysia had used meetings of developing countries to forward her views. Hence this situation concurs with the view of Keohane and Nye (1977) who argued that a government co-operated to change another government's stand and in the hope of moulding international governments in a particular way.

[1] "Malaysia had in recent months carved out for herself a special position as one of the more extreme of the G77 negotiators, anxious to make clear at every opportunity precisely where, in her view, the true responsibility lay for the world's environmental crisis i.e. with the developed world. Nor did she miss the opportunity provided by the KL Meeting (2nd Ministerial Conference of Developing Countries on Environment and Development-29/4/92) to ensure that her point of view prevailed in the final communique, both on specific issue of forests".

However, in this case Malaysia went further than just trying to change other countries' positions. Here, she was trying to use her status as a country Party and her influence among the developing countries not only to change the stand of others, but rather to change it to her advantage. This can be seen through the support she gave to the AOSIS for a Protocol to curb greenhouse gases in the developed countries and also her stand against the extension of JI to developing countries.

In return for her support to other developing countries' proposals, Malaysia received support for her representative to become the Chairman of the Subsidiary Body on Scientific and Technological Advice (SBSTA) for both the UNFCCC and the CBD. This would not have happened if she had chosen to adopt the `free-ride' concept. Malaysia believed that by participating actively in the agreement and becoming Chairman of the SBSTA to both Conventions, she would have a greater opportunity to mould the decision making to her own advantage, as shown by Johnson (1993) and illustrated in the inclusion of the biosafety issue in the CBD as detailed in Chapter seven.

9.3.6 Remarks

The discussion above has not only been able to relate the findings to the theories on implementation but has also shown that the findings concerning the implementation of the three MEAs are sufficiently comparable. Here it has been proven also that the factors that affect the implementation of the MP are similar to those that affect the implementation of the UNFCCC and the CBD. The implementation measures are also seen to produce similar kinds of impact on the country. This situation can be seen as allowing us in the future to use the same factors to analyse the implementation of other MEAs in Malaysia. Hence, it can be

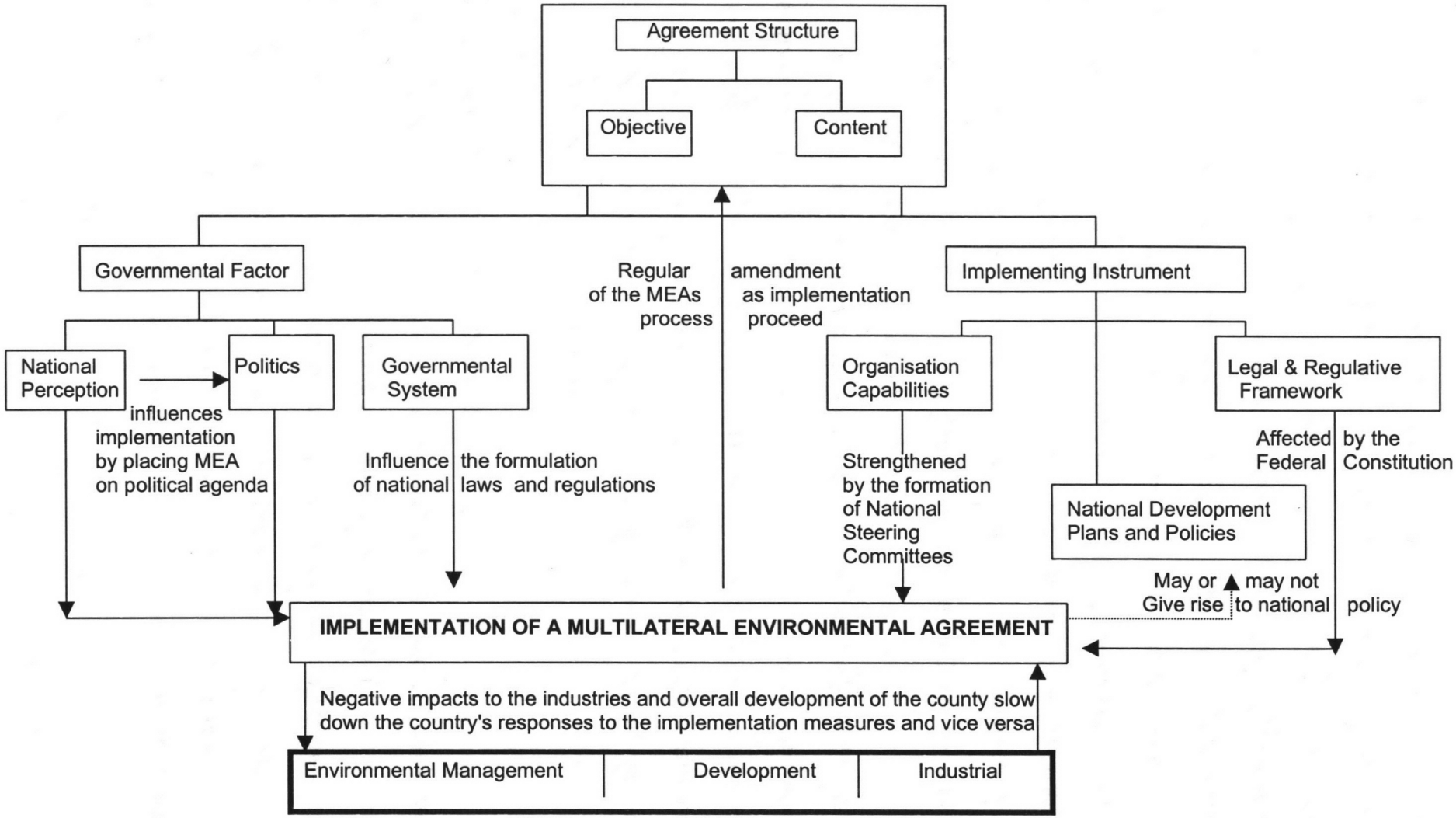
concluded that the study is able to provide an analytic scheme for multilateral agreement implementation that is useful in directing theoretical and empirical work.

The findings from the study also highlighted the need to refine Figure 1.1 in Chapter One. The factors in Figure 1.1, which affected the implementation of the MEAs are derived from the various literatures as elaborated in Chapter One. However, the findings from the analysis of the implementation of Montreal Protocol, Climate Change Convention and the Biodiversity Convention in Malaysia has provided further significant findings which enable the present researcher to improve Figure 1.1. Based on the findings, a refined version of the framework for the analysis of the MEAs is presented in **Figure 9.1** overleaf.

Firstly, Figure 9.1 shows that there is a continual amendment of the MEAs based on the feedback from the implementation processes at the national level. For example, the list of the ODSs under the Montreal Protocol is regularly being expanded and the target dates changed based on new technology and the availability of alternative substances. The national laws and regulations are also amended in line with the capabilities of the country to implement the MP.

Secondly, the figure indicates that the perceptions of the negotiator and implementor contribute to the implementation of the MEAs by putting them on the political agenda. In the Malaysian context, although politics remains an important factor in the implementation of the MEAs, it depends on whether the issue is for international or national consumption. If the MEA is important as a political issue at the international level it may or may not result in the formulation of a national policy. But an important item in national politics is likely to result in the formation of a national policy as in the implementation of the CBD.

Figure 9.1: Refined Framework for the Analysis of the Implementation of A Multilateral Environmental Agreement



The Figure further illustrates that the governmental system affects the implementation of the MEAs by confining the formulation of national laws and regulations according to state and federal jurisdiction as stipulated in the Federal Constitution. Hence the governmental system and the legal and regulative framework affected the implementation through a common factor that is the Federal Constitution which is the source of the system of government and the environmental legislation.

The organisational capabilities to implement the MEAs are strengthened by the formation of the National Steering Committees, which bring together the policy makers and the experts from different institutions. The NSC hence enhances the implementation of the MEAs by pulling together these resources and ensures a well co-ordinated policies, programmes and plans of action.

The impacts of the implementation of the MEAs on the economic and overall development of Malaysia will in turn affect the implementation process. As shown in the implementation of the UNFCCC, the perceived impacts to the various sectors such as forest and energy have slowed down the efforts taken to implement the UNFCCC whereas the positive impacts from the implementation of the MP have in turn enhanced the implementation process.

9.4 ASSESSMENT OF COMMITMENTS

The analysis undertaken so far has identified and analysed the measures Malaysia has taken to implement the three agreements. The measures shown earlier were either physical measures, such as carrying out projects or programmes, or, alternatively enabling provisions such as the establishment of policies, plans of actions, strategies and incentives to achieve the objectives of the agreement and to enhance the implementation of the projects. The study has also identified and

analysed the factors that affect the implementation of the measures. Finally, it has analysed the impacts of these measures on the country.

However, the study has not assessed or appraised Malaysia's commitments to international environmental co-operation vis-à-vis the implementation of the agreements. The commitments are pledges given to implement the measures required by the agreements. Hence, the question is whether Malaysia has carried out or fulfilled her commitments significantly. However, the more crucial question is how to assess the country's commitment since commitment is subjective. Therefore, instead of measuring commitments per se, we are going to use the measures carried out by Malaysia as an indicator of her commitments. The following assessment hopes therefore to determine whether the measures carried out are an indication of her commitments or whether the measures were carried out in response to national planning and have indirectly fulfilled Malaysia's international obligations.

The implementation of MEAs involves fulfilment of international obligations as well as national priorities, which makes their implementation rather more complex than the implementation of national policies. The measures taken to implement the MEAs need to balance international responsibility and national priorities. The complexity and the uncertainties of outcomes from internationally conceived agreements have been illustrated by the findings. For instance, Malaysia is aware that her tropical forest is important in preserving the delicate global ecological balance but she is also conscious that her forest needs to be utilised because it is a source of wealth to the country as stated by the Prime Minister at the 2nd Ministerial Conference of Developing Countries on Environment and Development, 1992. Hence, there is an element of uncertainty as to how Malaysia will respond to this issue bearing in mind the fact that she has to consider her national interests first. In this regard, Wallace (1984) argued as in Chapter Two that internationally negotiated

policies could not become embedded in national practice through a stable or predictable process of translation. They depend on specific needs, functional compatibility and high levels of interdependence to provide the momentum for translating objectives into outputs.

In light of the above arguments, we are of the opinion that the assessment of Malaysia's commitment (measures taken) must first be made within the context of her specific need as a developing nation. Within this context, the assessment should look into the basis for certain measures taken with respect to the country's needs or interests. Secondly, the assessment must also take into account the part she plays in the global environmental degradation compared to other developed and developing nations.

Within the context of her specific need as a developing nation it is clear that some of the measures she has taken are imperative to her being a responsible party to the agreements. For instance, taking measures to reduce greenhouse gases although under the Convention she is not required to do so. In certain cases, Malaysia seemed to exercise her responsibility in international environment co-operation by undertaking measures to fulfil her commitments to the MEAs. In other instances, the measures that she has undertaken have nothing to do with her being a party to the multilateral environmental agreement.

Apparently, when the issue addressed by the MEA concerns new global environmental degradation such as the depletion of the ozone layer, the measures taken are to conform to her commitments to the international community despite the fact that she was actually `forced' to carry out the measures for fear of losing her industrial competitiveness.

However, as regards issues that are already inherent nationally, the measures Malaysia has taken under the pretext of the CBD and the UNFCCC can be verily recognised as measures taken to satisfy the objectives of her national development plans. For instance, the conservation of biological resources, in particular the protection of forest, is often hailed by government agencies as the country's response to the CBD and the UNFCCC. However, the fact is, the conservation measures are carried out to ensure the county's resources are sustainably managed, and to ensure a continual supply of timber and timber products through afforestation and reforestation projects. In addition to ensuring a continuous supply of resources, conservation measures are also implemented to protect sensitive areas such as water catchment areas for her future well being. This has nothing to do with Malaysia's commitments to the CBD.

