PHRONETIC PERSPECTIVE IN POLICY ANALYSIS: AN INVESTIGATION ON NATIONAL CLIMATE CHANGE POLICY IN MALAYSIA

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ABSTRACT

Climate change has become a major issue around the world. In the recent period, the impact of climate change has grown enormously, and almost impossible for a country to deal with its effects alone. Climate change has major implications, which includes not only scientific, but also political, economic, socio-cultural, psychological, and ethical, which should be understood by policy makers and society in order to respond effectively to this issue. Nevertheless, policy makers wield a great deal of influence in shaping the meaning of climate change and in developing and executing adaptation and mitigation plans and strategies for countries and their inhabitants. Due to the omnipresent influence of positivism in social research, the field of policy studies has been dominated by empiricism to the study of politics and rule in society that indirectly obscures the diversity, complexity and diffusive dimensions of governance. Although policy process has advanced through the application of Habermasian communicative action in recent decades; this focus on public participation, discourse, and consensus leaves little space for investigations of values and power relations underlying attempts to plan for a sustainable future. In the face of climate change, Malaysia has implemented climate change policy in line with the international political scene. This thesis explores phronesis as an alternative theory of practice for policy makers who share the idea of climate change. In it, climate change policy planning requires an amended set of theoretical and practical tools; and explore the idea that practical wisdom are among the skills that policy makers required; who are interested in climate change will need to cultivate, supported by wise and creative planning theory. Phronesis develops principles derived from or relating to experience as opposed to other methods of acquiring knowledge, and setting them against empirical evidence, to be effective. Phronesis gives balance towards the empirical approaches, rationale for action and a focus for the development of alternative methods and approaches. This thesis adopts 'phronetic planning research' introduced by Flyvbjerg to investigate the National Climate Change Policy in Malaysia. Two central objectives are pursued: 1) to provide critical analysis of climate change policy in Malaysia through a phronetic research approach; and 2) to analyze the efficacy of climate change policy in Malaysia from a multi-stakeholder perspectives. By analyzing the phenomenon of phronesis in policy analysis, this study seeks to contribute in field of Science and Technology Studies. It also presents a narrative of phronetic research on policy analysis that will enrich literature in policy studies as well as in environmental studies. This study relies on data and information gathered through fieldwork in several states in Malaysia. Two methods were used: (a) in-depth interviews with policymakers, NGOs, environmental activists, academicians, and private sectors; and (b) archival studies method to trace climate change data in policy texts, technical documents, and mass media reports. Accordingly, as the basis for a research method, phronesis is best expressed through narratives of practice that interconnect on how strategies, goals, constraints, affordances and resources unfold in the enactment of climate change policy in Malaysia.

ABSTRAK

Perubahan iklim telah menjadi satu isu yang hangat di seluruh dunia. Sejak kebelakangan ini, kesan perubahan iklim semakin berkembang, dan membuatkan hampir mustahil untuk sesebuah negara menangani kesannya secara bersendirian. Implikasi perubahan iklim meliputi bukan sahaja sains, malah politik, ekonomi, sosio-budaya, psikologi, dan etika, yang perlu difahami oleh penggubal dasar dan masyarakat supaya tindakan yang berkesan dapat diambil untuk mengatasi isu ini. Namun begitu, penggubal dasar mempunyai pengaruh dalam membentuk makna perubahan iklim, serta dalam membangunkan dan melaksanakan perancangan dan strategi adaptasi dan mitigasi untuk negara dan penduduknya. Disebabkan pengaruh kuat positivisme dalam bidang penyelidikan sosial, bidang pengajian dasar secara asasnya cenderung kepada orientasi empirisme dalam kajian politik dan pentadbiran dalam masyarakat, yang secara tidak langsung telah mengaburi kepelbagaian dan kerumitan dalam dimensi tadbir urus. Walaupun proses penggubalan dasar telah melalui kemajuan menerusi aplikasi '*communicative action'* Habermasian dalam beberapa dekad kebelakangan ini, tumpuan dalam penyertaan awam, wacana, dan konsensus meninggalkan ruang yang kecil untuk kajian hubungan nilai dan kuasa dalam usaha untuk merancang masa depan yang lestari. Dalam menghadapi isu perubahan iklim, Malaysia melaksanakan dasar perubahan iklim, sejajar dengan senario politik antarabangsa. Tesis ini meneroka phronesis sebagai teori alternatif dalam amalan untuk penggubal dasar yang berkongsi idea tentang perubahan iklim. Dalam perancangan dasar perubahan iklim, ia memerlukan satu set teori dan praktikal yang berbeza; dan disokong oleh teori perancangan yang bijak dan kreatif. Penggubal dasar yang berminat dalam perubahan iklim perlu menyemai, dan meneroka idea bahawa *practical wisdom* adalah antara kemahiran yang penggubal dasar perlukan. Berbeza hujahan bukti empirikal, Phronesis membangunkan prinsip-prinsip yang diperolehi daripada atau berkaitan dengan pengalaman berbanding dengan kaedah lain dalam memperolehi pengetahuan. Phronesis memberikan keseimbangan terhadap pendekatan empirikal, satu tindakan rasional dan fokus bagi pembangunan kaedah dan pendekatan alternatif. Tesis ini menerima pakai '*phronetic planning research*' yang diperkenalkan oleh Flyvbjerg untuk mengkaji Dasar Perubahan Iklim Negara di Malaysia. Dua objektif utama untuk dicapai: 1) untuk menyediakan analisis kritikal dasar perubahan iklim di Malaysia melalui pendekatan penyelidikan phronetic; dan 2) untuk menganalisis keberkesanan dasar perubahan iklim di Malaysia dari perspektif pelbagai pihak yang berkepentingan. Dengan menganalisis fenomena phronesis dalam analisis dasar, kajian ini bertujuan untuk menyumbang kepada Pengajian Sains dan Teknologi. Ia juga membentangkan naratif penyelidikan phronetic kepada analisis dasar yang akan memperkayakan literatur dalam kajian dasar serta kajian alam sekitar. Kajian ini bergantung kepada data dan maklumat yang dikumpulkan melalui kerja lapangan di beberapa negeri di Malaysia. Dua kaedah telah digunakan: (a) wawancara mendalam dengan pembuat dasar, NGO, aktivis alam sekitar, ahli akademik, dan sektor swasta; dan (b) kaedah kajian arkib untuk mengesan data perubahan iklim dalam teks dasar, dokumen teknikal, dan laporan media massa. Sehubungan dengan itu, sebagai asas kaedah penyelidikan, phronesis dapat diungkapkan dengan kaedah terbaik melalui naratif, yang saling berhubungan tentang bagaimana strategi, matlamat, kekangan, keupayaan dan sumber yang terungkap dalam enakmen dasar perubahan iklim di Malaysia.

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ABBREVIATION

ADB	Asian Development Bank
CAP	Consumers Association of Penang
CBD	United Nations Convention on Biological Diversity
CCD	United Nations Convention to Combat Desertification
CDM	Clean Development Mechanism
CEMD	Conservation and Environmental Management Division
CETDEM	Centre for Environment, Technology and Development, Malaysia
COP	Conference of the Parties
DID	Department of Irrigation and Drainage Malaysia
DOE	Department of Environment
DWNP	Department of Wildlife and National Parks
EIA	environmental impact assessments
ENGOs	environmental non-governmental organizations
ENSO	El Nino Southern Oscillation
EPSM	Environmental Protection Society Malaysia
EPU	Economic Planning Unit
EQA 1974	Environmental Quality Act 1974
GDP	Gross domestic product
GEF	Global Environment Facility Trust Fund
GHG	greenhouse gas
GISTEMP	GISS Surface Temperature Analysis
GTCCC	National Green Technology and Climate Change Council
HFCs	hydrofluorocarbons
ICSU	International Council of Scientific Unions
INC	Intergovernmental Negotiating Committee
IPCC	Intergovernmental Panel on Climate Change
JPM	Prime Minister's Department
KeTTHA	Ministry of Energy, Green Technology and Water
LESTARI	Institute for Environment and Development
LULUCF	land use, land-use change and forestry
MDGs	Millennium Development Goals
MIDA	Malaysian Investment Development Authority
MITI	Ministry of International Trade and Industry
MNRE	Ministry of Natural Resources and Environment
MOSTE	Ministry of Science, Technology and the Environment
MOSTI	Ministry of Science, Technology and Innovation
MP	Malaysia Plan
NAP	National Action Plan
NAPA	National Adaptation Programmes of Action
NCDC	United States National Climatic Data
NCSD	National Council of Sustainable Development
NFC	National Forestry Council
NGO	Non-governmental organization
NGTC	National Green Technology Council
NRDC	Natural Resource Defense Council
NSCCC	National Steering Committee on Climate Change

OECD	Organization for Economic Co-operation and Development
OPP	Outline Perspective Plan
PFCs	perfluorocarbons
PICC	Putrajaya International Convention Centre
PTD	Administration and Diplomatic Officer
REDD+	Reducing emission from deforestation and forest degradation
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SCORE	Sarawak Corridor of Renewable Energy
SF_6	sulfur hexafluoride
SLiM	Sustainable Living in Malaysia
TAR	Third Assessment Report
UKM	National University of Malaysia
UNCED	United Nations Conference on Environment and Development
UNCHE	United Nation Conference on the Human Environment
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UTHM	Universiti Tun Hussein Onn Malaysia
WCED	World Commission on Environment and Development
WMO	World Meteorological Organization
WTO	World Trade Organization

CHAPTER 1

INTRODUCTION

1.1: Introduction

Climate change has been perceived as a global environmental problem in recent decades, receiving considerable attention from policy makers at national and international levels. Several strategies have been developed to reduce emissions of greenhouse gases (GHG) in the atmosphere; these strategies include reducing the use of fossil fuels and developing green technology. However, due to recent observable changes in climate, both natural and human systems must adapt to the effects of climate change.

Natural and human systems are constantly developing novel strategies to address the climate surrounding them. While all people are influenced in some way by weather and climate variability, vulnerability to exposure varies by region, business sector, society, and individual circumstances. This means that there are varying levels of exposure to climate-related risks, use of and dependency on climate resources, and decision-making time scales. The ability to adapt has also been influenced by non-climatic factors such as access to resources, technology, knowledge, and social characteristics (Adger et al., 2007; Smit & Pilifosova, 2001). In some cases, climate change may result in more favorable conditions and new opportunities.

Scientific knowledge plays a significant role in understanding and responding to climate change. The issue has been examined and defined by scientific measurement and

modeling. Formulated in a rational way, the problem itself suggests solutions. Scientific knowledge may be used to understand the relationship between GHG and climate change, and both science and policy are used to set emission reduction targets, as well as to establish institutions to operate the functions of governance. All countries on earth are in some way threatened by climate change, and all contribute some degree of emissions, so governance mechanisms are required at both a national and global scale.

Climate change is a particularly complex, multi-disciplinary area of science and non-science. Furthermore, climate change is not simply a scientific issue; it is a fundamentally social, political, cultural and values all wrap into one. Causes, impacts, and solutions cannot be separated from human societies and economies, their values and lifestyles.

Climate change is a phenomenon that is abstract and complex; should not be seen from a purely scientific standpoint. It is subject to various interpretations and understandings, which the stakeholders at various levels of decision making have different views about the need for adaptation, and the actions to be taken by whom. How and why the process of adaptation begins depends on how the problems and the opportunities to take visible action (Grothmann & Patt, 2005). Climate change is not the sole driver in stimulating adaptation considerations; these considerations must occur in combination with experience and circumstances that trigger and motivates action (e.g., Biesbroek et al., 2010; Tompkins et al., 2010). In the words of Lorenzoni et al. (2007:66), adapting to climate change may be characterized as a "wicked issue that represents a showcase of conflicting values and epistemic authorities; they are at the center of a contentious issue definition

process involving multiple actors and knowledge systems, in part shaped by societal choice and market imperatives".

Climate change may be considered an example of a trans-disciplinary problem that are not confined by the boundaries of the discipline; that must be addressed by those inside and outside the scientific community (Hinkel, 2008). For this purpose, participation and communication between stakeholder groups will enhance the robustness of research results and decisions, and thus contribute to more effective policy formulation. Local stakeholders have specific knowledge bases and experiences of context-specific conditions, which are important to consider when assessing climate impacts, vulnerability, and policy making process. As concluded by the Intergovernmental Panel on Climate Change (IPCC) (Carter et al., 2007:162): "To gain trust and improve decisions, awareness-building and dialogue is necessary between those stakeholders with knowledge to share (including researchers) and the wider public".

Based on the understanding that the physical reality of climate change potentially creates instability in terms of social, economic, and political aspects, governments around the world have introduced policies aimed at addressing climate change. Although there are positions skeptical of climate change, and whether there is a need to deal with it at all (Hulme, 2009), climate change has achieved the status of mega-global problem requiring coordination in multilateral agreements, such as the Kyoto Protocol.

Policy makers play an important role in the policy making process, hopefully making well-considered policy decisions aimed at reducing vulnerability to climate change.

Climate change is an issue that demands a role for scientific knowledge, along with diverse perspectives from other areas of knowledge. Thus, according to the IPCC the challenge for the decision-makers is "to find out which actions are currently appropriate and likely to be robust in the face of the many long-term uncertainties" (Klein et al., 2007). Through systematic assessment of adaptation measures and communication between all stakeholders, policymakers are able to make well-informed choices about what measures to implement.

According to Aristotle, politics are not something that can be understood by abstracting general principles and predictable things. It is also not a form of social engineering. Political science, he argued, is a demonstration of practical wisdom, rather than craft. He went on to explain that what he referred to as politics was "public administration" (Aristotle, 2009, Book 6, Chapter 8).

Aristotle claimed that political science, as a consequence of the emphasis on the particular, on context, and on experience, cannot be practiced as episteme. Being a knowledgeable researcher in the epistemic sense is not enough when it concerns political science because, "although [people] develop ability in geometry and mathematics and become wise in such matters, they are not thought to develop prudence [phronesis]" (Aristotle, 2009:1142a12–29). Aristotle went on to state that a well-functioning political science based on phronesis is imperative for a well-functioning society, inasmuch as "it is impossible to secure one's own good independently of […] political science" (Aristotle, 2009: 1141b27–42a12).

Phronesis is a type of knowledge that is sensitive to its application in a particular context; it is more inclined to the production of knowledge situated effects, about how to understand and act in contextualized situations, based on the deliberation in the resolution of certain set of values and interests. Such deliberation, which emphasizes on the values and interests, is significant to the development of social, political, economic systems, and even the environment of any society.