Moreover, the CBD only came into effect in 1992 whereas conservation efforts in Malaysia have been carried out since 1880. Therefore, the presence of the CBD has acted really as a catalyst to enhance national efforts with regard to the conservation of forest and other habitats such as wetlands. Consequently, the national committees established to pursue the implementation of the CBD and the UNFCCC have not only satisfied international but also national interest. Here, not only have the Committees succeeded in converging the various perceptions of different agencies towards the agreements but they have also managed to elevate national conservation efforts to a higher platform. At the same time, the agreements provide opportunities for Malaysia to capitalise on the MEAs as additional sources of financial and technological support as deliberated by Aminah[2] (NST, 13/6/1999). Programmes to phase out the ODSs were carried out with funding from the

[2] Aminah Ali (Senior Assistant Environment Control Officer, DOE) said that Malaysia would like to see developing countries get sufficient money to complete phase out programmes of ODSs. [...} Malaysia would have to negotiate strongly for additional funding.

Multilateral Funds under the Montreal Protocol and the national assessment of biological diversity was undertaken with funds from the UNEP.

Having discussed Malaysia's commitments within the first context (an assessment made with respect to the country's needs or interests) we can safely deduce that Malaysia carried out her commitments in tandem with her interests. She neither lags behind nor is in the very forefront of any effort to protect the global environment. Any measures that she takes are carefully weighted against her ability to do so as shown in projects for the phase out of ODSs and the AIJ projects to protect the forest as a carbon dioxide sink.

The assessment of her commitment made within the second context (the magnitude of her contribution to global environmental degradation) has illustrated that she contributed more to the effort to protect the global environment compared to her activities which resulted in the degradation of the global environment. With regard to the ozone depletion issue, Malaysia has targeted a phase out of CFCs by the year 2000, ten years ahead of the grace period given to her. She has also in place various implementing instruments such as organisational restructuring, enactment of laws and regulations to address ODSs' consumption. In addition she also incurred an expenditure of about US$270 millions over a period of five years to convert existing CFC technology to non-CFC technology. All these measures have been taken despite the fact that Malaysia's consumption was only about 3,351 metric tonnes of CFCs in 1997. This consumption is considered negligible when compared to that of the USA (Dupont) and UK (ICI) which are two of the biggest producers of CFC as reported by Benedicks (1991) and Kauffman (1997) in Chapter Two.

As for the UNFCCC, Malaysia's contribution to the emission of carbon dioxide is only 0.1per cent of the world's total emission (Table 6.1 page 195). This does not merit any great effort on her part to reduce her carbon dioxide emissions.

Furthermore, her tree cover which makes up more than 72% of her land area and acts as a carbon dioxide sink, more than compensates for any carbon dioxide that she emits. However, as a country Party she has started to address the issue of greenhouse gas emissions by providing organisational structure and programmes to mitigate greenhouse gases emissions. This by itself reflects her commitment to international co-operation.

Regarding biological diversity, despite the fact that she has been accused of exploiting her biological resources through heavy deforestation, the fact remains that she has still about 72% of tree cover with about 60% of this is forest. Between 1974-1995 she only lost 7.6 per cent of her forest (Table 6.3 page 198) to other land use activities compared to the loss of 20 million hectares of tropical forest per year worldwide as indicated in Chapter Two. Therefore, when comparing Malaysia's contribution to the overall loss of biological resources, the measures taken by her are significant although most were carried out long before the CBD came into effect.

9.5. CONCLUSIONS

The study was undertaken to investigate the implementation of three multilateral environmental agreements with the aim of identifying and analysing the factors that affect their implementation. The three MEAs are the Montreal Protocol on Substances that Deplete the Ozone Layer, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. Five objectives were formulated to guide the study's accomplishment of its aim.

The study was guided by the framework for the analysis of the implementation of a multilateral environmental agreement which found that to implement the MEAs, Malaysia carried out physical programmes, undertook organisational structuring, formulated policies, and enacted laws and regulations.

The study concludes that the implementation of the three multilateral environmental agreements is affected firstly by the perception of the politicians and policy makers on the motives of the MEAs. The perceptions of the three MEAs vary according to the subjects in question. While the MP is perceived as an obstacle to Malaysia's manufacturing sector, the UNFCCC is seen as posing no immediate threat to the country's interests. However, the CBD, on the other hand, is perceived to apply external pressure on the government to carry out conservation measures. As regards biosafety, the CBD is perceived as an instrument to ensure a safe biotechnology industry.

Secondly, the system of government affects the implementation of the agreements by restricting the federal government's complete control over the implementation of the measures of the MEAs. The federal government occasionally fails to persuade states' governments to share the responsibility for implementing the various measures required under the agreement. The states' governments' inabilities to carry out such measures has nothing to do with the weakness of the states' management capabilities which can be strengthen if the needs arise. Instead, it is the fear of the states loosing power over their natural resources to the federal government that has constrained the implementation of several measures. For instance, in the implementation of the National Parks Act 1980 and the Protection of Wild Life Act 1972 which deprived the states of their land.

Thirdly, the political nature of the resources as a source of income and as a symbol of power has generated a significant conflict of interest among those such as the MPI and MOSTE who are to implement the agreements.

Fourthly, the implementation of the agreements is not particularly affected by the absence of clear policy direction in the national development plans. Nevertheless, the absence of a clear policy direction has resulted in the implementation of the

MEAs becoming much compartmentalised with measures taken within the domain of individual sectors.

Fifthly, the organisational structures greatly affect the implementation of the agreements. Alone, the MOSTE is unable to implement the agreements because of severe limitations in terms of human resources, expertise and financial resources. Therefore, the creation of National and Technical Committees has greatly overcome the weakness inherent in the MOSTE, whose capability in the implementation of the agreements seems to be enhanced through the formation of the National and Technical Committees. These committees are able to pool together the various available resources.

Lastly, the difficulties of formulating and enforcing natural resources based legislation will continue to constrain the implementation of the multilateral environmental agreements, in particular those that impinge on state jurisdiction.

As regards the impact of the implementation of the agreements, the study concludes that the impact of the implementation of the MEAs, in particular the MP, on industrial growth will benefit the industries in the long term. The technology, which the industries will or have acquired, will enable them to become competitive again, especially when the supply of CFCs is no longer available in the international market. As for the other two MEAs, the impact on the industrial sector is not currently significant.

Nevertheless, the implementation of the CBD, which at present has not contributed to any serious impact on the commodities sector such as timber products and agricultural commodities, will need to be monitored closely. In the future the agricultural and forestry sectors will be affected by increasing conservation measures. In addition the requirement for a fair and equitable sharing of benefits might work against the country's interests especially in respect of the palm oil and

rubber industries since the industries source their genetic materials from Latin America and Africa. Malaysia might well end up having to pay these countries for the use of their genetic materials in the development of local palm oil and rubber industries.

As for the fourth objective, the study has generated empirical evidence to show that policy making and implementation form a continuous process and are elements of policy analysis. In addition, both the policy making and the implementation of MEAs can be considered as political processes because they are greatly dominated by negotiation, bargaining and compromise right from the beginning of the MEAs' formulation through reformulation and their implementation.

On the last objective, Malaysia is shown to have carried out her commitment significantly taking into consideration her national needs as a developing country and her relatively insignificant contribution to the overall global environmental degradation.

To conclude, this thesis besides achieving its main aim to identify and analyse the factors that affect the implementation of multilateral environmental agreements has inevitably demonstrated the relationship between international relations and national factors such as politics and institution. National politics has shown its ability to hinder international effort to influence domestic policy and regulation whereas local institutions have been shown to influence the transformation of the MEAs which contain international environmental policy agreements into substantial outputs.

9.6. RECOMMENDATIONS

This section is dedicated to making recommendations to enhance the implementation of multilateral environmental agreements in Malaysia. The study believes that recommendations to enhance the implementation of the multilateral agreements will have to evolve around the implementation mechanism consisting of variables that the influence the implementation process.

The study identified governmental factors, implementing instruments and agreement structure as influencing the implementation of the three multilateral environments in Malaysia. Therefore, these variables must be adjusted or restructured if the national implementation of the multilateral agreements is to be enhanced. While governmental factors and implementing instruments are influenced by the local situation, the MEA's structure is developed through negotiation at the international level and subject to factors outside the purview of the national authorities. Hence, this section will concentrate on those factors which are within national jurisdiction. The factors are those that make up the two variables (governmental factors and implementing instruments).

9.6.1.Recommendation I: Policy and Development Planning

The study believes that the implementation of multilateral environmental agreement could be enhanced if the national development planning is undertaken in tandem with international development. If Malaysia can satisfy her international commitment while at the same time pushing forward her own national agenda this will be conducive to her development. Hence, if she successfully converges international obligation with national capacity, she will certainly be able to utilise national and international resources to her advantage. For instance, in implementing the MP she has not only been able to make her ODSs industries competitive again

but is able to do so using international funding. Therefore, she needs a clear and pragmatic policy, which is able to synchronise national interests and international obligation.

The integration of international obligation into existing sectoral or cross-sectoral policies requires reforming national policies to reflect new priorities. For example, the CBD's international obligation requires the reformation of forestry policy to reflect new priorities for the conservation and sustainable use of biological diversity. Energy and transport policies need to be adjusted to mitigate greenhouse gas emissions and land tenure and land use policies restructured to cater to Malaysia's obligation to the UNFCCC and the CBD. However, the presence of a number of conflicting policies requires urgent identification of which policy over-rides what policy and under what circumstances.

Therefore, it is recommended that the National Development Plans (NDPs), which set out the broad policy objectives for overall economic development of the country, be used to address multilateral agreements within the context of national development. At present, the Plans address multilateral environmental agreements very generally and as a separate entity within the environmental chapter. However, to ensure the implementation of the MEAs it should be integrated in all relevant chapters, making linkages with all other sectoral policies. For instance, the climate change issue should be integrated into forestry, energy, transport and agricultural sectors. The integration can be done effectively through the National Development Plans thus achieved utilising limited resources more effectively.

The recommendation to use the National Development Plans is based on the fact that the NDPs are initiated at the highest level of the administrative framework compared to macro and sectoral policies which are handled at the Ministries' level. Furthermore, these policies are sometimes without an explicit budget to carry out

their implementation. Therefore, the NDPs' broader objectives stand a better chance of implementation into the planning and programmes of a larger number of agencies. However, It requires much more than just good policies to bring about implementation. Strategies, plans and programmes must be developed and implemented, and stakeholder support needs to be secured before policies are converted into action. Hence, National Development Plans that are endorsed at the highest level of the federal administrative system, together with the necessary approved allocations, are poised to become more acceptable for implementation. In addition, the five years period, which allows long-term planning, and the mid-term review mechanism will enable the country to adjust and refocus her programmes and action plans in accordance with latest international developments.

9.6.2 Recommendation II: Organisational Structure

The study identified organisation capabilities as one of the variables that influence the implementation of the MEAs. The findings went on to illustrate the fact that the MOSTE is the organisation that plays an important part in the implementation of all three MEAs under study. In fact, most of the MEAs in Malaysia are under the auspices of the MOSTE as shown in Appendix 1.1. It has been a routine exercise for the MOSTE to set up National Committees and Technical Committees to assist her in the implementation of the MEAs. Although two departments, the MSD and the DoE have assisted in implementing the UNFCCC and the MP, the main responsibilities for providing the policy direction and co-ordinating the implementation of the MEAs rest with the MOSTE, in particular the CEMD. The CEMD at present is functioning with only three officers and three supporting staff members.

Therefore, it is recommended that the MOSTE, in particular the CEMD, be expanded with additional manpower. However, the study also believes that an

increase in personnel will not greatly help in ensuring better implementation without the MOSTE also being given more political influence over other relevant agencies. Hence, besides increased manpower the MOSTE must be given a higher platform from which she is better able to command the co-ordinating and monitoring of the implementation of the MEAs. The platform suggested is the establishment of National Development Environment Planning Council (NDEPC), answerable to the National Development Council. Although environmental issues are discussed at the NDPC but it is reported that due to the huge complexity of development issues, environmental matters are often relegated to backstage. Hence, with the NDEPC established specifically for environment matters, in depth discussion can take place and the implementation of the MEAs can be better co-ordinated and monitored vis-à-vis national environmental priorities, and subsequently integrated into mainstream environmental issues.

9.6.3 Recommendation III: Legislation

It is believed that the MOSTE should play a more diplomatic role in persuading the states to help in the implementation of the MEAs. However, the power of persuasion does not seem to work well in the present situation. The National Parks Act, 1980, the Protection of the Wildlife Act 1972 and the Land Conservation Act 1960 are testimonials to the failure to persuade states to give up their land for conservation purposes. Hence, it is recommended that an intergovernmental agreement on the environment between all states and the federal government be created. The study is well aware that the Federal Constitution has already divided the jurisdiction of state and federal government in the matter of environmental issues. However, the suggested intergovernmental agreement is not meant to usurp the power of the Constitution but to provide the mechanism for an

integrated national approach to the environment and a better definition of the roles of the respective jurisdictions. This will reduce uncertainties in decision making and enhance implementation of the MEAs in particular, and environmental management in general.

9.6.4 Recommendation IV: Technology

Finally, it is suggested that the authorities give more attention to technology issues especially in the areas of research and development. Environmental problems are very dynamic and the solutions to problems often require modern technology and techniques. The implementation of the Montreal Protocol would not have been so easy if there had been no technological support from the international institutions. However, the local authorities must play a more active role rather than leave the international institutions to provide the helping hand. Therefore it is suggested that the industrial master plan provide clear direction and identify areas for active R & D in environmental matters, taking into consideration progress in global environmental co-operation. Industries, which posses the potential for being drawn into the implementation of the MEAs, must be identified and technological assessment of them undertaken with the intention of providing future funds and technological upgrading and transfer of technology. This will prepare them for an eventual transition in technology to accommodate international environmental co-operation and obligations within national interests and requirements.

9.7 FUTURE RESEARCH

It is suggested that future research be undertaken regarding the implementation of MEAs in Malaysia and an exploration conducted of the capabilities of different states to implement specific multilateral environmental agreements

especially those MEAs which focus on natural resources. At present only two of the 13 states have passed enabling legislation to protect and preserve the environment necessitating the effective the management and utilisation of natural resources. A future study should look into the basis for such a move and whether there is a likelihood that other states will follow suit. The study should also look into the institutional structures of both states and compare these with those of the remaining states to see whether the two states already possesses the necessary infrastructures to ensure the successful implementation of MEAs at state level.

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APPENDIX 1

Multilateral Environmental Agreements which Malaysia Signed/Ratified

No	Title	Date of adoption of Agreement	Entry into force (eif)	Date Malaysia Signed	Date Malaysia ratified (r)/ accessed (ac)	Depository	MOSTE as Implementor/Co-ordinating Agency
1	International Plant Protection Convention Amendment	6.12.51	3.4.1952 4.4.1991		17.5.1991 (ac) 17.5.1991	FAO	
2	Plant Protection Agreement for the South - East Asia and Pacific Region (as amended)	27.2.1956			20.11.57 (ac)	FAO	
3	Convention on the Continental Shelf	29.4.58	10.6.64		21.12.60 (ac)	Secretary General of UN (SGUN)	
4	Convention on fishing and Conservation of the Living Resources of the High Seas	29.4.58	20.3.1966		21.12.60 (ac)	SGUN	
5	Convention on the High Seas	29.4.1958	30.9.1962		21.12.60 (ac)	SGUN	
6	Treaty Banning Nuclear Weapon Tests in the Atmosphere in Outer Space and Under Water	5.8.1963	10.10.1963	12.8.1963	16.7.64	Russian Federation, UK of great Britain and Northern Ireland, USA	
7	Treaty on principles governing the activities of states in the exploration and use of outer space including the moon and other celestial bodies	27.1.1967	10.10.1967		21.2.1967	Russian Federation, UK of great Britain and Northern Ireland, USA	
8*	International Convention on Civil liability for oil pollution damage (as amended)	29.11.69	19.6.1975		6.4.95 (eif)	IMO	
9*	Fund Convention 1971						
10	Convention on Wetlands of international Importance especially as Waterfowl Habitat (Ramsar Convention)	2.2.1971	21.12.1975		10.3.95 (eif)	UNESCO	MOSTE
11	Protocol to Amend the Convention on wetlands of international importance especially as waterfowl habitat	3.12.82	1.10.1986		10.3.95	UNESCO	MOSTE

No	Title	Date of adoption of Agreement	Entry into force (eif)	Date Malaysia Signed	Date Malaysia ratified (r)/ accessed (ac)	Depository	MOSTE as Implementor/Co-ordinating Agency
12	Treaty on the Prohibition of the emplacement of nuclear weapons and other weapons of mass destruction on the sea bed and the ocean floor and its subsoil thereof	11.2.1971	18.5.1972	20.5.1971	21.6.1972	Russian Federation, UK of GB and N. Ireland, USA	
13	Convention on the prohibition of the development, production and stockpiling of bacteriological (biological) and toxin weapons, and their destruction	10.4.1972	26.3.1975	10.4.1972	26.9.1991	Russian Federation, UK of GB and N. Ireland, USA	
14	Convention Concerning the Protection of the world Cultural and Natural Heritage	23.11.1972	17.12.1975		7.12.1988	UNESCO	
15	Convention on International Trade in endangered Species of Wild fauna and flora	3.3.1973	1.7.1975		20.10.1977 (ac)	Switzerland	MOSTE
16	i) United Nations Convention on the Law of the Sea ii) Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982	10.12.1982	16.11.94	10.12.1982 2.8.1994	10.10.1996 28.7.96 (eif)	SGUN	
17	International Tropical Timber Agreement	18.11.1983	1.4.1985	14.12.1984	14.12.1984 14.1.97 (eif)	SGUN	
18	Vienna Convention for the Protection of the Ozone Layer	22.3.1985	22.9.1988		29.8.1989 (ac) 27.11.89 (eif)	SGUN	MOSTE
19	Montreal Protocol on Substances that Deplete the Ozone Layer (1987)	16.9.1987	1.1.1989		29.8.1989 (ac) 27.11. 89 (eif)	SGUN	MOSTE
20	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer (1990)	29.6.1990	10.8.1992		16.6.1993 (ac) 14.9.1993 (eif)	SGUN	MOSTE
21	The Copenhagen amendment to the Montreal Protocol (1992)	25.11.92			5.8.1993 (ac)		MOSTE
22	Montreal Amendment to the Montreal Protocol (1997)	17.9.1997	1.1.1999				MOSTE

No	Title	Date of adoption of Agreement	Entry into force (eif)	Date Malaysia Signed	Date Malaysia ratified (r)/ accessed (ac)	Depository	MOSTE as Implementor/Co-ordinating Agency
23	ASEAN Agreement on the Conservation of Nature and Natural Resources	9.7.1985	Not yet in force	9.7.1985		ASEAN Secretariat	MOSTE
24	Convention on Early Notification of Nuclear Accident	26.9.1986	27.10.1986		1.9.1987 2.10.87 (eif)	IAEA	
25	Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency	26.9.1986	26.2.1987	1.9.1987	1.9.87 2.10.87 (eif)	IAEA	
26	Agreement on the network of Aquaculture centres in Asia and the Pacific	8.1.1988	11.11.1990		4.7.1991 (ac)	FAO	
27	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	22.3.1989	5.5.1992		8.10.1993 (ac)	SGUN	MOSTE
28	United Nations Framework Convention on Climate Change	9.5.1992	21.3.1994	9.6.1993	11.10.1994	SGUN	MOSTE
29	Convention on Biological Diversity	5.6.1992		12.6.1992	22.9.94 (eif)	SGUN	MOSTE
30	UN Convention to Combat Desertification	6.10.95			27.6.97 26.12.96 (eif)		
31 *	International Convention on the establishment of an International Fund for Compensation for Oil Pollution Damages				6.4.95 (eif)		
32 *	International Convention on Civil Liability for Oil Pollution Damage				6.4.95 (eif)		
33	International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC)		13 .5. 95		30.7.97 (ac) 30.10.97 (eif)	IMO	MOSTE
34	ASEAN-OPRC				31.1.94		MOSTE
35	International Convention for the Prevention of Pollution from Ships 1973 as modified by the protocol of 1978 includes Annex 1,II and V						

Source: Register of International treaties and Other Agreements in the Field of the Environment 1993

- UNEP, Nairobi 1993 (total: 169 treaties/agreement), Official Documents, Secretariats of the Conventions

- Note
- * the later Conventions amended the previous Convention IAEA = International Atomic Energy Agency

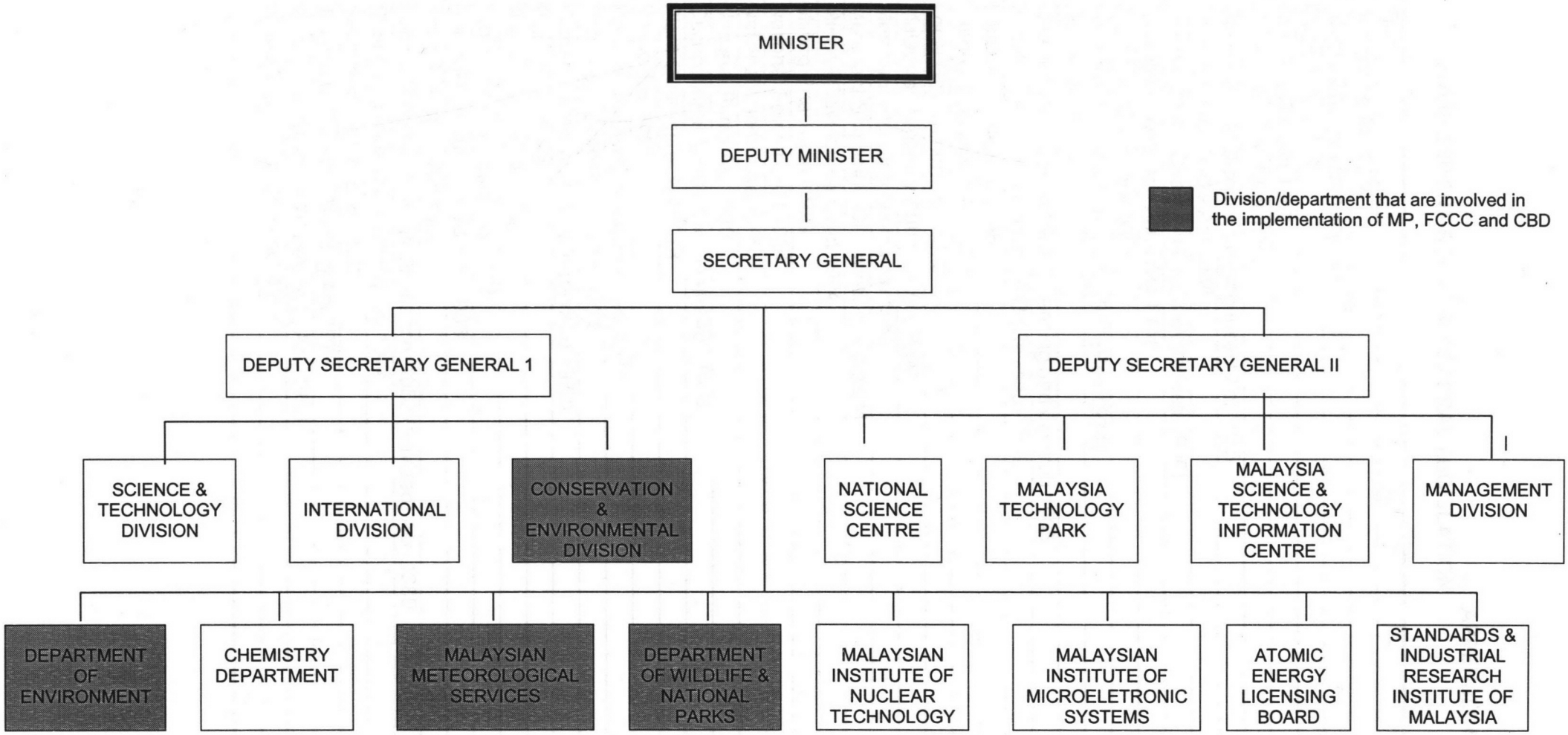
APPENDIX 2

Environment and Environmental Related Agencies

1	Atomic Licensing Board
2	Department of Agriculture
3	Department of Environment
4	Department of Marine, Peninsular Malaysia
5	Department of Mining
6	Department of National Landscape
7	Department of Town and Country Planning
8	Department of Transport
9	Department of Wildlife and National Parks
10	Drainage and Irrigation Department
11	Economic Planning Unit
12	Federal Land Development Authority
13	Fisheries Department
14	Forest Research Institute of Malaysia
15	Forestry Department of Peninsular Malaysia
16	Institute of Palm Oil Research
17	Institute of Rubber Research
18	Malaysian Agricultural Research and Development Institute
19	Malaysian Centre for Remote Sensing
20	Malaysian Institute of Nuclear Technology
21	Malaysian Meteorological Services Department
22	Ministry of Agriculture
23	Ministry of Culture, Arts and Tourism
24	Ministry of Energy, Communications and Multimedia
25	Ministry of Foreign Affairs
26	Ministry of Health
27	Ministry of International Trade and Industry
28	Ministry of Land and Co-operatives Development
29	Ministry of Primary Industries
30	Ministry of Rural Development
31	Ministry of Science, Technology and the Environment
32	Ministry of Works