The origins and development of the field of policy analysis shows that there are differences in perspective. Fischer (2003) shows that policy analysis that was initially associated with management practices by the government, have too technocratic view. The objective of policy analysis in this model is to "translate political and social issues into technically defined ends to be pursued through administrative means" (p. 4). This perspective focuses primarily on technical solutions, and do not consider the way in which this problem is formed by values and interpretations.

Criticisms of the technical-rational approach are focused on value-ladenness of policy making, and inseparable factors of policy and politics, as well as the complexity of the policy-making process, which does not fit technical rationalist methods. Phronesis and policy research is certainly imbued with value judgments. Phronesis addresses the question of the judgment to be made. Practical questions of social policy do not stop with technical questions. Values make up a part of the framework within which decisions are made.

Policy analysis is closely related to the issue of power. It is one of the core aspects of phronetic research (Flyvbjerg 1998; 2001). Such power issues permeate all dimensions

of the research process. Power issues are central to the production process of knowledge associated with everything; for example, consider the specific stance taken by academic researchers in the production of knowledge regarding funders and other key institutional actors. Issues of power are often important and visible role in the political arena. Another dimension in the research process is immersed by power relationships among those who fund the projects and those who conduct research, as well as those that may be categorized as a subject of research. According to Flyvbjerg (2012), phronetic research posits that the relationship between academic researchers and external partners, as well as the relationship between external partners, is a matter of power.

This thesis provides an analysis of how alternative approaches in the social research can improve the form of knowledge most relevant to society, namely, phronesis (practical wisdom on how to address and respond to social problems in a specific context). Related to this, using the classic definition of phronesis by Aristotle, coupled with issues of power, the new version of phronesis will serve as a relevant and useful approach in policy making process. It is hoped that this thesis will contribute to future debate and decision-making about climate change by providing insight into not only instrumental-rationality, but value-rationality concerning this contentious issue.

1.2: Rationalization of the Study

Differentiating between different elements of the theory of planning is not a simple activity. Although there are many epistemological theories of planning, we have one certainty. Everything revolves around the activity. It is the daily practice of a great number

of actors. Academic colleagues of planning may refer to it as planning research or planning theorizing, referring to a variety of different activities.

One purpose of planning research is to provide professional planners with the knowledge needed to complete a project plan, such as the construction of a new highway, which naturally requires technical knowledge of all sorts, or even knowledge of the local population. Meanwhile, another purpose of a planning study may design planning process. This includes planning methods, tools for planning, and communicative procedures. There is another purpose of planning research, however, which is the analysis of planning practices themselves. This will allow the researcher to come to a deeper understanding of the ways in which they work. It is particularly in this field that the theories of Flyvbjerg are hoped to make a contribution in terms of power and phronesis.

Phronesis in planning research is of fundamental importance, according to Flyvbjerg, because it introduces a normative/ ethical element to the practice of science and technology (stemming from episteme and techne respectively). It does so by asking three main questions as frame for the phronetic planning research: (1) where are we going with planning?; (2) Is this development desirable?; and (3) what, if anything, should we do about it? Flyvbjerg then adds a fourth question, namely: (4) who gains and who loses, and by which mechanisms of power? Thus, phronesis introduces an element of judgment, thereby admitting that social-scientific knowledge is not objective or neutral, but normative, potentially playing an active role in ongoing processes of planning (Flyvbjerg 2001).

1.3: Focus of the Study

The main purpose of this thesis is to analyze the climate change policy in Malaysia from the perspective of phronetic research introduced by Bent Flyvbjerg, in order to raise value-rationality in the study of policy.

The result of phronetic research is a pragmatically governed interpretation. However, this interpretation does not require the researcher to fully agree with the notion or understanding of each key actor, and this interpretation is not a method intended to discover the meaning of the practices. Phronetic research is an interpretation, and is not about developing a universal theory or method. Therefore, phronetic research is an analytical project but not a theoretical or methodological one.

Phronetic research explores the historical circumstance and event, as well as current practices towards planning. The role of phronetic research is clarification and deliberation of the problems and risks we face, and outline things that need to be considered, with the full knowledge that we cannot find a definitive answer to these questions.

The focus of this study is the National Climate Change Policy in Malaysia as conceived in 2009. Therefore, the data and information obtained are focused on 2009 and beyond. However, policies related to climate change policy are also discussed in this thesis, albeit indirectly.

This study has focused on people – their intentions and actions, as well as their relationships with each other as they took shape at a certain time and in a particular

environment or context. Accordingly, the primary focus of this study is not the technical capacity of policy formulation, budgeting, and organizational structure or related to the structure of the policy, although the author has addressed some issues related to the state of organizational, technical and political impact on policy formulation. What the author is attempting here is to relate experience and the reaction to these factors by those involved in the drafting process, as well as the implementation of the National Policy on Climate Change. This means that instead of simply explaining the context and events, I attempt to uncover the social reality, values, relations and power that are formed and shaped by the events in question.

Stakeholders in this case study are all 'real' people, each with their own personalities, backgrounds, political and religious beliefs, likes, dislikes and values; that is, those who are directly and indirectly involved in the formulation of this policy. It is not my intention to claim generalization for this study, because I believe that it will somehow detract the credibility of the reality context in this study, and may remove from it the basic synergies or tensions on the power play, which was largely the result of the unique character of the stakeholders involved.

1.4: Research Questions and Objectives

In general, this research aims at yielding descriptive as well as explanatory knowledge with regards to climate change policy. The research question that this thesis is intended to answer is as follows:

To what extent does instrumental rationality, value-rationality and power plays a significant role in the formulation of national climate change policy in Malaysia?

To answer the research question, this study focuses primarily on the following important issues:

1. To provide critical analysis of climate change policy in Malaysia through a phronetic research approach.
2. To produce an account of the efficacy of climate change policy in Malaysia from a multi-stakeholders perspective.
3. To discover and examine the relationship between knowledge and power in climate change policy analysis in Malaysia

1.5: Significant of Research

For a long time, the formulation of policy or planning has been based on the view of instrumental rationality. Instrumental rationality has become the main driving force of modern society, and downplayed value rationality. Flyvbjerg argued that the Aristotelian focus on value rationality is needed to balance instrumental rationality. He stated (2004: 53) that "problems with both biosphere and sociosphere indicate that's social and political development based on instrumental rationality alone is not sustainable".

This study will provide an indication that the formulation of a policy requires not only instrumental rationality, which is good in techne, but also value rationality or phronesis. Aristotle developed the idea of phronesis in this context, which is the wisdom

that enables us to make the difference between right and wrong actions in the context of a particular situation. Phronesis justifies contextual balance, in which value rationality can determine the most appropriate action. This action is defined by value-balance of which the persons attend to the consequences of their decisions. For Aristotle, this depends on our nature. If our nature is social, then all activities are socially-oriented and natural (Aristotle, 2009).

By incorporating value rationality in policy research, reality can be studied. In order to find meaning in good or bad, phronesis introduce power and values to research planning, acknowledging that social reality produces knowledge and rationality that can only be judged either good or bad in relation to values and interests. In the planning practice, knowledge and rationality cannot be separated from values and interests; power plays a major role in the production of knowledge and defining what is rational.

The main purpose of this research is expected to provide an overview of the policy making process from the perspective of phronetic planning. This research examines the functioning and critiques on national climate change policy in Malaysia. In addition, they may function as additional arguments in favor of the policy itself. Thus, this thesis might be interesting for the national community and for those interested in complex policy making processes. This, in turn, may provide input to parties involved in policy formulation in order to encourage the formulation of policies that are more effective and comprehensive.

1.6: Structure of the Thesis

The structure of this thesis is as follows. Chapter 1 has introduced the research topic. Chapter 2 presents a literature review that helps in documenting two foundations in policy analysis. Furthermore, it invites consideration of Aristotle virtue of phronesis. Drawing on the work of Bent Flyvbjerg (2001), it argues for the adoption of a phronetic approach to social research that also recognizes the context-dependent nature of knowledge; and as a means to question the policy analysis. Embedded in these relations is the critical dynamic involving knowledge and power (Foucault; Flyvbjerg 1998). Chapter 3 will introduce some essential background for this study by providing a brief history of the international politics of climate change. Chapter 4 introduces the research orientation and design. This chapter of the thesis describes in detail the methods adopted by this study for data collection and analysis with particular attention on the use of phronetic planning research. It covers the four value-rational questions which are the heart of phronetic planning research. A case study design will be used utilizing a qualitative methodological approach. Methods adopted include key informant semi-structured interviews at the national policy level, as well as document analysis in the context of climate change policy in Malaysia. Chapter 5 explores the context and aspects of the climate change policy in Malaysia. The findings are discussed from the interpretative case study, with an analysis of each of the key informants and documents from the perspective of phronetic planning research. Finally, Chapter 6 concludes the discussion by summarizing the main findings of the study.

CHAPTER 2

POLICY MAKING AND ANALYSIS: FROM POSITIVIST TO PHRONETIC PLANNING

The origins of and recent developments in the policy analysis field show clear differences in perspective. Fischer (2003) has demonstrated that policy analysis as initially associated with government management practices are too technocratic in scope. The purpose of policy analysis in this model is to "translate political and social issues into technically defined ends to be pursued through administrative means" (p. 4). This in turn has led to the prevalence of rational actor accounts which are intended to delineate the type of constraints and incentives which policy makers face when making a decision. This perspective focuses primarily on technical solutions, and do not consider the way development of the problem in terms of values and interpretations. This perspective thus shows the prevalence of neopositivist/empirical methods of analysis. This generally leads to undemocratic practices in making policy, because the policy is seen as an area for experts rather than the citizens. Moreover, even if the perspective has been subject to strong criticism, it still dominates the contemporary policy landscape.

Criticisms of the technical-rational approach is focused on value-ladenness in policy making, and inseparable factors of policy and politics, as well as the complexity of the policy-making process, which does not match the technical rationalist methods. Some authors have attempted to offer a better method to resolve complexity in policy making by considering how political, organizational, and other factors influence policy making. In

some cases, this has led to a change in focus away from 'the best way to solve a problem' to 'how to improve the politics of problem definition' (Bacchi, 1999).

Developments in the field of policy analysis have recently come to include post-empiricist critique, highlighting the need to question the way in which problems are represented, and instead of focusing on ways to solve the problem. This view has been criticized for not problematizing the way in which problems are framed, and this led to a lack of critical perspective about the kinds of power relations that are indicated by the problem setting. The purpose of this analysis perspective would be to demonstrate the type of power dynamic that lies behind the representation problem in particular ways. Some developments have been influenced by post-structural criticism, especially Foucault's analysis of discourse as power, while others fit Habermas' critical theory while attempting to link policy with normative goals.

2.1. Understanding Public Policy

The concept of public policy has been criticized as unworkable because it is too simple. Some scholars have simply understood public policy as "whatever governments choose to do or not to do" (Dye, 1972 in Knoepfel et al., 2007: 23); or "a course of action or inaction chosen by public authorities to address a given problem or interrelated set of problems" (Pal, 2001:2). However, others have advanced more elaborate definitions. For example;

- Paul Sabatier (2007:3), for instance, has defined public policy as a process in which "problems are conceptualized and brought to government for solution;

governmental institutions formulate alternatives and select policy solutions; and those solutions get implemented, evaluated, and revised".

- "A public policy is the product of the activity of an authority invested with public power and governmental legitimacy" (Mény and Thoenig, 1989 in Knoepfel et al., 2007: 23).
- "A public policy is a program of action specific to one or more public or governmental authorities within a sector of society or a given area" (Thoenig, 1985; Mény and Thoenig, 1989 in Knoepfel et al., 2007: 23).
- "A public policy is the product of activities aimed at the resolution of public problems in the environment by political actors whose relationships are structured. The entire process evolves over time" (Lemieux, 1995 in Knoepfel et al., 2007: 23).

All these definitions of public policy highlight a consensus on its instrumental character in the approaches to public policy – that is, the distinction that policies are not ends in themselves, nor are they inherently good or bad in themselves, but are instead merely instruments used in response to opportunities or problems within a specific domain of action.

The essential objective of policy analysis is not political power in itself, but its use for resolving collective problems. Thus, the notion of public policy can be referred to as the web of power in a specific institutional context played out between various socio-political actors who make a concerted effort to resolve a collective problem in collaboration with, or in opposition to, state and private actors.

Nevertheless, the instrumental character attributed here to public policy does not remove it from the realms of values and power. To comprehend the very objective of public policy – to which a given policy response is directed via a specified problem or opportunity – is to engage in an interpretive and political exercise fundamentally inseparable from the influence of values, symbols, power and discursive conventions. Moreover, the selection of policy instruments in the decision-making process does not occur in a vacuum but are conditioned by factors throughout the socio-political and institutional context in which they operate. These will be important points to bear in mind throughout the following discussion as we examine the discipline's historical evolution from positivist towards postpositivist and recently phronetic planning research; and begin to think critically about the focus and boundaries of policy studies as a field of inquiry.

2.2. The Rational/Empirical Foundation of Policy Analysis

Rationality may also be referred to as instrumental reasoning. It is defined as a view that recognizes scientific research as the only way to create authentic knowledge. Rationalism considers the linear nature of logic. In policy-making, rationality is required to achieve specific policy goals. A so-called rational choice is the best choice among the alternatives available due to comprehensive and systematic evaluation, which in the end will allow the end goal, to be achieved. The rational model is seen as a holistic approach, as well as value-free, as it compares all results, in social, political and budgetary terms.

The growing complexity of socio-technical systems in societies has at the same time expanded and strengthened the relevant information requirements in governmental decision-making process. Fischer's disputation that "policy decisions combine

sophisticated technical knowledge with intricate and often subtle social and political realities" (Fischer, 2003: 2) emphasized his view of the essential position of expertise or dominant form of knowledge that is accurate and reliable as a source of policy advice, and as a basis for the legitimacy of policy decision. Thus, in response to the complexity of socio-technical systems, the empirically based scientific approaches to decision-making in public policy are favorable by governmental decision-makers.

In conjunction with this belief in the superiority of scientific decision-making, a dominant emphasis on assessing the efficacy of policy decisions in terms of their efficiency and effectiveness, which can be measured in quantitative terms in meeting the objectives, has become favorably technocratic and rational. A technocratic foundation in policy analysis replaces politicians' and citizens' ordinary and local knowledge of policy-making with a new, scientifically validated type of applied, general knowledge. Better knowledge of causation, and know-how about the application of scientific logic in decision-making, have been the dominant claims of the schools of public policy (Hoppe, 1999).