APPENDIX 3

ORGANISATION CHART
MINISTRY OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT



APPENDIX 4

ENVIRONMENT-RELATED FEDERAL LEGISLATION

No	Title
1	Antiquities Act 1974
2	Atomic Energy Licensing Act 1984
3	Custom Act, 1976
4	Civil Aviation Act 1969
5	Continental Shelf Act 1966
6	Destruction of Disease Bearing Insect Act 1975
7	Drainage and Works Act 1988
8	Environmental Quality Act 1974 (Amended 1996)
9	Exclusive Economic Zone Act 1984
10	Explosive Ordinance 1957
11	Factories and Machinery Act 1967 (Rev 1974)
12	Fisheries Act 1985
13	Housing Development Act (Licensing and Control) 1965
14	Irrigation Areas Ordinance 1953 (Revised) 1989
15	Land Acquisition Act 1960
16	Land Conservation Act 1960
17	Local Government Act 1976
18	Malaysian Highway Authority Act 1980
19	Merchant Shipping Ordinance 1952
20	Merchant Shipping (Oil Pollution) Act 1994
21	Mineral Development Act 1994
22	Mining Enactment 1929
23	National Forestry Act 1984
24	National Land Code 1965
25	National Parks Act 1980
26	Occupational Safety and Health Act, 1994
27	Plant Quarantine Act 1976
28	Pesticides Act 1974
29	Petroleum (Safety Measures) Act 1984
30	Petroleum Development Act 1974
31	Petroleum Mining Act 1966 (revised 1972)
32	Poison Act 1989
33	Port Authorities Act 1963
34	Protection of Wildlife Act 1972
35	Radioactive Substances Act, 1968
36	Road Transport Act 1987
37	Sales of Food and Drugs Ordinance, 1952 (Revised) Act, 1989
38	Street, Drainage and Building Act 1974
39	Sewerage Services Act 1993
40	Town and Country Planning Act 1976
41	Water Enactment 1920 (revised), Act, 1989
42	Wood-Based Industries Act 1984

Consumption Data of Odss (Annex A of Montreal Protocol) in Malaysia, in Metric Tonnes, 1985-1997

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Group 1													
CFC11	363	576	810	998	834	1005.8	1120.2	1442.7	2045.9	na	986.12	972.84	1103.39
CFC12	456	1064	1358	1645	1470	1381.2	1740.6	1306	1426.7	na	2380.11	2021.28	2236.86
CFC113	119	684	876	1216	1381	1244.2	1210.6	836.8	189.5	na	75.25	55.08	10.15
CFC114	2	3	35	53	30	-	-	2.4	-	na	0	0	1.08
CFC115	-	-	1	-	5.5	1.8	-	-	-	na	0.28	0	0
CFC Consumption	**940**	**2327**	**3080**	**3912**	**3720.5**	**3634.2**	**4071.4**	**3587**	**3662.1**		**3441.76**	**3049.20**	**3351.48**
GROUP II													
Halon 1211	71	150	198	270	246	221.3	56.1	193.7	90.6		8	0	0
Halon 1301	56	120	101	38	60	13.3	10	8.55	-		0	0	0
Halon 2402	-	-	-	-	-	2.1	-	-	-			-	0
Halon Consumption	**127**	**270**	**299**	**308**	**306**	**236.7**	**66.1**	**202.25**	**90.6**	**15**	**8**	**0**	**0**
Total Annex A Consumption	**1067**	**2597**	**3379**	**4220**	**4026.5**	**3870.9**	**4137.5**	**3970**	**3752.7**	**3251**	**3449.76**	**3049.20**	**3351.48**
Consumption kg per capita	**0.1**	**0.24**	**0.27**	**0.29**	**0.29**	**0.25**	**0.25**	**0.24**	**0.24**	**0.24**	**0.18**	**0.14**	**0.15**

Source: Malaysia Country Programme Update (CP), 1995; DOE

Note: Data for 1985-1993 taken from CP, Table 1a

continuation...

Consumption Data of ODSs in Annex B,C and E of Montreal Protocol, Malaysia In Metric Tonnes, 1985-1997

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Annex B														
Group I														
CFC13						na	-	-	-					
CFC 111						na	-	-	-					
Group II														
Carbon Tetrachloride						na	-	-	-		1.30	0	0.32	
Group III											1.30			
Methyl Chloroform						172.1	2701.4	2829.2	2620		392.00	350.99	362.94	
Total Annex B Consumption						172.1	2701.4	2829.2	2620	2600	393.30	350.99	363.26	
Annex C														
Group I														
HCFC22						1309.3	2438.5	1809.1	2600		3450.58	2978.55	3745.68	
HCFC123									5		0	21.23	24.45	
HCFC141b											175.32	174.20	226.98	
Group II														
HBFCs						na	-	-	-					
Total Annex C Consumption						1309.3	2438.5	1809.1	2605	2990	3625.90	3173.98	3972.66	
Annex E														
Methyl Bromide						28.4	32.6	30	30	35	38.15	41.55	46.34	

Source: Malaysia Country Programme Update (CP), 1995; DOE

Note: Data for 1985-1993 taken from CP, Table 1b, Table 1c
Data for 1994 - from CP Table3;
Data for 1995-1997 -from DOE

APPENDIX 6

Consumption of ODSs by User Sectors in metric tonnes and percentage, 1989-1997

Application	Substance	Annex	1989	1990	1991	1992	1993	1994	1995	1996	1997
Solvent Cleaning	CFC113 CFC114[a]	A	1441 (19.32%)	1244 (15.13%)	1100 (11.99%)	800 (9.17%)	370 (4.03%)	140 (1.58%)	75.25 (1.00%)	55.08 (0.83%)	10.15 1.08[a] (0.15%)
Solvent Cleaning	C2H3Cl3	B	2348 (31.48%)	3057 (37.18%)	2701 (29.43%)	2829 (32.42%)	2620 (28.52%)	2600 (29.29%)	392.00 (5.22%)	350.99 (5.31%)	362.94 (4.96%)
Solvent cleaning	CCl4	B							1.30 (0.02%)	0	0.32 (0.004%)
Foams	HCFC141a[a] HCFC141b[b]	C							175.32[b] (2.34%)	156.58[a] 17.62[b] (2.63%)	217[a] 9.98[b] (3.1%)
Foams	CFC11[a] CFC12[b]	A	590 [a+b] (7.91%)	696 [a+b] (8.46%)	870 [a+b] (9.48%)	1088 [a+b] (12.47%)	1360 [a+b] (14.80%)	1180 [a+b] (13.29%)	697.55 [a] (9.29%)	712.75 [a] (10.77%)	662.03 [a] (9.04%)
Car air-conditioning	CFC12	A	894 (11.99%)	1012 (12.31%(	1126 (12.27%)	1171 (13.42%)	1276 (13.89%)	1171 (13.19%)			
Residential & Small Commercial air-conditioning	HCFC22	C	1296 (17.37%)	1309 (15.92%)	2439 (26.57%0	1809 (20.73%)	2600 (28.30%)	2990 (33.69%)			
Refrigeration & Large Commercial air-conditioning	CFC11[a] CFC12[b] CFC115[c]	A	485[a+b] (6.50%)	320[a+b] (3.89%)	378 [a+b] (4.12%)	435 [a+b] (4.99%)	495 [a+b] (5.39%)	495a+b (5.58%)	288.57[a] 2021.26[b] 0.28[c] (30.77%)	260.09[a] 1889.5[b] (32.49%)	44.36[a] 2125.02[b] (29.63%)
Refrigeration	HCFC22[a] HCFC123[b]	C							3450.80[a] (45.97%)	2978.55[a] 21.23[b] (45.34%)	3745.68[a] 24.45[b] (51.5%)
Aerosols	CFC11[a] CFC112[b] CFC113[c] CFC114[d] CFC12[e]	A B A A A	180 a+b+c+d (2.41%)	350 a+b+c+b (4.26%)	300 a+b+c+d (3.27%)	300 a+b+c+d (3.44%)	300 a+b+c+d (3.27%)	250 a+b+c+d (2.82%)	358.85 e (4.78%)	131.7 e (1.99%)	111.84 e (1.53%)
Fire-fighting	Halons	A	201 (2.69%)	207 (2.52%)	231 (2.52%)	263 (3.01%)	137 (1.49%)	15 (0.17%)	8 (0.11%)	0	0
Agriculture (Soil Fumigation)	CH3Br	E	24 (0.32%)	28 (0.34%)	33 (0.36%)	30 (0.34%)	30 (0.33%)	35 (0.39%)	38.15 (0.51%)	41.55 (0.63%)	46.34 (0.63%)
			7459	**8223**	**9178**	**8725**	**9188**	**8876**	**7507.11**	**6615.72**	**7321.22**

Source: Malaysia Country Programme Update (CP), 1995 and UNEP/ozl-pro/Excom/22/79 Annex III (actual)

Note: Data for 1985-1993 taken from Table 2,CP (estimate)
Data for 1994 - from Table 3, CP; (estimate). Data for 1995-1997 -from UNEP document (actual)

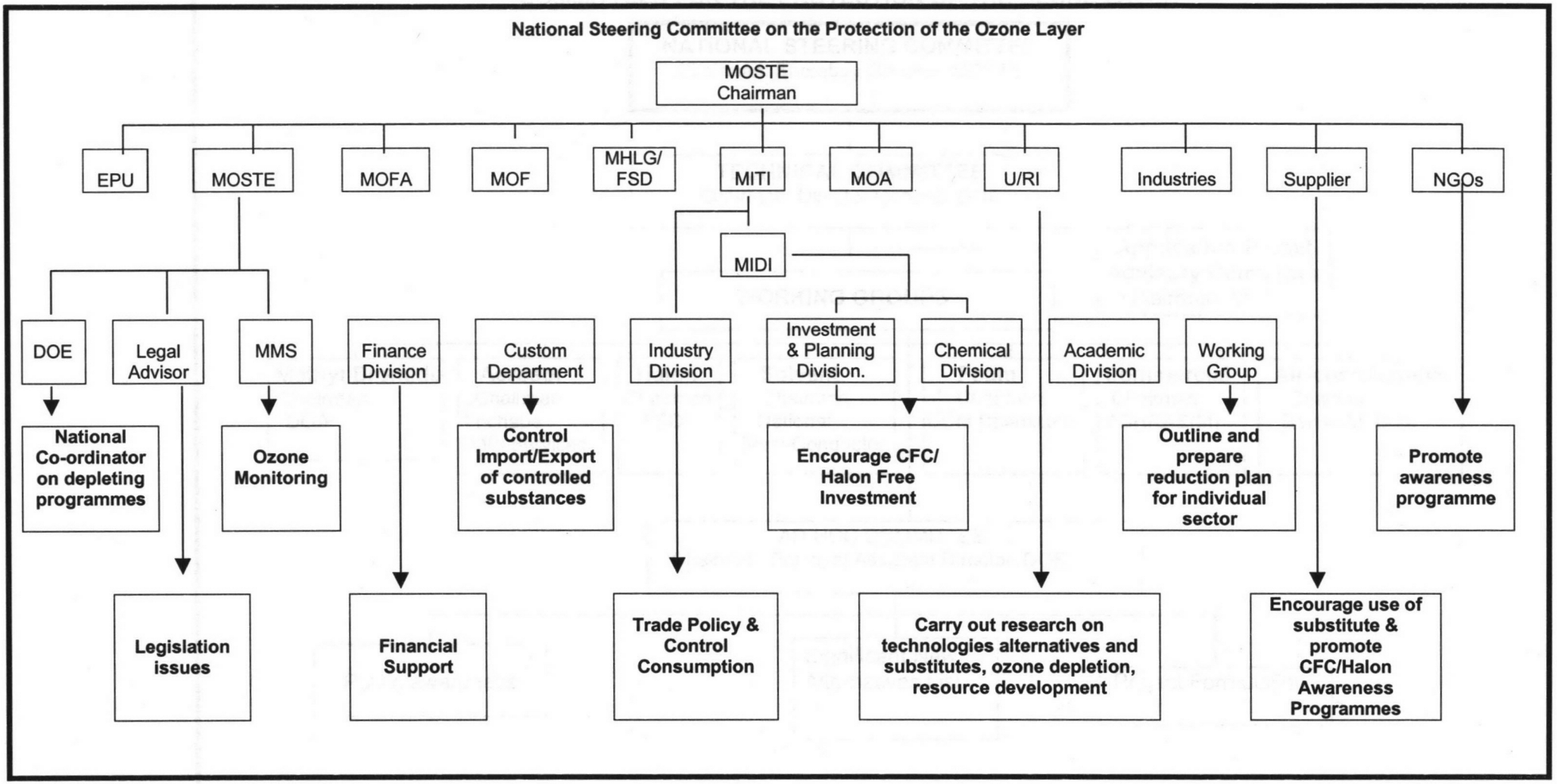
APPENDIX 7

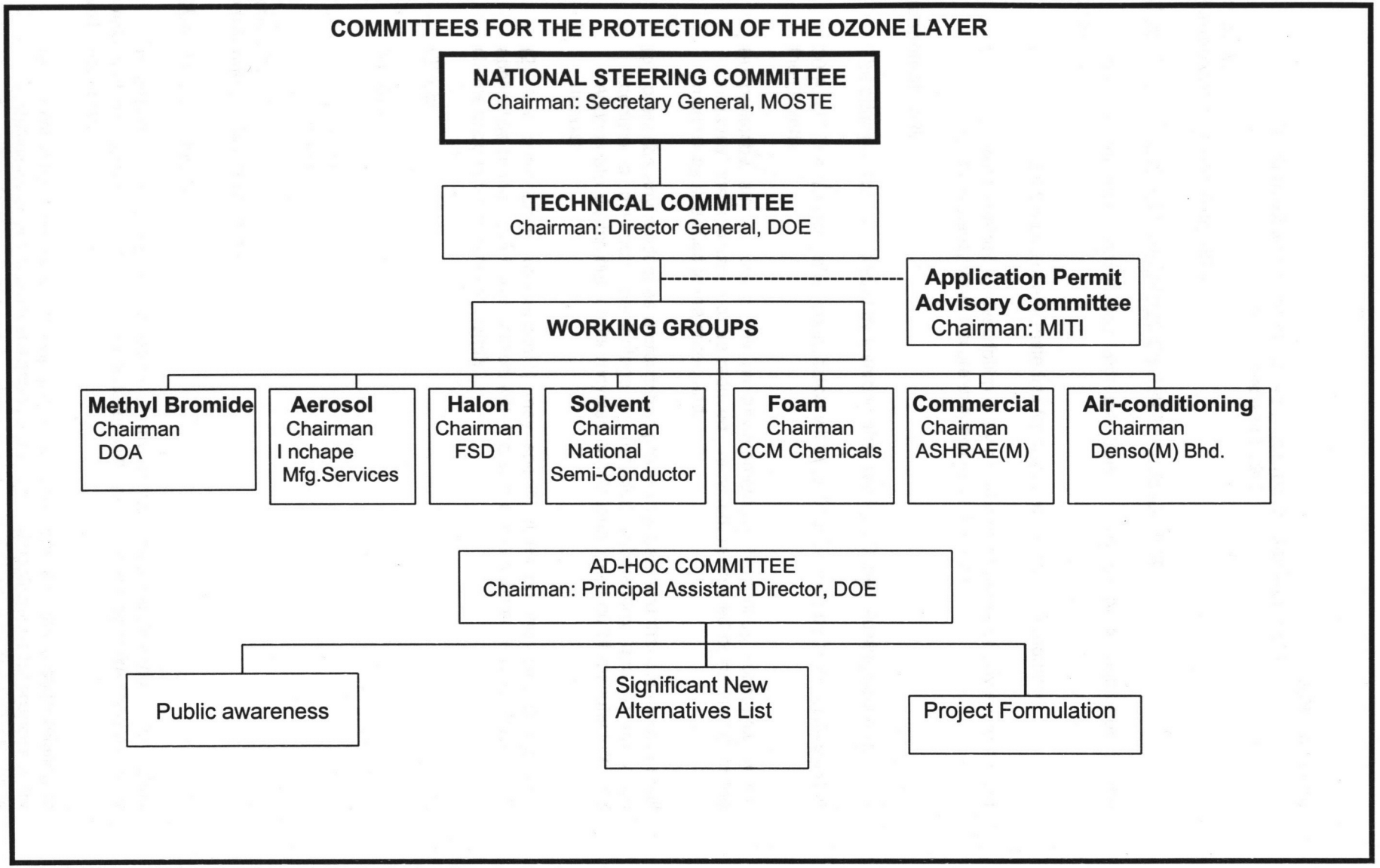
Reduction Programme of Controlled Substances by Major Industrial Users Malaysia, 1989-2000

	Solvent Cleaning				Foams		Refrigeration & Air- Conditioning				Aerosol		Fire Fighting		Agriculture	
Year	CFC113		MTC		CFC11,CFC12		Refrigeration & Commercial Air - Conditioning (CFC11,CFC12)		Mobile Air conditioning (CFC12)		CFC11,CFC12, CFC113,CFC114		Halons		Methyl Bromide	
	MT	%	MT	%	MT	%	MT	%	MT	%	MT	%	MT	%	MT	%
1989	1441	0%	2348	0	590	0	485	0	894	0	180	0	201	0	24	0
1990	1244	14%	3057	30%	696	+18%	320	34%	1012	+13%	350	+94%	207	+3%	28	+17%
1991	1100	24%	2701	+15%	870	+47%	378	22%	1126	+26%	350	+94%	231	+15%	33	+38%
1992	800	44%	2829	+20%	1088	+84%	435	10%	1171	+31%	300	+67%	263	+31%	30	+25%
1993	370	74%	2620	+12%	1360	+113%	495	+2%	1276	+43%	300	+67%	137	32%	30	+25%
1994	140	90%	2600	+11%	1180	100%	495	+2%	1171	+31%	250	+39%	15	93%	35	+46%
1995	70	95%	2080	11%	944	+60%	400	18%	1186	+33%	200	+11%	10	95%	40	+67%
1996	50	97%	1560	34%	708	+20%	300	38%	1172	+31%	150	17%	10	95%	46	92%
1997	30	98%	1040	56%	472	20%	195	60%	800	11%	100	44%	8	96%	52	117%
1998	10	99%	520	81%	236	73%	90	81%	800	11%	80	77%	8	96%	12	50%
1999	0	100%	0	100%	0	100%	90	81%	800	11%	40	78%	0	100%	69	188%
2000	0	100%	0	100%	0	100%	90	81%	800	11%	0	100%	0	100%	80	233%

Source: DOE (1995) Malaysia Country Programme Update (CP)

Note: Percent (%); 1989 as base year; +ve% indicates increase
1989- 1993 data is actual reduction in consumption from CP, Table 3b;
1994-2000 data is forecast reduction from CP, Table 3b
Agriculture Data from Table3, CP


National Steering Committee on the Protection of the Ozone Layer
MOSTE Chairman
EPU
MOSTE
MOFA
MOF
MHLG/ FSD
MITI
MOA
U/RI
Industries
Supplier
NGOs
MIDI
DOE
Legal Advisor
MMS
Finance Division
Custom Department
Industry Division
Investment & Planning Division.
Chemical Division
Academic Division
Working Group
National Co-ordinator on depleting programmes
Ozone Monitoring
Control Import/Export of controlled substances
Encourage CFC/ Halon Free Investment
Outline and prepare reduction plan for individual sector
Promote awareness programme
Legislation issues
Financial Support
Trade Policy & Control Consumption
Carry out research on technologies alternatives and substitutes, ozone depletion, resource development
Encourage use of substitute & promote CFC/Halon Awareness Programmes


COMMITTEES FOR THE PROTECTION OF THE OZONE LAYER
NATIONAL STEERING COMMITTEE
Chairman: Secretary General, MOSTE
TECHNICAL COMMITTEE
Chairman: Director General, DOE
Application Permit Advisory Committee
Chairman: MITI
WORKING GROUPS
Methyl Bromide
Chairman
DOA
Aerosol
Chairman
I nchape
Mfg.Services
Halon
Chairman
FSD
Solvent
Chairman
National
Semi-Conductor
Foam
Chairman
CCM Chemicals
Commercial
Chairman
ASHRAE(M)
Air-conditioning
Chairman
Denso(M) Bhd.
AD-HOC COMMITTEE
Chairman: Principal Assistant Director, DOE
Public awareness
Significant New Alternatives List
Project Formulation

Section 30 and 51 of the Environmental Quality Act, 1974 and Amendment 1996

Section 30
Environmental Quality Act, 1974

Section 30: Power to prohibit use of any material or equipment.

The Minister after consultation with the Council may by order published in the Gazette-

(a) prohibit the use of any materials for any process, trade or industry;

(b) prohibit whether by description or by brand name the use of any equipment or industrial plant; within the areas specified in the order.

Amendment 1996

16. The principal Act is amended by inserting after section 30 the following sections:

30 A. (1) The Minister, after consultation with the Council, may by order published in the Gazette-

(a) prescribe any substance as an environmentally hazardous substance which requires the substance to be reduced , recycled, recovered or regulated in the manner as specified in the order; and

(b) prescribe any product as a prescribed product for sale and that the product shall contain a minimum percentage of recycled substances and to carry an appropriate declaration on its recycled constituents, method of manufacture and disposal.

(2) Any order under subsection(1) may specify rules on the use, design and application of the label in connection with the sale of the substance or product which claims to be environmentally friendly.

(3) xxx

30 (B) xxx

(a) xxxx
(b) xxxxx

Section 51
Environmental Quality Act, 1974

Section 51. Regulation

(1) In addition to and not in derogation of any of the powers contained in any other provisions of this Act, the Minister after consultation with the Council may make regulations for or with respect to-

(a) prescribing fees for examining plans, specifications and information relating to installations or proposed installations the subject of applications for licences or for any other forms of approval given under this Act or any regulations made thereunder;

(b) prescribing standards or criteria for the implementation of any declared environmental policy or classification for the protection of the environment and for protecting beneficial uses;

(c) prescribing standards or criteria for determining when any matter, action or thing is poisonous, noxious, objectionable, detrimental to health, or within any other description referred to in this Act;

(d) prohibiting the discharge, emission, or deposit into the environment of any matter, whether liquid, solid , or gaseous, or any radio-activity and prohibit or regulating the use of any specified fuel;

(e) prescribing ambient air quality standards and emission standards and specifying the maximum permissible concentrations of any matter that may be present in or discharged into the atmosphere;

(f) prohibiting the use of any equipment, facility, vehicle, or ship capable of causing pollution or regulating the construction, installation or operation thereof so as to prevent or minimise pollution;

(h) - (s)

(2) Any such regulation may be general or may be restricted in operation as to time, place, persons or circumstances whether any such time , place, person or circumstances is determined or ascertainable before, at or after the making of the regulations.