The attempt to separate facts and values in policy sciences has led to the development of a technocratic method of policy analysis that emphasizes the effectiveness of means to achieve politically established goals. In this respect, the policy analysis tends to translate normative political and social issues into technically defined ends and can be achievable through administrative ends. In an effort to separate goal-values conflicts that associated with policy issues, economic and social problems are interpreted as issues in need of improved in terms of management and program design and that, their solution can

be found in the technical application of the policy sciences. This is often associated with the belief of superiority of scientific decision-making (Fischer, 1998).

The dominance of rational decision-making models in policy analysis has become geared towards informing administrative and managerial practices rather than highlighting the philosophical and values-based issues in the society itself. Per this model, policy analysis aims to structure the social and political issues in technical term and the problems can be solve through administrative means (Fischer, 1993).

The mainstream policy analysis can be characterized as: 1) emphasize quantitative analysis; 2) an underlying commitment in maintaining objectivity with separation of facts and values; and 3) the search of generalization of findings which validity and applicability is considered independent from specific social context. This orientation indicates the epistemological influence of positivism – a fundamental feature of research orientation in social science (Torgerson, 2007). In other words, policy analysis in the mainstream of the discipline is "a matter of uniformly applying empirically based technical methodologies [...] to the technical aspects of all policy problems" (Fischer, 2003: 5). Given the complexity of the context in which policy decisions are made, the often-limited availability of relevant information, and the uncertainty surrounding potential outcomes, decisions regarding solutions are most often made, and later evaluated, in accordance with such empirically-based technical methodologies.

Rationalist theory has not remained free from criticism. Most criticism is based on the idea that decision-makers are also influenced by external factors such as emotions,

experience, and their own values. In fact, a value-laden democratic setting is a quite complex scenario due to the involvement of various policy key players.

2.2.1. Positivism and Mainstream Policy Analysis

The contemporary approach in empirical policy evaluation is based upon positivism which is a theory of knowledge that applying the concepts and methods of the physical and natural sciences. It also is a source of epistemological ideals for the social sciences and policy sciences and has shaped the social science that is in pursuit of quantitatively replicable causal generalizations (Fischer, 1998). Neopositivist principles emphasize empirical research design, results and outcomes measurement, the development of causal models, and other neutral empiricism and procedures. In the field of policy analysis, positivism has found its greatest manifestation in the design of quasi-experimental research design, cost-benefit analysis, systems analysis, multiple regression analysis, quasi-experimental design, and so on. The principal assumption of positivism is that an orderly external reality exists. Such an epistemological view is thus based on empirical observations.

In this orientation, knowledge that is based on the natural observation of particular empirical events is the valid knowledge. Any proposition which cannot be verified empirically is thus regarded as meaningless (Kelly and Maynard-Moody, 1993). Reliable knowledge accumulation may only proceed through falsification. Compared knowledge about exact or specific places, circumstances or time, positivist knowledge intended to create empirical generalizations across social and historical contexts. In view of this, such generalizable knowledge is important for solving social problems.

Positivism is based upon the assumption that we can best comprehend and evaluate the world by striving to escape our own historical and culturally constructed presuppositions. As positivism first developed in the 19th century, the basic assertion was that sense perception is the basis of all human knowledge and that through objective observation we can discern facts such that they correspond to reality itself. Empirical verification is all that is needed to validate the truth claims of any given assertion. Anything which is not observable (anything based on "theological, metaphysical, philosophical, ethical, normative, or aesthetic" foundations) would be dismissed as meaningless, with no valid knowledge claims (Hawkesworth, 1988 in Kelly and Maynard-Moody, 1993: 136).

Interpretation and judgment as classically conceived of by philosophers such as Aristotle have no validity and no role to play in a positivist world. Value neutrality is considered essential. Neutral observation allows the facts to speak for themselves, unaffected by history or context, which ultimately only distorts reality. Only objectivity, through the use of the inductive scientific method, can allow us to see the external world as it really is.

Because positivism assumes that objective knowledge of a phenomenon can be achieved, this raises the fact-value distinction. The fact is, a proposition that can be tested empirically. They are separated from the values that are inexplicable by subjective assessments of propositions, states of the mind or intuition that are non-empirical.

Positivist and Popperian methods have traditionally dominated the field of policy analysis. The analyst's claim to knowledge is based on the value-neutral observation of

facts that can then be employed by decision makers as they formulate and implement policies. The more scientific or objective the analyst, the more credible his or her claims (Kelly and Maynard-Moody, 1993). Scientific principles applied to the world of politics may solve our problems, or such is the claim of adherents to this tradition. "Science provides a neutral ground upon which people of all creeds and colors might unite, on which all political contradictions might be overcome. Science is to provide a balance between opposing interests, a source of unity amidst diversity, order amidst chaos" (Proctor, 1991 in Kelly and Maynard-Moody, 1993: 136).

To be considered genuinely scientific, empirical research should be distinct from the normative context or implications. Thus, social scientists must adopt an orientation that has no value and it should be limited only to the empirical and factual phenomenon. When this concept is translated into the practice of policy analysis, such an orientation seeks to evade partisan value conflicts that are typical of policy issues. Social problems and politics that exist in society are viewed only in technical terms, where the solution can only be obtained in the application of scientific decision-making. This has led to a form of technocratic policy analysis emphasizing efficiency and effectiveness of the means to achieve established political goals (Fischer, 1998).

The underlying assumptions in perspective of policy as a technique is that the policy is related to the solution of the problems identified in the objective. From that point on, the process of policy formulation is usually depicted as a series through several stages (Figure 2.1), from the analysis of the evaluation, through the process of setting up the implementation of the solution.

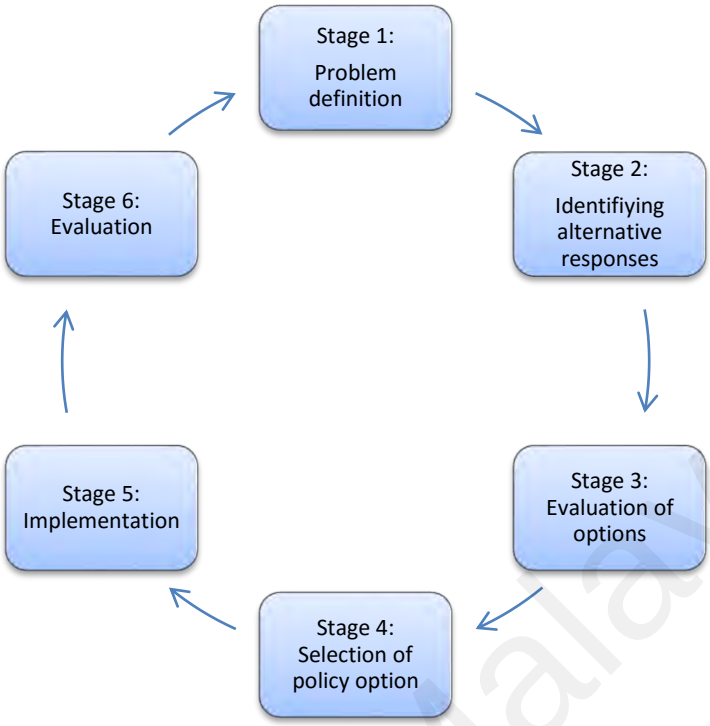

Figure 2.1: Policy cycle: a 'stagist' approach to studying public policy

This perspective is typically associated with the rational actor model that attempts to understand the constraints and demands faced by policy-makers at all levels of decision-making; and led to the establishment of specific solutions to achieve the desired goals. With specific goals to solve existing problems, this is a guide for policy makers at every step. The focus of the analysis is the process of decision-making, rather than the frame problem in a certain way, and the aim is to outline the reasons for the decisions made (Hill, 2005).

While this development has been seen as a step in understanding the complex process of policy making – especially when compared with the linear and limited model, which had greater influence during the early years of the discipline of policy analysis – it still has some fundamental flaws. Bacchi (1999) stated that the approaches of this perspective tend to assume "there is a readily identifiable social/economic problem which

needs addressing and that policy makers get together and do their best to come up with a policy which will address this problem" (p.17). It leaves the process of problem definition or representations, and does not include the probability that the representation of the problem itself may be problematic and products of the power struggles. Although most theories that do account for the complex power in policy-making tend to ignore the need for representation of competing problems.

Contrary from Lasswellian ideology[1], such an approach not only reflects the abandonment of the democratic process, but also the validity and superiority of the scientific method of democratic exchange, process and methods. The difference between facts and values also serves as a barrier between the activities of the scientific and political communities. Disputes about values are determined by a contestation of personal preferences, and therefore left to the politicians to overcome them; scientific investigations which require the implementation of principles are the domain of the scientists. As Fischer (1998: 4) succinctly stated, "the fact-value dichotomy identifies not only the appropriate focus for policy inquiry and the methods necessary for attaining objective knowledge, but the zone of demarcation between legitimate scientific authority and political involvement".

Although this distinction has actually become important in the social sciences, concerns have been raised among scholars. Scholars argue that the interpretation of the

[1] The intellectual foundations of the discipline of public policy have been attributed to Lasswell and Lerner's landmark publication of The Policy Orientation of 1951. In their vision, policy science was to be geared towards the knowledge needed to improve the practice of democracy. It was to be the "policy science of democracy". Lasswell sought to create a social science that was multidisciplinary; that had a problem oriented focus which was contextual in nature; and one that had an explicitly normative orientation (Torgerson 1985). Although the origins of the field were marked by promise and enthusiasm, its actual development has followed a different path from that envisioned by its founders. Policy analysis has emerged along technocratic rather than democratic lines; in contrast to the multidisciplinary approach that Lasswell had in mind. The field has been dominated by empiricist methods that have insisted on rigorous quantitative analysis, the separation of facts and values, and the search for generalizable findings applicable to a range of problems and contexts.

world, especially the social aspects cannot be understood just by observation alone. Human behavior is active and conscious, unlike physical objects in the world of science. Every action has meaning and direction for achieving goals. Thus, human behavior and actions cannot be understood in the same way as natural phenomena. Positivism does not take into account such a situation. It describes social action without taking into account meaning and understanding of the social conditions of social actors. A more radical explanation of the criticism comes from fact-value postpositivism.

Postpositivist scholars, such as Fischer (1998), have extensively critiqued fact value from the realm of the social action to the realm of natural science itself. He has demonstrated ways in which science activities are shaped by the normative assumptions and the social meanings of the world they explore, as well as illustrated that science depends on theoretical and practical presuppositions in complex ways.

In order to reach anything close to an understanding of the hard facts of the social world, inquiry must satisfy the fundamental conditions of empirical objectivity and value-neutrality. In other words, politics and the social context of human relations have no place in the orderly domain of scientific observation. Inquiry, from this stance, has no connection with the questions of perspective, interpretation, or the normative dimensions of knowledge formation. As such, one of the main preoccupations of positivist social science is to distinguish facts from values, and the laws of the social world from politics – the goal being to isolate a range of general principles, through which we can make causal propositions and deductive statements regarding human social conduct and the nature of societal relationships (Fischer, 2003: 118; Fischer, 1998; Flyvbjerg, 2001).

From the above discussion, it may be said that the concept of the policy process seems to be at the level of epistemological assumptions. Here, Fischer (2003) has concurred with Bacchi (1999) in criticizing empiricism and neo-positivist approach to knowledge, which is characterized by technical rationalist approach. The appropriate discipline policy analysis should be based on "general sense that better information would lead to better solutions" (p.11). This is an effort to develop a more complex understanding of the policy-making", but which express "little sense at the outset that policy problems [are] as much the result of socio-political interpretations as they [are] concrete manifestations of relatively fixed social processes" (p.11).

This, according to Fischer and Bacchi, is the result of the perspective on knowledge that overlooks our perceptions and definitions of social problems are inextricably related to values, and that "no matter how efficient a program might be, if it fails to confront the basic value frames that shape out understandings of the problem, it is bound to be rejected" (Fischer, 2003: 12). This critic then takes on the development of post-empiricism, which emphasizes the concept that facts cannot be separated from values, and believes that reality is always interpretively mediated.

2.2.2. The Critics of Positivism in Policy Analysis

Rationality is not flexible in terms of the softer issues in the policy-making environment. The policy-making environment has a variety of socio-political problems which require an integrated policy approach. This highly politicized environment of policy making because every key player in the policy-making process has a specific agenda. Thus,

the empirical investigation cannot always explain the valuative issues at play in the policy environment (Allmendinger, 2001).

Along with developments in science, postpositivist also draw on historical and sociological observations about the nature of scientific practice, to show that scientific knowledge rooted in the historical and social context. In studying the history of science, positivism emerged to address the problems that arise from the Renaissance and the Scientific Revolution in the 15th and 16th century. The collapse of Catholic domination led to the need to develop a new foundation of certainty and truth that would restore social stability. To this end, philosophers at the time sought to bridge knowledge to empirical experience.

Fischer (1998) argued that positivist epistemology should not be used as a universal foundation for scientific practice as a whole, because it seems to address certain problems in a particular socio-historical context, and therefore may not be relevant to other contexts. Apart from historical considerations, sociological studies have also shown that empirical investigation is also conditioned by the socio-cultural practices.

Modernists evaluation embodies an instrumental notion of rationality as a matter of correct procedure or method in a context where "[...] policymakers seek to manage economic and social affairs rationally in an apolitical, scientized manner such that social policy is more or less an exercise in social technology" (Schwandt, 1997 in Sanderson, 2002: 67). The application of scientific method to contemporary life can lead to the

deformation of praxis[2], and maintains that social scientific knowledge (which is general and theoretical) cannot provide the primary basis for evaluation judgments under conditions of plurality, uncertainty and difference. While acknowledging the role to be played by such knowledge, he argues that evaluators must recognize the need for practical knowledge or wisdom to help practitioners understand their practice better and to make moral-political judgments (Sanderson, 2002).

This position is consistent with Majone's (1989 in Sanderson, 2002: 67) criticism of the "[...] rationalist fallacy of believing that theories and ideas alone are powerful enough to determine the course of events, and of interpreting policy-making as a purely intellectual exercise [...]" and his critique of decisionism as neglecting the role of social processes and rules. Rather, by following Aristotle's view of policy analysis as techne, Majone saw policymaking as a process of deliberation and argumentation; by emphasizing the role of argument as a complex blend of factual statements, interpretations, opinions, and evaluations, when dealing with institutional, social, and moral issues (Sanderson, 2002).

Empiricists do not include most of real decision-making process. Fischer argues that falsification not only failed to guide the empirical research design but also as a theory of professional conduct (Fischer, 2003). Rationalists view of policy analysis as an empirical process (linear step-by-step approach) involving rational thought by experts and technocrats only. Values in the policy cycle are not fully understood. Interpretation of the value and

[2] Praxis is used specifically in an Aristotelian sense, that is, to be understood in terms of 'right conduct' or, as Kemmis and Smith (2008) in Kinsella 2012: 150) put it, phronesis as Professional Knowledge-Practical Wisdom in the Professions:

> Praxis is a particular kind of action. It is action that is morally-committed, and oriented and informed by traditions in a field. It is the kind of action people are engaged in when they think about what their action will mean in the world. Praxis is what people do when they take into account all the circumstances and exigencies that confront them at a particular moment and then, taking the broadest view they can of what it is best to do, they act.

condition of a community cannot be measured in a purely scientific way. Positivism has failed because it is simply out of touch with the people because of the difference (gap) between theory and practice (reality). Positivism supports decisions made by the political hierarchy, without taking into account the effect of non-realistic and accurate access to information (Hajer and Wagenaar, 2003).

Foucault (1980b), and Latour (1987), for example, have argued that, apart from being a technical activity, science is also a socio-cultural activity imbued with both social and practical judgments. To understand the scientific findings, one must fully understand the social and cultural setting and context that gives them meaning and purpose. This means that scientific truth is never free of the conditions in which it was found.

However, as pointed out by Fischer, positivism has declined only in discourse. Studies show that in practice the positivist tenet is still very much with us (Flyvbjerg, 2004). Fischer, in (Flyvbjerg, 2004: 286), therefore concluded the following:

> In short, the ideology wanes, but the practices [of positivism] remain embedded in our educational and governmental institutions. And, because they still play a powerful ideological role in determining what is considered important and what is not, all the more so because they are hidden, it is unlikely that they will simply go away if we ignore them.

Considering that positivism and rationalism are still going strong, in rational choice theory in economics, political science, and certain parts of sociology. Therefore, according to Fischer, critique of positivism and rationalism must continue.

2.3. Postpositivist Foundation in Policy Analysis

Policy analysts have traditionally used positivist methods to carry out their research, but such methods are incompatible with interpretive and symbolic conceptions of policy. Quantitative analysis in the policy-making process disregards the fundamental position of politics, and values in social life have shifted the investigative focus of policy-making away from broader, normative dimensions of policy studies.

Due to the reality constructed by the social, the postpositivist emphasis has shifted to the situational context and discursive processes that make it up. Postpositivists' goal is to comprehend how different types of scientific practices developed by different actors interact to form a specific discursive, which may be considered knowledge (Fischer, 1998). For this purpose, postpositivist reconstruct the scientific process by taking into account the coherence theory of reality, as opposed to the neopositivist theoretical correspondent. Correspondence theory claims that a proposition is true when it corresponds to reality or facts. While the coherence theory will judge the proposition is true in terms of how it coheres or fits with the whole system of beliefs or propositions.

In other words, something is true if it fits into a well-integrated set of beliefs. Coherence theory deals with the nature of what cannot be determined by empirical propositions. It seeks to include a variety of theoretical perspectives and explanations that can deal with the phenomenon. This also means that, quantitative research is just one of the components of the construction theory as other means of investigation. Given the diverse perspectives through the observation of a phenomenon, knowledge emerges from discursive interactions by competing interpretations. Under postpositivism, consensus is

achieved through the synthesis of competing views. This is opposed to the neopositivist view, in which consensus is achieved through reproduction of empirical investigation. Deliberation was conducted in order to develop a rich perspective on human affairs and rather than finding of empirical evidence (Hajer and Wagenaar, 2003). Unlike knowledge is being understood as evidence, postpositivists understand knowledge to be consensually 'accepted beliefs' (Fischer, 2009).

To include various forms of real reasons in scientific practice, postpositivists argue that it is necessary to adopt a framework that is multi-methodological. They post that positivism is too dependent on the argument based on formal logic, making it unable to capture the rich and diverse interpretive judgments that characterize scientific investigation.[3] To move beyond the dominant positivist paradigm for social research, one should be exposed to new ways of thinking about research, data, language, and meaning (Hernandez, 2012). Therefore, postpositivism steps out of the confines and limitations of formal logic of neopositivism, and into the realm of informal logic and practical reason – the configuration of the new methodology.

Frank Fischer, in his book *Reframing Public Policy* (2003), provides a recognizable and coherent articulation of a post-normal alternative to mainstream social science with the contemporary field of policy studies. For Fischer, one of the central concerns of social inquiry is to investigate the ways in which the empirical is always embedded in the normative. As such, the implications of postpositivism for policy scholarship go well beyond the argument. Rather, by siting social scientific research within a broader

[3] Formal logic is concerned with the forms that yield or guarantee valid inferences from a premise or premises to a conclusion.

interpretive framework, postpositivists seek to account for the ways in which politics and values are inherently and inextricably connected. In this way, postpositivism in policy studies seeks to widen the definition of public policy and simultaneously to bring our analytical orientations around to a more textured and sophisticated appreciation of the interpretive and political dimensions of policy scholarship as an intellectual enterprise. In short, the postpositivist movement puts the social back in social science.

Institutionalized practices in decision-making focuses on the (expert generated) scientific knowledge (Hertin et al., 2009), and to be regarded as knowledge that can be used (Haas 2004), scientific information must be relevant, accessible and neutral (in other words produced in a state that is free from the influence of non-scientific interest). One of the determinants of demand for scientific knowledge is the objectivity and independence of the factors that influence the way the object of study is reviewed and reported. In fact, this interpretation of scientific knowledge can be described as universal, and not influenced by external factors such as experience and opinions of local stakeholders (Juntti et al., 2009). However, as Haas (2004) has pointed out, some studies suggest that in order to qualify as usable knowledge for policy decision-making, scientific knowledge needs to be capable of commanding sufficient political support, applicable to the problem at hand, and representative of a scientific consensus.

Instead of understanding these beliefs as the empirical outcomes of inter-subjectively reliable tests, the postpositivist sees knowledge as socially accepted belief– a normative distinction than as proof or demonstration; and as the product of a chain of interpretive judgments, both social and technical. A notable feature of the local (or

unscientific) knowledge is formed and embedded it in the context of a particular culture and often also practical context. This contrasts with scientific knowledge (Juntti et al., 2009). Unscientific knowledge gradually has been gaining attention, even becoming institutionalized practice in decision-making, as if grants the universal validity of scientific knowledge as superior status. Unscientific knowledge is applied as a means of legitimizing policy and improving accountability and transparency, and is considered to play an important role as instrumental in achieving the policy compliance.

Some critics also suggest that we should move beyond the adversarial context juxtaposition of experts and people (contained by most examples of patterned by negotiations citizen) in making policy decisions and restructure the whole relationship (Fischer, 2009). Instead of just using the input of the people to the policy to achieve policy compliance, Fischer (2003) emphasized the role of "bringing forth new knowledge and ideas capable of creating and legitimizing new interests, reshaping our understanding of existing interests and in the process, influencing the political pathways along which power and interests travel" (Fischer, 2003, p. xii).

This suggests that citizen participation has epistemological implications, in other words, it involves the commonly interpretation of how it is possible to obtain meaningful knowledge about phenomena and different things. Lay knowledge is essential for addressing the distinctive context related situations and to formulate policies that really work in practice. It also offers a different epistemological perspective which has the potential to lead to new and conceivably more valid and legitimate understanding, framings

and also solutions to environmental governance and sustainable development (Juntti et al., 2009).

From this perspective, social scientific theories can be understood as assemblages of theoretical presuppositions, empirical data, research practices, interpretive judgments, voices, and social strategies (Fischer, 1998).

Many scholars have long set a broader definition of evidence. This includes the knowledge and expertise of lay people, stakeholders, or experienced-based experts (Collins and Evans, 2006), which are more often than not associated with analysis-based, scientific evidence (Fischer, 2003). Those who support this wider understanding, the evidence for policy decision making assert that the knowledge generated without taking into account the context in which it is applied is not compatible with the requirements of environmental policymaking. For example, Redclift (2005) argued that the traditional definition of scientific and categories have been obscure about local meanings of nature and natural resources, as well as related environmental and social values. In addition, while the scientific categorization itself ultimately based on human judgment, it is widely agreed that the process of environmental policy increasingly politicized, dealing with conflicts of interest and normative dilemmas is essential to achieve a legitimate and functional policy solutions (Fischer, 2003).

The postpositivist framework involves the exercise of a multi-methodological range of intellectual criteria, both qualitative and quantitative. The basis for this postpositivist framework is the recognition that an epistemology which defines knowledge and rationality

in terms of logical deduction or empirical falsification is simply limited to deal with the multiple forms of reason manifested in scientific practices. Interpretive judgments which are characteristic of every phase of scientific investigation, as well as the cumulative weighing of evidence and argument, are too rich and various to be captured by the rules governing inductive or deductive logic (Collins, 1992 in Fischer, 2000). For this reason, postpositivism substitutes the formal logic of neopositivism with the informal deliberative framework of practical reason (Fischer, 2000).

2.4. Phronesis: A Framework of Practical Reason

In explaining the alternative concept of reason, postpositivists recognize that the formal models of reason is not suitable with the common practices of argument. Scriven (1987 in Fischer, 2003a: 219) argued that "classical models of reasoning provide inadequate and in fact seriously misleading accounts of most practical and academic reasoning – the reasoning of the kitchen, surgery, workshop, the law courts, paddock, office, battlefield, and of the disciplines". Postpositivists have conceptualized such reasoning as a form of informal logic, which has its own rules and procedures, rather than as an incomplete version of the formal reasoning.

While the formal reasoning intended eternal, invariable principles, regardless of context; practical reasoning pays close attention to matters of probability which vary according to context, rather than universal truths. Informal logic emphasizes an assessment of argument in a particular context. This is unlike formal logic, which assumes that arguments in all fields may be judged by the standard of mathematics. Its value lies in the

recognition that the kind of arguments related to different issues depend on the types of issues.

Challenging science's emphasis on generalizations, informal logic probes the argument-as-given, rather than attempting to fit or reconstruct it into the confining frameworks of deduction and induction. As such, it emphasizes an assessment of the problem in its particular context, seeking to determine which approaches are most relevant to the inquiry at hand. Accordingly, in pursuit of an alternative methodological framework, postempiricists have returned to the Aristotelian conception of phronesis (Fischer 2009).

The discussion of the idea of phronesis should begin with its founder, Aristotle. Aristotle divided rationality into three aspects. The episteme, answering the questions related to 'why', 'what' and 'how', are linked to laws and the human ability to act within a theoretical world. Techne is related to the faculty of craft, art, and technology. It allows us to build and produce things and implies rules of production. Basically, techne is an instrumental rationality. The third is practical wisdom, which reflects the human actions and their consequences in a particular context. This is what Aristotle called phronesis[4], a reflexive approach to reality that involves structure, value-laden deliberation, and balance in decision making.

According to Aristotle, the guidance of phronesis in our reasoning is the most important aspect in our definition as rational beings. Here, he stressed that phronesis should

[4] I will use Aristotle's concept of phronesis by taking into account the new interpretation by social scientists such as Foucault and Flyvbjerg (Flyvbjerg 1998a); Flyvbjerg (1998).

be put higher than other aspects of rationality – episteme and techne. This idea[5] aligns with Greek culture, that the nature of human entails a social soul. What is mean here is that we are born, live, and are organized as person through our community lives; thus we are social artifacts.[6] For Greeks, the character of person would be developed in relation to others; a person was not considered an atomic individual entity. The polis is the life within the community. From Aristotelian point of view, to be a social being is to take into consideration the consequence of our actions on others, because we are part of a community that shares an idea of common good.

Accordingly, Aristotle developed the idea of phronesis in this context, which is the wisdom that enables us to make the difference between right and wrong actions in the context of a particular situation. Phronesis justifies contextual balance, where rationality can determine the most appropriate action. This action is defined by value-balance of which the persons attend to the consequences of their decisions. For Aristotle, it depends on our nature. If our nature is social, then all activities are socially-oriented and natural (Aristotle, 2009).

2.4.1. Aristotle's Episteme, Techne, and Phronesis

A contemporary interpretation of the Aristotelian concept of phronesis, variously translated as prudence, or practical wisdom, and sometimes practical reason. It refers to reflexive analysis of values and interests that aimed at praxis. In Aristotle's own words,

[5] In Book VI of the *Nicomachean Ethics,* Aristotle explains how Phronesis is the virtue of the reason (*dianoia*). He uses the word *arete*, which means the excellence needed to function properly in relation to one's nature.

[6] The idea of 'social artifacts' is used today to reinterpret the idea of 'person' in a desontological way. Luhmann in *Social Systems* (1995: 405) claimed "But individuals are constituted only in interaction, and thus are psychically internalized social artifacts."

phronesis is an intellectual virtue that is "reasoned, and capable of action with regard to things that are good or bad for man". Phronesis concerns values and goes beyond analytical, scientific knowledge (episteme) and technical knowledge or know-how (techne), and it involves judgments and decisions made in the manner of a virtuoso social actor (Flyvbjerg, 2006).

In Nicomachean Ethics Book VI, Aristotle was unequivocal in his regard of phronesis as the most important of the three intellectual virtues: episteme, techne, and phronesis. Phronesis is most important because it is an activity in which, using the terminology of Max Weber, instrumental rationality is balanced by the value rationality. According to Aristotle and Weber, the balance between instrumental rationality and value rationality is important to sustained happiness of the people in any society.

The word episteme is defined in modern vocabularies as 'epistemology' or 'epistemic'; and techne as 'technology' or 'technical'; it is indicative that the influence of scientific and instrumental rationality dominates the modern thinking and language. Consequently, modern language and terminology do not have a word for the root term, phronesis.

The term epistemic science derives from the intellectual virtue that Aristotle calls episteme, which is generally translated as science or scientific knowledge. Episteme concerns with universals and the production of knowledge that is invariable in time and space. This type of knowledge can be achieved with the aid of analytical rationality.

Modern science or natural science is a correspondent to episteme. From Socrates to Plato, and subsequently in the Enlightenment tradition, this scientific ideal has become dominant.

Techne can be translated into English as art in the sense of craft; a craftsperson is also an artisan. For Aristotle, both techne and phronesis are connected with the concept of truth, as is episteme. Techne is thus craft and art, and as an activity it is concrete, variable, and context dependent. The objective of techne is application of technical knowledge and skills according to a pragmatic instrumental rationality, what Michel Foucault (1980a: 255) called "a practical rationality governed by a conscious goal".