Amendment 1966

34. Subsection 51(1) of the principal Act is amended-

(a) xxx

(b) xxx

(c) xxx

(d) by inserting after the paragraph (s) the following paragraphs:

"(t) regulating environmental audit and the submission of an audit report and the appointment of qualified personnel to assist the Director General in carrying out an environmental audit of any vehicle, ship or premises ,irrespective of whether the vehicle, ship or premises are prescribed under section 18 0r otherwise, and their manner of operation , and prescribing the fees chargeable;

(u) prohibiting or regulating the manufacture , storage, transportation ,or the application or use, emission, discharge , or deposit into the environment, of any environmentally hazardous substances' ;

(v) regulating measures to assess , control , reduce or eliminate environmental risk;

(w) regulating the competency of persons qualified to maintain and operate the equipment or control equipment."

APPENDIX 11

Projects and Activities Approved by Multilateral Fund

For Malaysia (as at 30 June 1998)

Sectors	No of Projects/Activities and implementing agencies						Cost (US$)
	UNDP	UNEP	UNIDO	WB	Bilateral	Total	
Refrigeration & Air Conditioning (MAC/Commercial Refrigeration)	10	-	-	6	-	16	12,341,996.00
Solvent	4			5	1(France)	10	2,161,956.00
Foam	41		3	3		47	10,410,284.00
Aerosol	4			3		7	2,819,480.00
Halon	1			1		2	922,932.00
Several Activities	11	1	2	7	1 (USEPA)	22	1,696,728.00
Agriculture (CH_3Br)	1					1	5,000.00
Total	**105**						**30,265,236.00**
Year	Expected No. of Activities/ Projects completed/to be completed						Expected amount of ODS to be Phase-out (ODP tonnes)
	UNDP	UNEP	UNIDO	WB	Bilateral	Total	
1993	2	-	-	2	1(USEPA)	5	150.00
1994	6	1	-	1	-	8	100.00
1995	11	-	-	2	-	13	544.00
1996	12	-	1	5	-	18	1532.50
1997	13	-	-	2	-	15	914.90
1998	22	-	1	11	-	34	1,437.65
1999	7	-	3	1	1 (France)	12	1,107.95
Total	**105**						**5,786.98**
	Total No. of Activities/Projects completed						ODS Phased-Out (ODP Tonnes)
Total	**17 + (48)* = 65**						**3,423.10**
Amount Disbursed = US$21.5 million							

Source: Department of Environment, 1998

Note: (48)* = number of investment projects

APPENDICES TO DECISION II/8 ("FINANCIAL MECHANISM") ADOPTED BY THE SECOND MEETING OF THE PARTIES

Appendix I

INDICATIVE LIST OF CATEGORIES OF INCREMENTAL COSTS

1. The evaluation of requests for financing incremental costs of a given project shall take into account the following general principles:

(a) The most cost effective and efficient option should be chosen, taking into account the national industrial strategy of the recipient party. It should be considered carefully to what extent the infrastructure at present used for production of the controlled substances could be put to alternative uses, thus resulting in decreased capital abandonment, and how to avoid deindustrialization and loss of export revenues;

(b) Consideration of project proposals for funding should involve the careful scrutiny of cost items listed in an effort to ensure that there is no double counting;

(c) Savings or benefits that will be gained at both the strategic and project levels during the transition process should be taken into account on a case by case basis, according to criteria decided by the Parties and as elaborated in the guidelines of the Executive Committee;

(d) The funding of incremental costs is intended as an incentive for early adoption of ozone protecting technologies. In this respect the Executive Committee shall agree which time scales for payment of incremental costs are appropriate in each sector.

2. Incremental costs that once agreed are to be met by the financial mechanism include those listed below. If incremental costs other than those mentioned below are identified and quantified, a decision as to whether they are to be met by the financial mechanism shall be taken by the Executive Committee consistent with any criteria decided by the Parties and elaborated in the guidelines of the Executive Committee. The incremental recurring costs apply only for a transition period to be defined. The following list is indicative:

(a) Supply of substitutes

(i) Cost of conversion of existing production facilities:

-cost of patents and designs and incremental cost of royalties;

-capital cost of conversion;

-cost of retraining of personnel, as well as the cost of research to adapt technology to local circumstances;

(ii) Costs arising from premature retirement or enforced idleness, taking into account any guidance of the Executive Committee on appropriate cutoff dates:

-of productive capacity previously used to produce substances controlled by existing and/or amended or adjusted Protocol provisions; and

-where such capacity is not replaced by converted or new capacity to produce alternatives;

(iii) Cost of establishing new production facilities for substitutes of capacity equivalent to capacity lost when plants are converted or scrapped, including:

-cost of patents and designs and incremental cost of royalties;

-capital cost;

-cost of training, as well as the cost of research to adapt technology to local circumstances;

(iv) Net operational cost, including the cost of raw materials;

(v) Cost of import of substitutes;

(b) Use in manufacturing as an intermediate good

(i) Cost of conversion of existing equipment and product manufacturing facilities;

(ii) Cost of patents and designs and incremental cost of royalties;

(iii) Capital cost;

(iv) Cost of retraining;

(v) Cost of research and development;

(vi) Operational cost, including the cost of raw materials except where otherwise provided for;

(c) End use

(i) Cost of premature modification or replacement of user equipment;

(ii) Cost of collection, management, recycling, and, if cost effective, destruction of ozone depleting substances;

(iii) Cost of providing technical assistance to reduce consumption and unintended emission of ozone depleting substances.

APPENDIX 13

Market Prices for Odss Alternatives/Substitutes in 1994

Alternatives/Substitutes	Market Price RM/kg (US$/kg)	Remarks
HFC13a (Alt for CFC12)	a. 40.00 (16.00) b >20.00 (8.00) (OEM) 35.00 (14.00) (REM) c. 27.00 (10.8) d. >20.00 (8.00)	Hoechst Du Pont York Westech
HC (Substitute for CFC11)	1.00 (0.4)	Kontrak Manufacturing

Source: DOE (1995), Malaysia Country Programme Update

Import Costs for Odss (Annex A), 1990-1993 Compared to Market Price in 1994 (US$/Kg)

CIF Prices, RM/kg (US$/Kg)					
ODSS	1990	1991	1992	1993	Market Price 1994
CFC11	1.76	1.66	1.52	1.74	a. 2.60 b. 2.20-2.40
CFC12	1.90	1.94	1.75	2.10	a. 2.40 b. 3.00-3.20
Other Halogenated Derivatives	2.31	2.35	2.18	2.29	-
CFC113	2.32	2.04	2.12	2.69	4.00
CFC114	2.17	3.87	3.72	5.64	-
CFC115	2.50	2.13	2.14	5.68	-
Halon 1211	3.72	3.59	4.94	6.45	16.00-28.00
Halon 1301	4.55	5.32	5.72	9.31	
Other Halogenated Derivatives	2.74	2.23	1.70	2.64	

Source: DOE (1995) Malaysia Country Programme Update

Note:

`a' and `b' indicate two separate sources of market information

OEM = Original Equipment Manufacture

REM: Replacement Equipment Manufacture

Rate of Conversion: 1US$ = RM$2.5 (1994)

APPENDIX 14

Trends in CO_2 Emission from Industrial Sources in Selected Countries (`1000 tonnes carbon /year)

Country	YEAR			
	1960	1970	1980	1990
Brunei	91	2238	1871	1421
Indonesia	5844	9050	25825	38506
Malaysia	1112	4092	7764	16216
Philippines	2303	6733	9971	11752
Singapore	380	4964	8217	10279
Thailand	1012	4190	10921	25535
Vietnam	2061*	7696*	4633	6337
ASEAN	12803	38963	69202	107046
USA	799,544	1165477	1259281	1310341
Japan	63,997	202973	254881	289288
World	Not available	Not available	5066855	5824051

Source: UNEP, 1993 in 1st ASEAN State of the Environment Report 1997

Emission of Methane ('1000 tonnes per year) from Man Made Sources, 1991

Country	Solid Fuel	Coal mining	Oil and gas production	Wet rice agriculture	Livestock	Total
Indonesia	480	82	720	5100	650	7100
Malaysia	65	0	250	290	39	640
Philippines	220	na	na	1500	220	1900
Singapore	61	na	na	Na	0	60
Thailand	110	9	83	5300	440	6000
Vietnam	120	75	0	3400	270	3900
USA	8400	9100	5300	750	6000	29000
Japan	1900	97	35	1400	280	3600
World	40000	40000	26000	72000	76000	250000

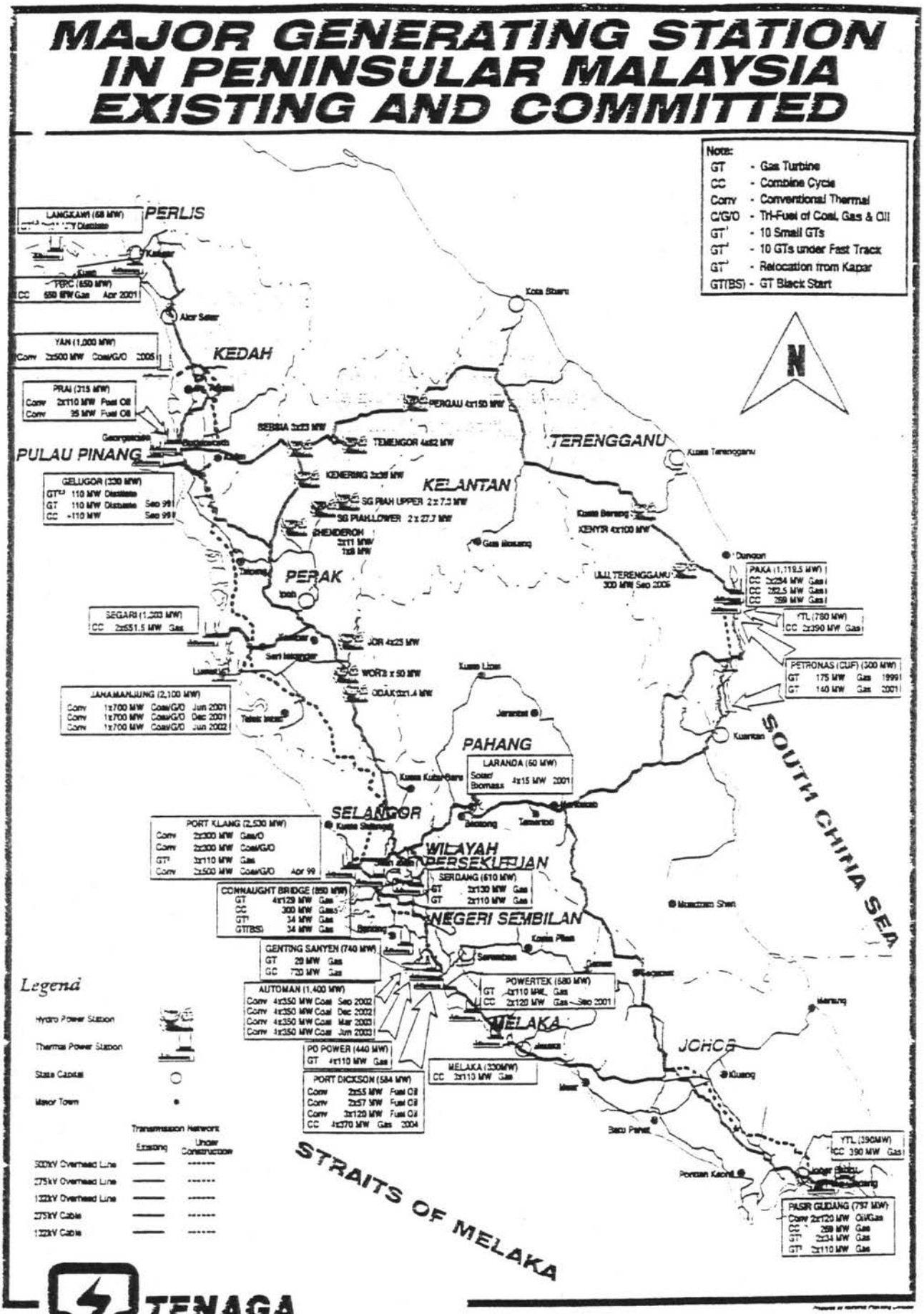
Source: WRI 1994 in 1st ASEAN State of Environment Report 1997 (Table 3.3)