Phronesis is often translated as prudence or practical common sense. Let us again examine what Aristotle has to say:

> Prudence cannot be a science or art; not science [episteme] because what can be done is a variable (it may be done in different ways, or not done at all), and not art [techne] because action and production are generically different. For production aims at an end other than itself; but this is impossible in the case of action, because the end is merely doing well. What remains, then, is that it is a true state, reasoned, and capable of action with regard to things that are good or bad for man […] We consider that this quality belongs to those who understand the management of households or states (Aristotle 2009: 1140a24–b12).

Phronesis related to normative or moral character of phronetic decision: questions projected by phronetic cannot be answered without considering the issue of normative or evaluation. These types of questions to be answered in phronetic often in the form of normative: 'Where are we going?', 'Is this desirable?' and 'What should be done?' (Flyvbjerg, 2001: 60). Aristotle explains:

> Practical wisdom is a rational faculty exercised for the attainment of truth in things that are humanly good and bad. (Aristotle, Ethics, Book 6,ch. 5: 177)

This is sometimes interpreted to mean that phronesis, unlike techne, is exclusively normative and moral (Spicker, 2011). People with practical wisdom (phronimos) have knowledge of how to manage things in each particular situation. This knowledge cannot be equated with or reduced to a general truth about the management. Phronesis is a sense, or tacit skills to implement in practical ethical manners, while phronesis it is not some kind of a science.

Phronesis concerns the analysis of values – "things that are good or bad for humans" – as a point of departure for action. Phronesis is that intellectual activity most relevant to praxis. It focuses on what is variable, on that which cannot be encapsulated by universal rules, on specific cases. It also requires an interaction between the general and the concrete; it requires consideration, judgment, and choice (Yanow, 2003). More than anything else, phronesis requires experience. About the importance of specific experience, Aristotle says,

> [P]rudence [phronesis] is not concerned with universals only; it must also take cognizance of particulars, because it is concerned with conduct, and conduct has its sphere in particular circumstances. That is why some people who do not possess theoretical knowledge are more effective in action (especially if they are experienced) than others who do possess it.

Phronesis is all about flexible and practical judgment. Further, phronesis emphasizes the situational context of decisions; and the importance in understanding and relating decisions to the context where they are taken (Spicker 2011).

An important element of this interpretation is the link between phronesis and experience. Aristotle wrote:

> Intelligence apprehends the truth of definitions which cannot be proved by argument, while phronesis involves knowledge of the ultimate particular thing, which cannot be attained by science but only by 'perception'. (Aristotle, Ethics, Book 6, ch. 8: 182)

According to Dunne (1993 in Schwandt 2007), phronesis is an experience, an immediate, concrete and personal. Knowledge through experience has been identified, such as phronesis, with professional craft knowledge learned 'on the job' (Spicker 2011). Furthermore, it can also refer to knowledge based directly on personal experience that the observer; and it has been used mainly in relation to the experience of witnesses, validating personal, non-expert knowledge (Spicker, 2011). However, phronesis and the idea of 'experiential knowledge' are not directly equivalent. Phronesis draws on experience, but it does not have to rely solely on personal experience or character of the person using it. It may be shared, for example, in a community of practice.

Table 2.1: Summary of Aristotle's Intellectual Virtues (Flyvbjerg, 2001; Flyvbjerg, 2004)

Episteme	Scientific knowledge. Universal, invariable, context-independent. Based on general analytical rationality. The original concept is known today from the terms 'epistemology' and 'epistemic'.
Techne	Craft/art. Pragmatic, variable, context-dependent. Oriented toward production. Based on practical instrumental rationality governed by a conscious goal. The original concept appears today in terms such as 'technique', 'technical,' and 'technology'.
Phronesis	Ethics. Deliberation about values with reference to praxis. Pragmatic, variable, context-dependent. Oriented toward action. Based on practical value-rationality. The original concept has no analogous contemporary term.

2.4.2. Understanding Phronesis

Aristotle considered the good of the agents as the goal of ethics. The good of a person is the full development of our natural powers. Human highest power and the one that distinguish us from animals, is our reason. According to Aristotle, phronesis, or

practical wisdom, is an excellent dispositional state of the intellectual; and rational part of the soul. The definition of phronesis is given in Book VI of the Nicomachean Ethics:

> The necessary conclusion is that [practical] wisdom is a disposition accompanied by rational prescription, true, in the sphere of human goods, relating to action (1140b20-21).

Phronesis is reason and rationality as applied to practical moral matters. A person who possesses phronesis is known as a *phronimos*. *Phronimos* or 'wise person' is good at deliberation. This can lead to a conclusion that phronesis is an intellectual virtue. Intellectual virtues contradict to moral virtue whereas it is a dispositional condition of the desiderative and appetitive part of the soul. Contrary to *eudaimonia* (happiness)[7], it is far less controversial to translate phronesis into English. It is generally accepted that phronesis is captured by the concept of practical wisdom (Kara, 2009). Thus, the term will be used interchangeably in this chapter. The analysis of practical wisdom is for the most part guided and clarified by Aristotle's work, which in this author's opinion is still relevant today.

From the definition above, practical wisdom has four characteristic features. First is related to the associations of practical wisdom direct and result in actions. Practical wisdom is intended at the truth about practical human goods. The *phronimos* acts well and advices others about proper action. To reach a good action, the person acting must choose appropriately. Therefore, the second characteristic of practical wisdom is that it involves choice. Aristotle wrote, "Now the origin of action – in terms of the source of movement, not its end - is choice, while that of choice is desire and rational reference to an end. Hence, intelligence and thought, on the one hand, and character-disposition on the other are

[7] Following Meikle (1995); Kraut (2006) *eudaimonia* as happiness.

necessary for choice; for doing well and its contrary, in the context of action, are conditional on thought and character" (Aristotle, 2009: 1139a32-35).

The efficient cause of action is choice. Choice then essentially requires the third feature of practical wisdom, which is deliberation. Deliberation is requires about things on which we can act, we do not deliberate about matters that we cannot change. Aristotle's line "we deliberate, not about ends, but about what forwards those ends" (Aristotle, 2009: 1112b12-13) is often quoted in order to support the thesis that the purpose of practical wisdom is to find the means to the end but not to determine the end itself. Sometimes, the means to an end are revealed in deliberation. The fourth feature of practical wisdom is directed towards the ends. The choice resulted from deliberation is distinguished by deliberative desire, which decision[8] are made together with reason and desire.

The choice that has the conformity of reason and desire is the end of deliberative thought and the starting point of action (Broadie, 1991). The flow of the two features of practical wisdom works as follows: a rational choice is made through the process of deliberation of reflection; from the rational choice, actions are taken. Briefly, a person with practical wisdom has the ability to deliberate on all the relevant data in a particular situation and then make the right choice (Kara, 2009).

Bordieu (in Frank 2012) associates practical wisdom with the concept of habitus. Habitus provides the embodied practical wisdom that guides decisions made in particular context. According to Bordieu, habitus is embodied. It is a disposition of the body to feel

[8] Broadie (1991) translated *prohairesis* as "decision".

comfort of discomfort with particular ways of being (wearing certain clothes; eating certain foods) and to entertain 'for me' certain action possibilities (finishing study, enjoy leisure time with certain people). Second, habitus is not fixed, but durable; it is developed early in life, and it may changes but slowly. Third, habitus may not determine action, but does dispose the person to feel rightness and may trigger the necessity of particular ways of acting.

Practical wisdom requires deliberation, a rational process that we undertake in order to answer practical questions about what to do (Richardson, 1994a; 1994b). In other words, deliberation is always a rational process. Richardson has listed three standards for rationality: 1) potential discursiveness or public expressibility; 2) orderliness; and 3) the absence of general flaws of thinking such as inconsistency, vicious circularity, excessive close-mindedness, and one sidedness. A deliberative process should be assessable and explainable. It may be justified and criticized publicly.

The above is the list of four features of practical wisdom and three standards. Now we can discuss about the main components of this intellectual virtue. They are: 1) deliberation; 2) comprehension; 3) cleverness; and 4) sense. Correct sense, good comprehension, and good deliberation are all acquired through experience (Sayer, 2011). These capacities are used when facing with difficult moral situations and facilitate in deciding on what to do. A person needs a good sense to "make the correct discrimination on what is reasonable" (Aristotle, 2009: 1143a21-22).

Comprehension is essential for gathering all the relevant data in a particular situation, provide the correct interpretation of these data, and accordingly assign an appropriate weighting to their importance. Finding out precisely about a moral situation involves judgment; that is judging what other people say, especially about theirs and other people's action. A young and inexperienced person is likely to be uncritical, but the experienced and wise person should enable to apply good comprehension to judge either the reports of others are likely to be true or false. Comprehension and sense do not prescribe; rather they make judgments and are discriminative capacities (Aristotle, 2009: 1143a 9-10).

Cleverness enables its possessor to uncover the effective means to proposed goals and it is crucial to practical wisdom. However, given the proper situation, the wicked person can also possess a profound of cleverness, but they do not pursue a good ends. In choosing the good ends, the wise person is guided by moral virtue, which a wicked person does not possess.

Practical wisdom involves deliberation. Deliberation is difficult because it is a time consuming and requires a thorough process with a beginning and an end. The beginning is when agents establish an end. After that they proceed to think about how and by what means it is to be achieved. If there is more than one way to achieve the end, then the agent should choose the finest means. Good deliberation requires experience (Hurthouse, 2006). Worldly knowledge is gained from experience, which ensures expertise in deliberation. The more experience the person have, the better the comprehension, sense, and deliberation (Sayer, 2011).

Much like the virtues of dianoia[9], phronesis enables human being to distinguish between right and wrong; and this is connected with wisdom. The original Aristotelian phronesis had no moralistic association in the sense of assuming fixed rules or applying standards to a particular situation. However, it involved the acceptance of human morality within relative and complex contexts. In this context, rationality does not determine the right action from the previous fixed principles, except through the consideration of the consequences in our long lifeline of action. In this sense, phronesis may be defined as a contextual starting point, at which ethics are not subject to abstract rules. If there is no fixed point for determining right from wrong, what is the criterion? Aristotle answered with rational criteria: an action is rational if and only if its implementation is towards pursuit of happiness.

This implies that happiness of inter-subjective are higher than purely individual. According to Aristotle, *eudaimonia* is a normative condition of our long line of action and rationality. In terms of epistemologically, of what relevance is, as long as social sciences have human conditions as objects, they need to evaluate, and thus give account of the social dimension action that associated with the idea of happiness as the ultimate goal. All human beings attempt to achieve *eudaimonia*. *Eudaimonia* can be achieved if we act with practical reasoning. The pursuit of happiness does not rely on abstract rules: rational action seeks to maximize happiness, which this action is related to a life in which the person who possess the virtues provides a balance between the enjoyment of pleasure, comfort, and contemplative life, while at the same time maintaining the social responsibilities of every citizen.

[9] Reason or understanding that implies a discursive process (Kraut, 2006).

Human beings are *zoon politikon*[10] and phronesis, according to Aristotle, is part of it. For Aristotle, practical thinking is concrete because it involves the analysis of a case. Aristotle disagreed with Plato, that reality may not be reduced to an abstract model. In Aristotle point of view, humans' moral character is constructs from their social condition. Thus, all other activities should be subordinated to this social reality as linked to power context (Kuschel, 2012).

In considering the relation of ethical knowledge and action, Aristotle expanded the Socratic equation of knowledge and virtue. Socrates meant knowledge as episteme, a form of a principled knowledge that existed, but independently of the knower. This epistemic knowledge is universal, but equally true for all knowers; external, that is unchanging over time; and foundational – qualities in the world of senses were known only by the relation of the epistemic truths. Codified by Aristotle, the goals of the sciences (primarily mathematics, physics, and philosophy) were to discover, catalogue and communicate the

[10] This is one way to elucidate the relationship between virtues on the one hand and a morality of laws on the other is to consider what would be involved in any age in founding a community to achieve a common project, to bring about some good recognized as their shared good by all those engaging in the project. As modern examples of such a project we might consider the founding and carrying forward of a school, a hospital or an art gallery; in the ancient world the characteristic examples would have been those of religious cult or of an expedition or of a city. Those who participated in such a project would need to develop two quite different types of evaluative practice. On the one hand they would need to value—to praise as excellences — those qualities of mind and character which would contribute to the realization of their common good or goods. That is, they would need to recognize a certain set of qualities as virtues and the corresponding set of defects as vices. They would also need however to identify certain types of action as the doing or the production of harm of such an order that they destroy the bonds of community in such a way as to render the doing or achieving of good impossible in some respect at least for some time. Examples of such offences would characteristically be the taking of innocent life, theft and perjury and betrayal. The table of the virtues promulgated in such a community would teach its citizens what kinds of actions would gain them merit and honor; the table of legal offences would teach them what kinds of actions would be regarded not simply as bad, but as intolerable. The response to such offences would have to be that of taking the person who committed them to have thereby excluded himself or herself from the community. A violation of the bonds of community by the offender has to be recognized for what it is by the community, if the community is not itself to fail. Hence the offender in one crucial sense has excluded him or herself, has by his or her own action invited punishment. Whether the exclusion were permanent —by way of execution or irrevocable exile— or temporary —by way of imprisonment or exile for a term —would depend upon the gravity of the particular offence. A broad measure of agreement on a scale of gravity of offences would be partially constitutive of such a community as would a similar broad measure of agreement on the nature and importance of the various virtues (Macintyre, 2007: 150)

epistemic knowledge. It is clear Socrates claimed that all virtues were forms of knowledge. This kind of knowledge that guided actions was fundamentally the same as those that guided scientific investigation (Halverson 2002).

The knowledge acquired from human behavior is different from the nature of knowledge of the material world and physical phenomena. If one were to follow the world from the episteme perspective, then this is the world of facts and laws. Contrary to human behavior, it is not ruled by laws because humans are always constantly taking different circumstances, therefore practical knowledge is a matter of comprehension of a particular situation. In other words, humans are phronetical beings (Kuschel, 2012).

The Socratic fundamental insight about knowledge has had long-standing implications for the study of ethics and practice. If there is ultimately one type of knowledge, then the knowledge gained through research of human affairs (e.g. history, arts, and ethics) would have the same fundamental characteristics as scientific knowledge. Aristotle explained that the relation between knowledge and virtue was more complex. The relationship should consist of fundamental capacity of judgment, namely practical wisdom, which can bring together the appropriate rules with the exercise of the right virtues in particular situations (NE 1144b 16-29). In Book VI, Aristotle began with a distinction between the kinds of knowledge "of things whose originative causes are invariable" (episteme, or the principles of scientific knowledge); and the knowledge "of things variable" (moral philosophy, and the Socratic unity of knowledge and virtue) (NE 1139b8). This leads towards a conception of phronesis, or practical wisdom, which is relatively different from the platonic conception of episteme.