APPENDIX 15

Emission from Sultan Salahuddin Abdul Aziz power Station (1993)

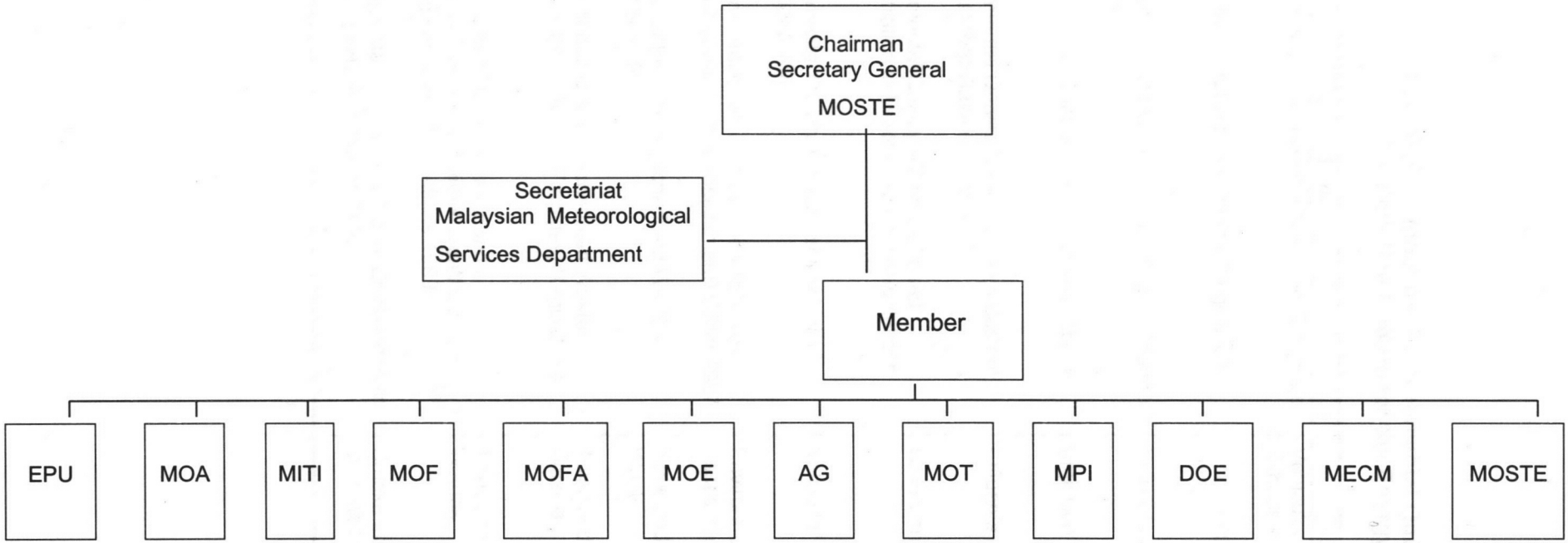
	Fuel Consumption		Emission Rates		
	Fuel Type (in Boiler)	Amount	SO_2 (tonnes)	NO_2 (tonnes)	CO2 (tonnes)
January	Oil	40,512.47 (tonnes)	2,732.05	517.65	128,462.40
	Coal	107,548.76 (tonnes)	1,129.26	1,129.26	256,269.60
	Gas	45,373,997.50 (cm3)	0.43	0.43	92,332.80
Total			(3,861.74)	(2,046.21)	(477,064.80)
February	Oil	49,979.60 (tonnes)	3,370.50	638.62	158,479.20
	Coal	83,699.89 (tonnes)	878.85	878.85	199,440.00
	Gas	29,440,047.50 (cm3)	0.28	259.07	59,911.20
Total			(4,249.63)	(1,776.54)	(417,830.40)
March	Oil	42,382.60 (tonnes)	2,800.27	541.55	134,388.00
	Coal	128,739.94 (tonnes)	1,398.00	1,351.77	306,763.20
	Gas	44,275,002.50 (cm3)	0.43	389.62	90,100.80
Total			(4,210.37)	(2,282.94)	(531,252.00)
April	Oil	41,524.05 (tonnes)	2,800.27	530.58	131,666.40
	Coal	133,142.98 (tonnes)	1,398.00	1,398.00	317,253.60
	Gas	45,213,805.00 (cm3)	0.43	397.88	92,008.80
Total			(4,198.70)	(2,326.46)	(540,928.80)
May	Oil	47,865.61 (tonnes)	611.61	611.61	151,776.00
	Coal	127,741.64 (tonnes)	1,341.29	1,341.29	304,380.00
	Gas	38,704,992.50 (cm3)	0.37	340.06	78,768.00
Total			(4,569.60)	(2,292.96)	(534,924.00)
June	Oil	40,280.73 (tonnes)	2,716.43	514.70	127,728.00
	Coal	145,696.87 (tonnes)	1,529.82	1529.82	347,167.60
	Gas	45,072.00 (cm3)	nil	0.40	93.60
Total			(4,246.25)	(2,044.92)	(474,991.20)
July	Oil	45,359.14 (tonnes)	3,058.90	579.58	143,827.20
	Coal	147,113.76 (tonnes)	1,544.70	1,544.70	350,539.20
	Gas	42,269,410.00 (cm3)	0.40	371.97	86,018.20
			(4,604.00)	(2,496.25)	(580,384.80)
August	Oil	52,229.30 (tonnes)	3,522.20	667.37	165,614.40
	Coal	133,589.08 (tonnes)	1,402.68	1,402.68	318,319.20
	Gas	27,938,252.50 (cm3)	0.27	245.86	56,851.20
Total			(4925.15)	(2,315.91)	(540,784.80)
September	Oil	78,717.90 (tonnes)	5,308.53	1,005.83	249,609.60
	Coal	128,245.31 (tonnes)	1,346.57	1,346.57	305,582.40
	Gas	238,657.00 (cm3)	nil	2.10	482.40
Total			(6,655.10)	(2,354.50)	(555,674.40)
October	Oil	107,545.42 (tonnes)	7,252.58	1,374.17	341,013.60
	Coal	85,632.60 (tonnes)	899.14	899.14	204,048.00
	Gas	17,691,885.00 (cm3)	0.17	155.69	36,000.00
Total			(8,151.90)	(2,429.00)	(581,061.60)
November	Oil	96,531.31 (tonnes)	6,509.82	1,233.44	306,093.60
	Coal	66,404.47 (tonnes)	697.25	697.25	158,227.20
	Gas	25,349,968.00 (cm3)	0.25	223.08	51,588.00
Total			(7,207.31)	(2,153.77)	(515,908.80)
December	Oil	71,210.47 (tonnes)	4,802.26	909.90	225,799.20
	Coal	85,744.32 (tonnes)	900.32	900.32	204,314.40
	Gas	40,778,570.00 (cm3)	0.39	358.85	82,987.20
Total			(5,702.97)	(2,169.07)	(513,100.80)
Total	Oil	714,138.61 (tonnes)	48,159.63	9,124.98	2,264,464.80
	Coal	1,373,299.62 (tonnes)	14,419.66	14,419.66	3,272,299.20
	Gas	357,319,659.50 (cm3)	3.43	3,144.45	727,142.40
			(62,582.72)	(26,689.05)	(6,263,906.40)

Source: EPU (1996) Study on EPAP (Table 4)


MAJOR GENERATING STATION
IN PENINSULAR MALAYSIA
EXISTING AND COMMITTED
Note:
GT - Gas Turbine
CC - Combine Cycle
Conv - Conventional Thermal
C/G/O - Tri-Fuel of Coal, Gas & Oil
GT' - 10 Small GTs
GT* - 10 GTs under Fast Track
GT' - Relocation from Kapar
GT(BS) - GT Black Start
N
PERLIS
KEDAH
PULAU PINANG
PERAK
KELANTAN
TERENGGANU
PAHANG
SELANGOR
WILAYAH PERSEKUTUAN
NEGERI SEMBILAN
MELAKA
JOHOR
SOUTH CHINA SEA
STRAITS OF MELAKA
LANGKAWI (68 MW)
YTL (780 MW)
CC 2x390 MW Gas
PETRONAS (CUF) (300 MW)
GT 175 MW Gas 1999
GT 140 MW Gas 2001
PASIR GUDANG (737 MW)
Legend
Hydro Power Station
Thermal Power Station
State Capital
Major Town
Transmission Network
Existing
Under Construction
500kV Overhead Line
275kV Overhead Line
132kV Overhead Line
275kV Cable
132kV Cable
TENAGA NASIONAL BERHAD

APPENDIX 17

NATIONAL CLIMATE COUNCIL



EPU: Economic Planning Unit
MOA: Ministry of Agriculture
MITI: Ministry of International trade and Industries
MOF: Ministry of Finance
MOFA Ministry of Foreign Affairs
MOE: Ministry of Education
AG: Attorney General's Chamber
MOT: Ministry of Transport
MPI: Ministry of Primary Industries
DOE: Department of Environment

MECM: Ministry of Energy, Communications and Multimedia
MOSTE: Ministry of Science Technology and the Environment

APPENDIX 18

Legislation under the Environmental Quality Act, 1974 On Pollution Control for the Energy Sector

Title	Subject	Effective Date
Motor Vehicles (Control of Smoke and Gas) Rules 1977	Vehicular Smoky Exhausts	22 December 1978
Environmental Quality (Licensing) Regulations 1977	Licensing under EQA 1974	10 October 1977
Environmental Quality (Compounding of Offences) Rules 1978	Power to Compound	10 October 1978
Environmental Quality (Clean Air) Regulations 1978	Emission to Atmosphere	10 October 1978
Environmental Quality (Sewage and Industrial Effluents) Regulations 1979	Effluents to water course	1 January 1979
Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations 1985	Lead Content in fuel	11 July 1987
Environmental Quality (Motor Vehicle Noise) Regulations 1987	Vehicular Noise	16 July 1987
Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987	Environmental Impact Assessment	1 April 1988
Environmental Quality (Scheduled Wastes) Regulations 1989	Toxic and Hazardous Wastes	1 May 1989
Environmental Quality (Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989	Toxic and Hazardous Wastes	1 May 1989
Environmental Quality (Prescribed Premises)(Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989	Toxic and Hazardous Wastes	1 May 1989
Environmental Quality (Control of Emission from Diesel Engine) Regulations 1996	Smoke and pollutants such as CO, HC and NOx	1 September 1996

APPENDIX 19

Examples of Ex-Situ Conservation in Malaysia

Types	Item,	Places
Arboreta	Medicinal Plants/fruit trees/timber species	Medicinal Plant Garden, UPM Serdang; Forest Research Institute Kepong
Seed Genebanks	Rice/vegetables	Malaysia Agricultural Research and Development Institute, Seberang Perai
Field Genebanks	Rubber/oil palm/orchid	Rubber Research Institute Malaysia, Sungai Buloh; Palm Oil Research Institute, Kluang Johor; Sabah Orchid Garden, Poring
Captive Breeding Centres	Sumatran rhinocerous/ seladang	Captive Breeding Station, Sungai Dusun; National Zoo
Rehabilitation Centres	Orang- utan	Orang Utan Rehabilitation Centre, Sepilok
Turtle Sanctuaries	Marine turtle	Turtle Sanctuary Rantau Abang Trengganu
Turtle Hatcheries	River terrapin/marine turtle	Terrapin Hatchery, Bota Kanan/