It is suffice to say that the Aristotelian theory has introduced adequate flexibility in the theoretical aspects, such as his idea of practical rationality. Practical rationality thus established a field of study, at least, for the Western world in understanding of rationality as a continuum of practical wisdom, from Aristotle, to Machiavelli, to Nietzsche, to Foucault.

2.4.3. From Classical Interpretation to the Contemporary Interpretation of Phronesis

Aristotle's concept of contextualism has implications for the study of social sciences in general, and planning in particular. It is important to note that contextualism is not identical with relativism but understanding. Kuschel (2012) explained that the role of power is a factor in the center of human relationships, and should be understood in the social world from both factual and semantic perspective. It should be clear that power does not necessarily mean randomness and negative, but it is the need to organize and classify distinctive of human rationality. This generates asymmetrical formal and informal relations.

From a phronesis point of view, justice is considered as rights, consequences related to the balance social equality or inequality, social tension, and the distribution of power. Virtues cannot be obtained by rules of laws. Virtues are product of phronesis – skills for capturing and understanding reality and acting correctly according to that reality in a contextual situation in which human as social beings have responsibilities with respect of actions taken.

The infamous Francis Bacon's dictum 'knowledge is power', underlined to a universal knowledge arrived at through scientific analysis. His dictum would become the basic assumption behind the Enlightenment and the rise of science. In planning theory from

the nineteen-fifties well into the nineteen-eighties such a scientific attitude has been influential. However, the classic Aristotle's phronesis did not engage in the relationship between rationality, knowledge, and power. Authors such as Machiavelli, Nietzsche, Foucault, and Flyvbjerg have reinterpreted phronesis that include the dimension of human rationality in which knowledge is the product of power that transmitted by means of communication (Kuschel, 2012).

Phronesis as an epistemological[11] tool in the social sciences may be constructed from authors such as Nietzsche[12] and Foucault[13]. Both authors enriched the Aristotelian concept[14] by introducing the relations of power and the consequences of daily life and science. They stress the fundamentally interpretive nature of social science, where all episteme constantly involves intentionality as it seeks to generate a condition that legitimize an existing ideas, practices or laws. This process starts when scientists select the object of study and its dimensions of interest (Foucault 2004). Accordingly for both Nietzsche and Foucault, all scientific truth is the result of a constructive knowledge, which possibilities are linked to conditions of power. Power[15] is omnipresent in society as well as in the

[11] Flyvbjerg considered that from a phronetical perspective, key questions of epistemology ("What is knowledge?" "What can we know?" "Under what conditions can we know that we know?") lead to more dynamic approaches: "How do people acquire knowledge and skills?" By addressing this question we begin to understand the problem of context (Flyvbjerg, 2001: 9).

[12] Kaufmann (1974) addressed the Nietzschean idea of human action assuming that "Nietzsche considers both the man who acts on impulse and the man who deliberately counteracts his impulses inferior to the man who acts rationally on instinct," an opinion he gets from Aristotelian ethics.

[13] Foucault and Pocock are two authors that recover the value of Greek ethics while making the impossibility of returning to the past clear. This explains the Foucauldian reconceptualization of phronesis.

[14] See: Flyvbjerg, "Aristotle, Foucault, and Progressive Phronesis: Outline of an Applied Ethics for Sustainable Development," in Earl Winkler and Jerrold Coombs, eds., *Applied Ethics: A Reader* (New York: Basil Blackwell, 1993).

[15] Here I follow Foucault's approach to power: "In the first place, he strikingly proposed that there is a deep and intimate connection between power and knowledge, viewing these mechanisms in relation to the various applied social scientific disciplines that, so he argued, render them elective: their effectiveness, in his view, largely derives from the shaping impact on people of experts' knowledge claims. Secondly, his overall aim was to produce a 'micro-physics of power'. In explaining this idea, he wrote that 'in thinking of the mechanisms of power, I am thinking rather of its capillary forms of existence, the point where power reaches

scientific world. That is why both authors rejected the idea of a neutral, and objective science. Science is determined by human conditions by establishing relations with objects and between individuals.

From Nietzsche to Foucault, phronesis has been understood as an aspect of our rationality that linked to our ability to perform and apply moral judgments beyond the context to real situation, and to assess them from a policy perspective. This process has two regulatory dimensions: 1) the principles that inform our moral judgment; and 2) the practical rationality – the ability to evaluate the implementation of moral judgment; and to evaluate the exceptional principles that determine the relationships of power within them.

Aristotle, Nietzsche, Foucault, and Flyvbjerg agreed that phronesis entails the unfeasibility of normative idealism; and for that reason decline the usefulness of such model. In that case, it rejects the possibility that social models can be neutral, purely scientific, and free of power structure. Aristotle stated that phronesis is part of our rationality. It provides a prudential knowledge and the ability to evaluate consequences before deciding an action.[16] As such, the incipient of Aristotelian thinking is that a critical theory – a capability that involves all type of knowledge. The Aristotelian types of knowledge, which is the notion of science and technology (episteme and techne) are suitable for humans by means their activities are guided by phronesis.

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into the very grain of individuals, touches their bodies, and inserts itself into their very actions and attitudes, their discourses, learning processes, and everyday lives' (Foucault 1980a: 39)" (Lukes, 2005: 88-89).

[16] Foucault explains phronesis relative to parrhesia (the courage of truth): "They must attend to themselves. This definition is crucial. Oneself in the relation of self to self, oneself in this relation of watching over oneself, is [first] defined by phronesis, that is to say, practical reason, as it were, reason in practice, the reason which enables good decisions to be taken and false opinions to be driven out. Second, oneself is also defined by *aletheia* inasmuch as this is what will in fact be the index of phronesis, what it is pegged to, what it looks for, and what it obtains; but *aletheia* is also Being insofar as we are related to it, precisely in the form of the *psukhe* (the soul). If we can have phronesis and take good decisions, this is because we have a particular relation to the truth which is founded ontologically in the nature of the soul" (Foucault 2004: 86).

This does not mean that knowledge is incarcerated by a rational evaluation that restrain by desirable rule of action. Phronesis is a tool. Per Nietzsche's and Foucault's perspective, phronesis is not a value-determined content which can be approach by any kind of reality. Phronesis is an instrument in evaluating the consequences of a particular contextual situation. In its progressive version, phronesis involves the consideration that all kind of knowledge as non-neutral. Science based on phronesis argues on the knowledge that claims as pure science that seeks objectivity and disinterested knowledge. Nietzsche and Foucault view human beings interact and work in socially-constructed based on multiple types of stakeholders. Therefore, science is not free from context, but exists with the intersections of power and knowledge.[17]

Phronesis has two dimensions. First, it involves a particular moral character, the reflection of which has implications for the agent's action. But in other dimension, it has an area in which participation in public space is determined by the ability of the individual to have the dialogical skills to persuade. Aristotelian moral character entails that reasoning, persuasion, and public life should go hand in hand.

Nietzschean and Foucauldian philosophy show the dual idea that knowledge is produced by situations of power, and from the constitution appears the criteria of truth and falsity in science, which takes the form of a normative rule in scientific and academic activities. Flyvbjerg's analysis of power in case studies (1998b: 141) stated that,

[17] Flyvbjerg (2001: 173) pointed out the implications of the impossibility of social sciences to achieve what Kuhn understood as 'normal science': "The assertion as to the social sciences' instability and lack of success in becoming normal science should not be interpreted to mean that the development of social science is incidental or without significance for society. The point, rather, is that the social sciences' development and importance are not best understood in relation to their role as epistemic science, but in relation to the practical application of these sciences in society's institutions".

> Actions are dictated by whatever works best to defeat an opponent, but mostly describes the ways in which surveys, analysis, documentation, and technical argumentation are […] used to try and create consensus but are also attempts to avoid confrontation, such avoidance […] being a characteristic of stable relations.

For Nietzsche and Foucault, power relations are the social sciences' main element, as they assume that an idea of rationality that can unmask the norms that stem from implicit power relations. Natural science involves the development of theory and critical rationality, which are critically accepted paradigms.

Dreyfus's first step is to make clear what he understands by ideal 'theory'. He looks back to Socrates, whom he regards as the founder of that unique intellectual activity called theorization. Ideal theory has been viewed by Dreyfus as having six basic characteristics that can never be fully realized, but can be approached to varying degrees. Socrates introduced and argued for the first three of these when he said that a theory must be: (1) explicit, (2) universal; and (3) abstract. It must be *explicit* because a theory is to be laid out so clearly, in such detail, and so completely that it can be understood by any reasoning being; a theory may not stand or fall on interpretation or intuition. A theory must be *universal* in that it must apply in all places and all times. Finally, a theory must be *abstract* in that it must not require a reference to concrete examples.

Descartes and Kant supplemented Socrates' three criteria with two further factors. A theory must also be (4) discrete; that is, formulated only with the aid of context-independent elements, which do not refer to human interests, traditions, institutions, and so on. It must also be (5) systematic; that is, it must constitute a whole, in which context-independent elements (properties, factors) are related to each other by rules or laws.

Finally, modern natural science has added a further criterion for an ideal theory: that it must be (6) complete and predictive. The way a theory accounts for the domain it covers must be comprehensive in the sense that it specifies the range of variation in the elements, which affect the domain, and the theory must specify their effects.

Dreyfus and Bourdieu have argued that this approach, which has been successful in many parts of the natural sciences, cannot succeed in the study of society. The reason, posited Dreyfus, has to do with the central importance of context in human social life (Flyvbjerg, 2001):

> Insofar as the would-be sciences [social sciences modeled upon the natural sciences] follow the ideal of physical theory, they must predict and explain everyday activities, using decontextualized features. But since the context in which human beings pick out the everyday objects and events whose regularities theory attempts to predict is left out in the decontextualization necessary for theory, what human beings pick out as objects and events need not coincide with those elements over which the theory ranges. Therefore predictions, though often correct, will not be reliable. Indeed, these predictions will work only as long as the elements picked out and related by theory happen to coincide with what the human beings falling under the theory pick out and relate in their everyday activities.

Per the discussion above, phronetic research differs from episteme (philosophical or scientific knowledge) and techne (technical knowledge or know-how). In contrast of episteme, phronesis is practice-focused, which it is more than what is true, but what is good to do in any particular circumstances. Phronesis differs from technical knowledge, and is concerned with evaluating and prescribing goals and means to achieve the goals. The fundamental criteria of phronesis is that it is not intended for grasping some theory or having some command over set of skill; phronesis is closer to a virtue, or set of virtues – that is, part of a person (Schram, 2012).

2.5. Phronesis as Methodological Core of Research in Social Science

In applying phronesis as methodological core of social science should begin by recognizing the limitation of rationality and adopting human aspect as a center point in science. This involves the two following realities: 1) the inability to reduce social reality to certain models that can be considered valid without a normative consideration in a given context reality; and 2) consciousness on the role of communication as a constitutive and regulatory element of social reality. In this sense, understanding as a constitutive element of the social sciences is as much based on the capacity to reflect on one's own rationality as it is about reality and consequences. Such self-interpretation is the only way to recognize and unmask the power relations within the sciences themselves.

Giddens (1984) called the two types of self-interpretations 'double hermeneutic'. First are the self-interpretations among those people in the study and the researchers itself. According to hermeneutics and phenomenology, in order to understand why people act in certain ways, these self-interpretations and their relations to the context of those studied must be understood. Hermeneutics emphasizes understanding as different from explanation. This is closely related to Max Weber's term *verstehen* (understanding). The second aspect of double hermeneutics is concerned with the researchers' own self-interpretations. The people studied are part of a particular situation; and the researchers itself is part of it as well as the research itself also constitutes that particular situation. Researchers' understanding and concept must be understood in relation to this particular situation. This particular situation or context both will determine and is determined by the researchers' self-understanding.

Following the double hermeneutics, the questions of what can be counted as 'relevant facts' within a particular discipline is determined by the researchers' interpretations, and by the interpretations of the people whom the researchers study. What is mean by hermeneutics-phenomenological argument is that the study of society is variable, but can only be stable through the self-interpretations of the individuals studied. As these interpretations are not constant, the study of society cannot be stable either. As the practitioners of hermeneutics say, the natural sciences do not have corresponding problems, because they deals with 'dead' objects – they do not answer back (Flyvbjerg, 2001).

Understanding in social sciences is not neither a mere description nor models according to a desirable given reality. Here, understanding is the ability in the reconstruction and rebuilding of cases from suggestions and recommendations; and the ability to take actions and to judge the consequences of such actions towards a particular reality. Understanding is the act of deconstructing relationships, to analyze the conditions that have been presupposed and the consequences that happen following the implementation of certain models.

From the perspectives of Nietzsche and Foucault, the social sciences are essentially contextual. In this case, the premise of an approach from phronetic science is 'why' and 'how'. It is a point of departure where the social implications pertaining to a particular reality can be identified.

> […] the 'How?' question has been neglected. "If […] I grant a certain privileged position to the question of 'how' it is not because I would wish to eliminate the questions of 'what' and 'why'", says Foucault. "Rather it is

> that I wish to […] know if it is legitimate to imagine a power which unites in itself a what, a why and a how" (Flyvbjerg, 2001: 119).

Phronetic research focuses on the dynamic question, 'How?' in addition to the more structural 'Why?'. It is concerned with both *verstehen* (understanding) and *erklären* (explanation). Effects of social phenomena are investigated and interpreted in relation to process. In the study of relationships of power, Foucault emphasized the how-question, "the little question […] flat and empirical", as particularly important (Flyvbjerg, 2001: 136).

In phronetic research, context is the essential aspect which the narrative and the value of cases take on particular importance. Aristotle's theoretical reflection on politics took a different constitution of his time. Foucault took a similar approach.

There are some differences between the story and analysis of empirical cases. First, theoretical studies based on phronesis do not bound to empirical method and data, but certain realities that refined and interpreted through the evaluation and consideration. The significant difference between narrative/case studies and empirical method is that the result of the narrative/case studies can form a suggestion that is, in the social science is built as a dialogue. Pure speculation may offer interpretations of the dialogue and enable the understanding of social phenomena, until other speculations takes on new legitimacy and replace it. When Foucault stimulates the idea of phronesis as progressive way and rational thought, he rejuvenates Aristotle's thought of phronesis, and become a challenge to any social science disciplines.[18]

[18] In some way it is possible to say that phronetic science is in line with the democratic structure of societies as a whole. "We also saw that for the public sphere to make a real contribution to democracy, one would have to link it to conflict, power, and partisanship. In forging this link, we will continue in the present chapter our

Narrative is storytelling which uses factual data analysis and put the relationships of power and influence that determine something into case studies. In this case, for example, policy studies may be used to demonstrate that a good environmental policy may protect the environment from environmental pollution. Stories behind the facts and statistics are revealed in the narrative. In such stories, several issues are highlighted, who are the winners and loser? What actors or stakeholders have defended what position? Using narratives, the comparison of relationships and the results that entail scientific discourse can be performed.

Phronesis operates in the form of narrative as an evaluative rationality implies that the judgment of a situation is the result of balancing the data; and this is not based on universal principles but based on contextual. Although Foucault's idea of phronesis is also a content-dependent evaluative rationality, he adds something to Aristotelian thought: the importance of uncovering the power relations through the analysis of the discourse that gives them sustenance.

Flyvbjerg, in his decisive *Making Social Science Matter*, argued that practical wisdom has survived in social science from Aristotle through Machiavelli; it passed by Nietzsche and up to today's work of Foucault. In his work, Flyvbjerg was able to show that a phronetically-understood social science is relevant, significant, applicable, and flexible enough; and therefore able to deal with higher level of complexity.

Flybjerg's works on comprehension and reconstruction of phronesis is largely based on the Aristotelian concept, Foucault's rational approaches, and the work of Dreyfus and

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focus on Michel Foucault's analysis of power as a means of developing a more adequate and contemporary conception of phronesis″ (Flyvbjerg 2001: 110).

Dreyfus (Flyvbjerg, 2001). Flyvbjerg presupposed the Dreyfus's model of a division of knowledge to be useful for understanding the linkage between knowledge and context, and it is directly deal with the question of whether knowledge about human activity can be context-independent (Flyvbjerg, 2001).

Real expertise implies experience, intuition, holistic consideration, and context-value practices in assessing a given situation and deciding on an action. This process does not come from a neutral-value rational that applies only on abstract principles and rules.

In line with the Aristotelian idea of phronesis, Dreyfus and Dreyfus (Flyvbjerg, 2001; Kinsella, 2012) suggest that real expertise is 'the art of judgment', which implies previous knowledge and experience and above all, the capacity to evaluate problems in particular cases. By adopting the Dreyfus' model of division of knowledge, and Aristotle's idea; it does not mean that 'know-how' and theoretical knowledge are not useful. But, both should be balanced by value-reflection before being applied. If this situation were taken into consideration, then we can start talking about the expert knowledge.

Following rules and applying procedures does not mean that a person has sufficient internalized knowledge. Internalized knowledge is part of the individual. It cannot be translates into rules and explanation. This only occurs once people begin to evaluate the effects of the application of certain procedures and rules in a particular situation. Dreyfus and Dreyfus interpreted the idea of expertise as a holistic use of rationality in the same sense as Aristotle. It is not a matter of one or another; it is that episteme and techne requires the guidance of phronesis.

2.6. Phronesis as Policy Analysis

There is nothing new in linking political science and phronesis (Flyvbjerg, 2001, 59). For political scientists, it is worth noting that Aristotle linked phronesis directly with political science.

Aristotle here emphasized that "Political science and prudence [phronesis] are the same state of mind" and that political science must deal both with general legislation and particular circumstances and must be practical and deliberative (Schram et al. 2013:370). "Prudence [phronesis] concerning the state [the object of political science, for Aristotle] has two aspects: one, which is controlling and directive, is legislative science; the other... deals with particular circumstances... [and] is practical and deliberative." (Aristotle, 2009: 1141b8–b27).

Aristotle's (2009) assertion of political science, as a consequence of the emphasis on the particular, on context, and on experience, cannot be practiced as episteme. To be a knowledgeable researcher in an epistemic sense is not enough when it concerns political science because, "although [people] develop ability in geometry and mathematics and become wise in such matters, they are not thought to develop prudence [phronesis]" (Aristotle, 2009: 1142a12–29). Aristotle explains that a well-functioning political science based on phronesis is imperative for a well-functioning society, inasmuch as "it is impossible to secure one's own good independently of […] political science" (Aristotle, 2009: 1141b27–42a12). Second, one may benefit from paying close attention to Aristotle's emphases in his concept of phronetic political science of both the collective (the state) and

the particular, of control and circumstance, of directives and deliberation, of sovereign power and individual power (Schram et al. 2013).

Politics by Aristotle's view is not something that can be done by abstracting general principles and things that can be predicted. It is also not a form of social engineering. Political science, he argues, is a demonstration of practical wisdom, rather than craft: and he goes on to explain that what he meant was referring to politics is public administration (Aristotle, Ethics, Book 6, Chapter 8).

Phronesis, and policy research, certainly imbued with value judgments. Phronesis address the question of judgment to be made. Practical questions of social policy does not stop with technical questions, such as 'how this effect is produced?' They were just as much concerned with the question 'what should we do?' Values are part of the framework within which decisions are made. If phronesis is about forming guides to action, the norms that guide action are part of the process. Not least, if researchers do not isolate the core elements they think are more relevant; norms are part of the package. Phronesis is far removed from the tradition of a value-free social science, which once dominated the field (Spicker 2011).

To consider planning as a value-rational process in which actors exercise power in many different ways, is to choose a research method that reflects this view. For this purpose Flyvbjerg (2001) has developed what he calls phronetic planning research. Referencing to the writings of ancient philosophers Aristotle, Flyvbjerg stated that scientific research takes into account only two of the three intellectual virtues necessary in good research, the

episteme and techne. Phronesis, the third virtue is typically lost in the practice of science. Episteme is about scientific, universal knowledge, techne is more practical and focused on the creation or building of something, and phronesis refers to a kind of practical knowledge that enables wise decisions. Therefore, there are different types of knowledge.

Phronesis is of fundamental importance in the planning research, according to Flyvbjerg, as it introduces a normative and ethical element to the practice of science and technology (stemming from episteme and techne, respectively). It can be done by asking three key questions as a frame for phronetic planning study: (1) 'where are we going with planning?' (2) 'is this development desirable?'; and (3) 'what, if anything, we should do?'. Flyvbjerg then add a fourth question, namely (4) 'who gains and who loses, and by which mechanisms of power?' Therefore, phronesis introduces an element of judgment, accordingly acknowledging that social-scientific knowledge is not objective or neutral but normative, and has the potential to play an active role in the ongoing process of planning.

Aristotle emphasized in his concept of phronesis both the collective (the state) and the particular, rules and circumstance, directives and deliberation, sovereign power and individual power. Since the time of Aristotle, however, an unfortunate division has developed in philosophy and in the social and political sciences, of two separate traditions, each representing one of the two sides stressed by Aristotle. One tradition, mostly dominant, has developed from Plato via Hobbes and Kant to Jurgen Habermas and other rationalist thinkers, emphasizing the first of the two sides; that is, rules and rational control. The other, partly Aristotelian and partly sophist in origin, has developed via Machiavelli to

Nietzsche, and to Michel Foucault in some interpretations, emphasizing particular circumstances and practical deliberation.

It is not just states that there are different ways presenting policy, but it reflects that there are different forms of knowledge, and explain the different sorts of practice. Based from Flyvbjerg (2001) and Aristotle, Tenbensel in Colebatch (2006) argued that we should distinguish between three types of knowledge about policy (Box 2.1).

In this view, policy analysts apply the knowledge and skills not only of formal methodological training, but it includes imitation, experience, and practice. Policy arguments may involve all these kinds of knowledge; however, participants may not be equally skilled in terms of knowledge, because each asking a different questions. Episteme asks 'what is true?' techne asks 'what works?', and phronesis asks 'what should be done?' Majone (1989, in Fischer 2009: 123) states that, the task of policy analysis is depending on "more on 'knowing how' than 'knowing that'". Policy analysis does not involve only purely logical activity.

Episteme – the universal knowledge produced by analytic rationality. Epistemic knowledge is 'the type that establishes causal links and chains', and is 'the knowledge aspired to by mainstream rationalist policy analysts in their search for the likely consequences of the different policy alternatives they evaluate'. Political science practiced as episteme is concerned with uncovering universal truths or laws about politics.

Techne – the 'practical-technical' knowledge derived from experience and skill; this is not simply the practical application of epistemic knowledge but is often tacit knowledge which 'cannot be explicitly codified but which rests very much in implicit personal or institutional practices often associated with craft like skills, awareness of reputations, hands on techniques.' Political science practiced as techne is consulting aimed at better politics by means of instrumental rationality—a type of social engineering—where "better" is defined in terms of the values and goals.

Phronesis – which is 'a sense of the ethically practical rather than a kind of science', and is 'based on practical value rationality'. Political science practiced as phronesis is concerned with deliberation about (including questioning of) values and interests aimed at praxis. 'Where are we going?'; 'Is this desirable?' and 'What should be done?'; are all phronetic questions, and they underpin the definition of a policy problem.

Box 2.1: Three types of knowledge about policy

From the perspective of social constructivist, policy analysis is a social process, in which the collection of craft knowledge and skills practiced by analysts covering procedures, conventions, and judgments that combines social, institutions, and personal factors. The determination of whether a specific data quality is acceptable, as Majone (1989 in Fischer, 2009: 123) stated that a policy analyst "applies standards that derive from his own experience but also reflect the professional norms of teachers and colleagues, as well as culturally and institutionally determined criteria of adequacy".

The basis of practical reason is that it recognizes that the arguments relevant to the problem are different, and depending on the nature of these issues. What is reasonable in jurisprudence or clinical medicine is judged in terms different from what is 'logical' in geometrical theory or physics (Sanderson, 2002). Fundamental to such judgment is the values and sensitivity in the context of the circumstances of a problem or issue. The reason for practical discourse, as phronesis, is different from the theoretical framework, technical proficiency, and experiential knowledge needed to put the technique to good use in concrete cases. Practical reason as such, aims to bring greater range of evidence, arguments, explanations, strategies and analyses to bear on the problem being investigated (Fischer, 2003a). It offers a conception of reason that it is more appropriate to the forms of rationality displayed in real-world policy deliberation. Practical reason supplies a framework for examining and testing the logical components of a policy argument.

Deliberation involves not only scientific evidence, but it involves various forms of practice on intellectual skills. The conception of science, which defines rationality in terms of one technique, whether it is deductive logic, or the method of empirical verification, is a

narrow view to incorporate multiple forms of rationality manifested in scientific research. Interpretative judgment also involved in characterizing each phase of scientific investigations, and determines the rational choice for a particular scientific theory, which is based on accumulated evidence and arguments. This situation cannot be explained solely by the rules of inductive or deductive logic. For this reason, phronesis, practical reason or value judgment, is manifested in the process of interpretation and judgment for all the understanding as an alternative to the logic of positivist form of scientific rationality (Dryzek, 1993).

It is not an absolute proof that determining the validity or acceptance of a theory, but as a process of deliberation to reach a consensus among researchers as to what will be taken as a valid explanation. As Fischer (2009: 125) puts it across succinctly, "it is the practical judgment of the community of researchers and not the data themselves that establishes the accepted explanation". Postpositivist acknowledge that, although informal logic of practical Reason could not validate the truth of particular conclusions, it provides with a rational method of probing the much overlooked contextual dependence of most forms of argument (Scriven 1987 in Fischer, 2003a: 219).

Practical informal logic, designed to investigate both the ambiguity and incompleteness of existing knowledge, which has been conceptualized with an understanding of the evidence and verification, in which the two are strongly opposed to the concept of formal logic, which is bounded by the methodology that need to combine the quantitative and qualitative orientation. In contrast to science that seeks generalizations, informal logic follows investigate-as-given, in which it is subject to certain norms and

context, rather than an attempt to suit or reconstruct into the framework of deductive or inductive. Therefore, practical logic emphasizes assessment in the context of a specific problem, seeking to determine the most relevant approach to a given inquiry.

Given that the determination of existing knowledge and social context is a theoretical construct, practical reasoning focuses on understandings of problems and variety of appropriate methods for investigating them. Postpositivist theory explains that this does not mean that formal logic should be abandoned altogether; its range of applicability is much narrower than has been claimed (Fischer, 1998).

2.7: Understanding Planning and Power

A famous dictum is Francis Bacon's 'knowledge is power', which refers to the universal knowledge that can be achieved through scientific analysis. His expression became the basic assumptions behind the Enlightenment and the rise of science. In planning theory from the 1950s until the 1980s the scientific attitude was very influential. Bent Flyvbjerg and Tim Richardson (2002), however, have challenged these notions. Flyvbjerg (2001) changed expression by Bacon to advocate that 'power is knowledge'. He explained that, rationality is never universal, and always laden with power and values. According to Flyvbjerg and Richardson, planning theorists has neglected the issue of power, but at the same time still working with the concept of power-free rationality.

In Flyvbjerg argument about phronesis as a social science, it is totally different from the natural sciences and cannot be successfully practiced in conjunction with the principles (rule-based, predictive) of natural science. Flyvbjerg (2001) identified deficiencies in the

classical concept of phronesis as developed by Aristotle, that it did not include power. Flyvbjerg (2001:3 and 88-128) critically evaluate the philosophy put forth by Habermas (communicative action in a perfect democracy) and Foucault (power relations), and concluded that contemporary phronetic science has to include research questions about power. Flyvbjerg (2001: 60) formulates the main 'power questions' to be answered by phronetic research as "who gains and who loses; by which mechanisms of power?"

This scientific approach upholds the fundamental methodology in planning and promoted 'scientific professional status' profession of urban planning in most parts of the world. However, it over-emphasized the scientific approach, autocratic and undemocratic to planning, and the power of the authorities. Scientific focus is not only reducing the social focus of the plan, but it resulted in a scientific rigidity and rational power which has been widely criticized (Sandercock, 1998). In the second half of the 1900s, the rational planning model had been heavily criticized for not directing or explaining planning activities satisfactorily.

Traditionally, power has not been taken into account when studying the planning practices. In the 1950s, it was generally agreed upon by the early planning theorists that this new academic discipline should convey objectification of professional planning (making planning more scientific) by focusing on rationality; this included making planning more rational, and analyzing planning as an activity of rational decision-making (McGrath, 2007). Spatial dynamics were regarded in a rational system of relations, and analyzed in terms of rational components – among which the stakeholders – interacting according to

identifiable patterns and mechanisms. However, people, are not rational actors (Flyvbjerg, 2001).