Source: National Policy on Biological Diversity, MOSTE, 1998

APPENDIX 20

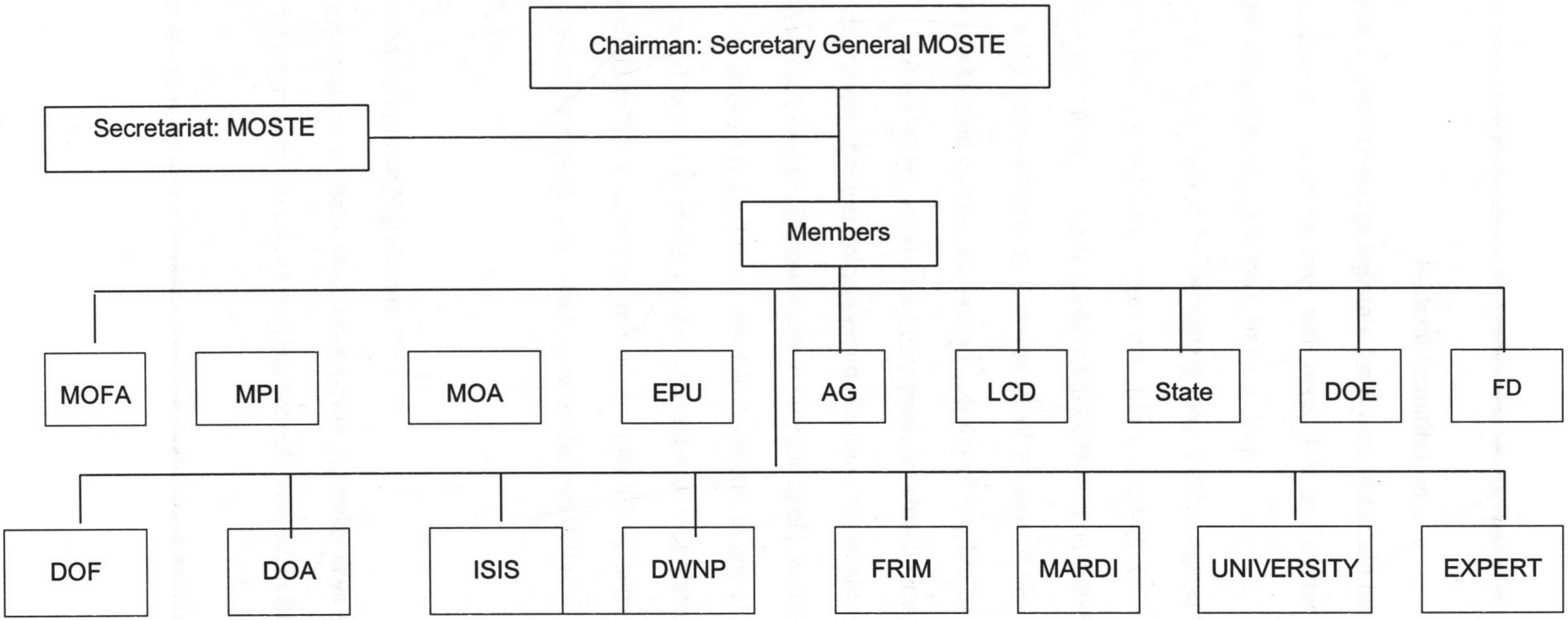
Peninsular Malaysia: Proposed National Parks, Nature Reserves, Nature Monuments and Wildlife Sanctuaries

State	Reserve or Park	Approximate area (acres)
Perak	Belum Wildlife Reserve	531,000
	Grik Wildlife Reserve	168,000
	Segari Wildlife Reserve	3,450
	Selama Wildlife Sanctuary	55,000
	Kuala Gula Bird Sanctuary	2,200
	Gunong Tempurong Nature Monument	3,000
Selangor	Batu Caves Nature Monument	385
	Templer Park Nature Monument	7,500
	Kuala Selangor Nature Monument	1,400
Negri Sembilan	Pasoh IBP Research Reserve	6,000
Johor	Mersing Nature Monument	46,000
	Padang Mulud Nature Reserve	5,320
	Johor State (Gunong Blumut) National Park*	128,000
Johor-Pahang	Taman Endau-Rompin National Park*	500,000
Pahang	Tasek Bera Nature Reserve	82,000
	Manchali Nature Reserve	1,000
	Tasek Chini Nature Reserve	12,000
Trengganu	Ulu Trengganu Wildlife Reserve	288,000
	Dungun Turtle Sanctuary	800
	Trengganu Bird Sanctuary	730
Kedah	Ulu Muda Wildlife Reserve	285,000
Penang	Baru Feringghi Wildlife Reserve	3,620
Kelantan	Sungai Nenggiri Wildlife Reserve	91,000
Total		2,221,405

Source: Third Malaysia Plan, Table 11-3, Page 225

* there are designed to be multiple-use national parks with logging restricted to designated areas

NATIONAL COMMITTEE ON BIOLOGICAL DIVERSITY



AG: Attorney General
DOA: Dept of Agriculture
DOE: Dept of Environment
DOF: Dept of Fisheries
DWNP: Dept of Wildlife and National Parks
EPU: Economic Planning Unit
FD: Forest Dept

FRIM: Forest Research Ins. of Malaysia
ISIS: Ins. of Strategic and International Studies
MLCD: Ministry of Land & Co-operative Development
MARDI: Malaysian Agriculture Research Development Institute
MOA: Min of Agriculture
MOFA: Min of Foreign Affair
MOSTE: Min of Science, Technology and the Environment

MPI: Min of Primary Industries

Federal Constitution

76. Power of Parliament to legislate for States in certain cases

(1) Parliament may make laws with respect to any matter enumerated in the State List, but only as follows, that is to say:

(a) for the purpose of implementing any treaty, agreement or convention between the federation and any other country, or any decision of an international organisation of which the Federation is a member; or

(b) for the purpose of promoting uniformity of the laws of two or more States; or

(c) if so requested by the Legislative Assembly of Any State.

(2) [...] and no Bill for a law under paragraph (a) shall be introduced [...] until the Government of any state concerned has been consulted.

(3) subject to Clause (4), a law made in pursuance of paragraph (b) or paragraph (c) of Clause (1) shall not come into operation in any state until it has been adopted by a law made by the legislature of that state, and shall then be deemed to be a state law and not a federal law, and may accordingly be amended or repealed by a law made by that legislature.

(4) xxx

77. Residual power of legislation

The Legislature of a State shall have power to make laws with respect to any matter not enumerated in any of the Lists set out in the Ninth Schedule [...]

National Forestry Act 1984

An Act to provide for the administration, management and conservation of forests and forestry development within the States of Malaysia and for connected purposes.

7(1) The State Authority may constitute any land a permanent reserved forest by publishing in the Gazette a notification-

a) specifying the situation and extent of such land; and

b) declaring that such land shall be a permanent reserved forest from a date fixed by the notification

7(2) From the date so fixed, such land shall be a permanent reserved forest.

10(1)[...} classify every permanent reserved forest under one or more of the following classifications [...]

(a) - (e) timber production, soil protection, soil reclamation, flood control, water catchment;

(f) forest sanctuary for wild life;

(g) virgin jungle reserved forest;

(h)-(k) amenity, education, research, forest for federal purposes

11(1) the State authority, if satisfied that any land in a permanent reserved forest-

(a) is no longer required for the purpose for which it was classified under section 10; and

(b) is required for economic use higher than that for which it is being utilised, may excise such land from the permanent reserved forest.

12. Where the land is excised under Section 11 the State Authority shall, wherever possible [...] constitute in accordance with section 7 an approximately equal area of land a permanent reserved forest.

Extracted and Condensed from National Forestry Act 1984

Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987

Prescribed activities
The activities specified in the Schedule are prescribed to be prescribed activities.

Schedule

1. Agriculture:
(a) Land development schemes covering an area of 500hectares or more to bring forest land into agricultural production.
(b) - (c) xxxx

2. Airport

3. Drainage and Irrigation
(a) xxx
(b) drainage of wetland, wild-life habitat or of virgin forest covering an area of 100 hectares or more.
(c) xxx

4. Land Reclamation

5. Fisheries:
(a) xxx
(b) xxx
(c) Land based aquaculture projects accompanied by clearing of mangrove swamp forests covering an area of 50 hectares or more.

6. Forestry:
(a) Conversion of hill forest land to other land use covering an area of 50 hectares or more.
(b) Logging or conversion of forest land to other land use within the catchment area of reservoirs used for municipal water supply, irrigation or hydro-power generation or in areas adjacent to state and national parks and national marine parks.
(c) Logging covering an area of 500 hectares or more.
(d) Conversion of mangrove swamps for industrial, housing or agricultural use covering an area of 50hectares or more.
(e) Clearing of mangrove swamps on islands adjacent to national marine parks.

7. Housing
8. Industry
9. Infrastructure
10. Ports
11. Mining
12. Petroleum
13. Power Generation and Transmission
14. Quarries
15. Railways
16. Transportation
17. Resort and Recreational Development
18. Waste Treatment and Disposal
19. Water Supply

National Parks Act 1980

An Act to provide for the establishment and control of National Parks and for matters connected therewith

1. (2) This Act shall not apply to [...] and the State Parks of Kelantan, Pahang and Trengganu, which together constitute the Taman Negara [...].

3. (1) The State Authority may on the request of the Minister reserve any State Land within the State (including any marine area) for the purpose of a National Park [...]

3. (2) The area so reserved shall be placed under the control of a National Park committee [...].

3. (3) The reservation of an area or part thereof under this section shall not be revoked by the State Authority except with the concurrence of the Minister in writing.

4. The object of the establishment of National Parks is the preservation and protection of wild life, plant life and objects of geological, archaeological, historical and ethnological and other scientific and scenic interest and [...].

Taman Negara

Taman Negara National Park was formerly known as King George V Park. It is situated in three states of Pahang, Kelantan and Trengganu. It was established in 1939 by the State Enactment:

i. King George V National Park (Pahang) Enactment 2 of 1939
ii. King George V National Park (Trengganu) Enactment 6 of 1358
iii. King George V National Park (Kelantan) Enactment 14 of 1938

The title of the Park was change to `Taman Negara' by the King George V National Park (Change of Title) Enactment 1960 [No.12 of 1960]. The Park is administered by a Trustee, which appointed the Chief Game Warden, Federation of Malaya to be the Officer -in-Charge of the Park. The chief game warden is the Director General of the DWNP.

Source: MOSTE, 1998

APPENDIX 26

Legislation Used to Declare Protected Areas in Peninsular Malaysia

Period and Control	Areas of Jurisdiction					Total Area Gazetted (ha)
	Federated Malay States	Straits Settlement	Johor	Trengganu	Kelantan	
1902-1955 (under state)	Wild Animals and Birds Protection Enactment 1902/04/14/21	Wild Animals and Birds Ordinance 88 of 1904	Wild Animals and Birds Protection Enactment 10 of 1923	Protection of Wild Animals Enactment 1 of 1923	Wild Animals and Birds Protection Enactment 11 of 1930	**432,134**
1956-1972 under state	Wild Animals and Birds Protection Ordinance, No2 of 1955 (replaced all state wildlife laws and was adopted by all states in Peninsular Malaysia					**76,511**
1973-present Federal	Protection of Wild Life Act, No.76 of 1972 (replaced Wild Animals and Birds Protection Ordinance; enforced by Federal Government through DWNP throughout Peninsular Malaysia					**None**
1938-present under State	Pahang, Trengganu and Kelantan Taman Negara Enactments of 1938/39 3 State Parks constitute the National Park					**431,452**
1980-present under federal	All states in Peninsular Malaysia National Parks Act of 1980					**None**
1989-present under Johor	National Park Corporation Enactment (Johor) 1989					**48,905**

Source: Department of Wild Life and National Parks (DWNP), 1996

Australia Takes Tough Line On HIV Plant

A potent chemical extracted from a common Western Australia shrub shows a promise as a treatment against HIV-at least in the test tube. American researchers at the NCI Maryland have isolated an alkaloid from the tough woody plant, which halts the replications of HIV.

NCI has a standard agreement, which it offers to countries in which its collectors hunt plants. The agreement is meant to encourage such cooperation. Australia refused to sign the standard agreement when asked by the NCI in 1990s. The reason given by the Australian was "it would not guarantee the outcomes we require, and unless it guarantees them why should we sign".

Australia will not agree to any deal that does not has 'build in protection for the plant in the wild', which include Australian scientist in the research and development and guarantee a fair and equitable share of any commercial benefits from development of the plant.

Source: New Scientist 3 July 1993

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