During the sixties and seventies, some social movements evolved in response to the emphasis that is too narrow, which only focused on the physical and economic development. Developments such as these ignore broader social development, as well as social wants and needs, such as the Civil Rights Movement of the 1960s; and the proponents of Advocacy Planning[19], Radical Planning, Equity Planning[20], Marxist planning[21], and the Basic Needs Approach[22]. This is a reaction and response to the modern project only focused on instrumental rationality and ignoring human values in most places in the UK, USA and Western Europe. This in turn led to social awareness and focus on broader social issues.[23] Awareness of modern planning is not focused on the social aspect further increase the efforts to form a new planning which is also linked to the postmodern turn in the same period (Allmendinger, 2001). According to Sim (2001), the postmodern turn is associated with commitment to cultural advancement, human liberation from the requirements of economic and political oppression, an anti-authoritarian mindset, a new

[19] Advocacy is a political process by an individual or group which aims to influence public-policy and resource allocation decisions within political, economic, and social systems and institutions. It involves educating and creating awareness among legislators and the general public of issues facing the community and the importance of aligning public policy to address the need. Advocacy does not endorse or oppose specific legislation, and can include many activities that a person or organization undertakes including media campaigns, public speaking, commissioning and publishing research or polls to informs the community at large how public policy decisions impact service provision. Advocacy planning was also opposed to the organized, institutionalized forces of government and planning (which could not effectively deliver the necessary services to the people) (Sandercock, 1998).

[20] Equity planning focuses on the poor and elderly with few resources, the truly disadvantaged, and emphasizes greater community (Sandercock, 1998); (Fischer, 2009)

[21] The Marxist urban planners regard the fair distribution of 'real income' as central to the planning process - so as to benefit the groups that have the least (Sandercock, 1998); (Knoepfel, 2007).

[22] For more information on the Basic Needs Approach, see Hawkesworth and Kogan, 1992).

[23] This remit of social issues includes amongst others: meeting basic human needs and wants; addressing poverty in general; the promotion of equity in all its forms; basic community development; combating discriminatory practices regarding race, gender, and cultures; helping the poor minorities, the marginalized and the truly disadvantaged (the bottom of the social society); respecting and assisting elderly people, handicapped people, orphans, unemployed and inoperative people, the homeless, and social misfit in general; and the promotion of local economic development.

form of skepticism about power, intelligence, political and cultural norms; rejection of structuralism and methods and ideological assumptions that lie behind it.

Closely linked to the above criticisms of instrumental rationality and the emergence of social consciousness; can be said to be renewed interest in democratic planning and community participation exists in the countries that practice democratic systems in the sixties and seventies. Although the neglect of the social environment and emerging social consciousness highlight the role of the community in planning and decision making, the development of the emerging democratic movements had a great impact on democratic planning. The influences that affected the new focus on participation came from the public administration theorists that emphasized the role of the community in administration. Some authors such as Sewell and Coppock (1977, in Coetzee, 2005), argued that the role of the public in the planning was rooted in both philosophical considerations – the common belief that individuals have the right to be informed and consulted on matters which affect them personally; and pragmatic considerations – general belief that public priorities and interests cannot be identified or failed in the planning and decision making (Coetzee, 2005).

This new forms of democratic planning with emphasis on the social, as well as its cross-sector and socio-political nature not only has a major impact on the role of local authority planners, managers and politicians. In fact it causes a many new power structures, such as forum that represents the community; a new kind of power, such as the power of community leaders; and also new power relations, such as the power relationship between the community and elected politicians.

Social movements not only lead to new directions in urban planning practice in most democratic countries, but it also provide a space for new debate in planning theory. The debates in contemporary planning theory can be seen since the 1970s in which the planning theorists began to shift from a focus on planning theories of modernist/rational or the instrumental rationality with its modernist limitations, towards the rational-communicative (Yiftachel and Huxley, 2000). Healey (1997) referred to this theory as the communicative turn in planning. This new wave of intellectual evolved since the 1970s, which is labeled as argumentative, interpretative or communicative planning theory.

The communicative turn in planning theory is not bound by the limitations of instrumental rationality, but also liberate planning theorist from the limitations that constrained in instrumental rationality. Communicative turn in planning theorist have engaged in poststructuralist and multi-cultural discourse on the nature of knowledge, ethics, justice and power. This consecutively lead to a significant number of planning theorists engaging in the communicative-pragmatic logic, accumulating evidence about speech, narratives, professional profiles, consensus building and negotiation as well as power (Yiftachel and Huxley 2000).

In the philosophy of communicative action put forth by Habermas (1984), rationality needs to be reorganized by means of critical thinking that seeks to bridge the gap between citizens' everyday practices and the realm of politics and social engineering. For Habermas, this goal may be achieved by enhancing the 'public sphere' through participatory practices – a concept put forward by Habermasian thinkers, in which citizens can openly and collectively deliberate about the political solutions to public problems.

Participatory practices will provide space for policy-makers and citizens to engage in dialogue about the common values and social goals, and this will be based on communicative ethics arising from an “ideal speech situation in which people communicate free from power relations, deception and self-deception” (Hoppe, 1999: 19). These measures tend to normatively guided policy process as opposed to technical process consideration of policy; in which the notion 'good life' in the Aristotelian sense, consideration of the evidence or technique is not a guide to making decisions. This approach emphasizes the discursive engagement “with an eye to the quality of decision making and the authenticity of consensus formation” (Hoppe, 1999: 20). Emphasis on the discourse of critical and theories stemming from the perspective of Habermas, which refers to the importance of deliberation as a way to liberate policy from constraint of interests (Fischer, 2003: 46) that it is bound when left exclusively in the hands of politicians and policy makers (i.e. with little or no citizen participation).

This perspective has been criticized that highlight the concept of the 'ideal', in which the public sphere and deliberative democracy with the participation of citizens in public areas consider sharing with rationality and value. Apart from that ideal, and therefore rather unreal, the possibility of fair dialogue and consensus formation on certain fundamental aspects of human life, that the concept of Habermas’ conception of public sphere conceals the fact that modern dialogic rationality and values already express a form of dominant discourse (Hajer, M., and Wagenaar, M. 2003).

According to Fraser (1992), Habermas held a “bourgeois, masculinist conception of the public sphere” (pp.117, 118) that overlooks the basis of impossibility to completely

overcome when power and status differences are involved in the discussions. Beyond the formal limitations to participation class, ethnic and gender differences will be reflected in the access and participation for public discussion. Furthermore, Fraser demonstrated how the public sphere can be the "institutional site for the construction of the consent that defines the new hegemonic mode of domination" (p.117). Thus, the idea of consensus itself is bounded by the establishment of dominant discourses and practices in a way that will inevitably conceal differences and exceptions.

2.7.1. The Dimensions of Power

The concept of power is still highly contested among political scientists and sociologists. There is no universal agreement on how to define the concept, except to say that it is a complex, interactive, and exist in almost every social and political atmosphere. Nevertheless, Foucault observes, "power is co-extensive with the social body; there are no spaces of primal liberty between meshes of its network" (Foucault, 1980, 142). Therefore, power is best examined within a broad network of social and political contexts that reveal its varying characteristics with multiple and diverse meanings and positive and negative forms.

Phronetic planning research is in direct response to the research paradigm informed by rational planning, knowledge/action planning theory, or paradigm of communication (see Flyvbjerg, 2004). Concepts commonly used by planning researchers as a frame of reference when studying the planning practices include Habermas' communicative rationality. This concept, however, describes the ideal situation, and does not reflect reality. Based on the works of Machiavelli, Nietzsche and Foucault, Flyvbjerg suggested that

power relations are more useful as a frame of reference for research of planning practices. Planning is not characterized by (power free) communicative rationality, but by power relations. This notion holds that all knowledge is laden with values and interests. Traditionally, science has rejected the values and interests as subjective, and has been pursuing universally rational and objective knowledge. In order to study this social reality, however, this instrumental rationality must be balanced with the value-rationality, according to Flyvbjerg (2001).

The question of exercise of the power is not a new issue under discussion; in fact it has become an important role in the field of human sciences to discuss (Allmendinger 2001). The discussion on power can be said, started in the early 1500s, when Machiavelli presents a useful discussion about power in his classic writing *The Prince*. Machiavelli stated that, it is something very natural for someone who wishes to obtain more power, and this phenomenon is common. There, he presented a variety of tactics and strategies based on his own war experiences, regarding such topics as how to obtain power (in any way and at all cost); how to maintain power through the prowess and wealth; and methods for the exercise of power through fighting, law or force. The aggressive Machiavelli's manners of 'becoming a prince' is something typical of the dominatory power, in which it is synonymous with power in general (Coetzee, 2005).

Contemporary planning theorists have examined the concept of power from various angles. For a long time power is seen as part of the legislative authority or dominatory authorities concept – a tendency to dichotomize the notion that 'they' (structures, organizations, experts) had power; and 'we' (the oppressed, grassroots, marginalized) did

not (Gaventa and Cornwall, 2001). This is much like the concept of power held and exercised by Machiavelli's "Prince".

Friedmann (1998) admitted the neglect of power in the past and present planning theory. However, there are several ways to take power into account. If one considers power as a negative force which is possessed by one party and executed over the other, the focus is likely to reduce the role of power in planning practice. Flyvbjerg and Richardson (2002) argued that this is what communicative rationality strives for.

On the other hand, in a postmodernist mode, if power is conceptualized in a Foucauldian sense, as an ever-present aspect of discourse – not negative, not statically possessed by one party, but inevitable, applied dynamically as a strategy in communications – it becomes compelling just to study how power works in practice (Allmendinger, 2001; Foucault in Faubion EDT, 1994). Based on the literature *Discipline and Punished* (Foucault 1977), written by Foucault himself, he has reformulated the concept of power. Based on the theories of Nietzsche, Foucault associated power with the flow of knowledge and communication (Allmendinger, 2001; and Hillier, 2002). In addition, Foucault's involvement in hermeneutic sociology and the study of people and institutions also resulted in a major reconceptualization of strategic power relations in support of Habermas' theory of communicative action (Foucault, 1994).

For Foucault, power cannot be possessed given that power is everywhere and power comes from everywhere. Foucault believed that power did not follow rules or hierarchy. In the same way that power does not exist without relationships, the way that power does not

follow rules or hierarchy also can be explained by the 'web' concept, where power could flow up and down and also sideways. There is no set way or source in which power could be considered to only come from (Foucault, 1979).

This is in contrast to Habermas who believes that power can be possessed in the process of finding a consensus. Foucault largely directed the focus on power as a dense net of omnipresent relations and not only as localized in centers and institutions, in the social web, and juridical structures etc.

Foucault believed very strongly that power was not a possession and therefore could not be acquired, seized or shared (Foucault, 1988). Rather, he maintained that power was the result of a relationship, and therefore could only exist where there were relationships. These relationships could be economic processes, knowledge relationships, or sexual relations (Foucault, 1979; Garland, 2007).

Foucault's belief that power was a web emphasized the fact that power exists solely through relationships and could not be possessed by an individual.

> Power must be analyzed as something which circulates, or rather as something which only functions in the form of a chain. Power is employed and exercised through a net-like organization. And not only do individuals circulate between its threads; they are always in the position of simultaneously undergoing and exercising this power. In other words, individuals are the vehicles of power, not its only points of application (Foucault 1979: 98).

Power is not a capacity or a 'battery' that can be strapped on or taken off, according to Foucault (1979). Power is dependent on the existence of relationships and cannot exist in

isolation (Foucault, 1977).When considering relationships, one person usually has more power, and the other person has less. Under a Foucauldian approach, the submissive person is not necessarily in a negative position because of their lack of power. A Foucauldian approach holds that the submissive person may well enjoy and benefit from having the other person hold more power in the relationship (Garland, 2007).

He argued that power is seen as ultradynamic – something that flows from the center to the peripheries, in a constant back-and forth movement, that it circulates through individuals and binds them together in a web of relationships (Foucault, 1996; Foucault in Faubion edt. 1994; and Foucault, 1994). This web[24] is generally structured into disciplines within which power and knowledge are interrelated (Hillier, 2002). Foucault explicitly states that power relations are deeply rooted in social nexus (Foucault in Faubion, edt.1994).

Power does not occur in isolation. Power arises through a multiplicity of factors, such as organisms, forces, energies, materials, desires and thoughts. Foucault believed that power/knowledge functions through discourse and those relations of power cannot be established, consolidated nor implemented without the production, accumulation, circulation and functioning of a discourse (Foucault, 1979).

Therefore, power relations are embedded within local discourse and institutions (Foucault in Allmendinger, 2001). However, Foucault (1994) also argued that power exists only when it is exercised out by some on others; it is not purely a relationship between

[24] which was also referred to by Foucault as the general matrix of force relations at a given time in a given society

people, but a manner (communicative action) in which some act on others. It is the kind of behavior between individuals and groups that create power – through communication and communicative actions (Foucault, 1994).

Discussion about power from the Foucault and Habermas view shows that there is a connection between these social and power relations as both these aspects forms an integral part of social nexus, even though Foucault and Habermas, as well as their followers, have seen social relations and power relations as different, the entity cannot be changed. The relationship between social and power relations also show that it is a strategic and communicative action is equally conditions each other, and secondly shows a specific form of power accompanies any speech action (Foucault, 1994).

Foucault argues that power is not only disposed by agents (in the social alignment), but also by means of what is known as the instruments of power such as buildings, documents, or tools. (Foucault, 1994). Therefore, power should be understood as a multiplicity of force relations that is "produced from one moment to the next in all points and all relations" (Flyvbjerg, 2001: 120).

Hooper (1992, in Garland, 2007) discussed how Foucault viewed the acceptance of power. He believed that power is accepted because it is a positive force that penetrates society and has more purpose than to solely repress. He states Foucault as saying that the present form of power came into existence in the 18th century and began to exercise itself through both social production and social service. This helped obtain productive service from individuals. Power must be incorporated into their bodies, acts, attitudes and

behaviors, allowing significant methods like school discipline to condition minds and bodies (Garland, 2007).

Foucault further argued that resistance is intrinsic to all power relations – where there is power, there is resistance. According to Foucault, these points of resistance are present everywhere in the power network. As power relationships have a strictly relational character and there is no one single source of resistance, just as there is no one single source of power. Instead, there exist multitudes of resistances, each of them being a special case arising from individual circumstances and power relations (Foucault, 1977). As power relationships have no single source of resistance, the multiplicity of points of resistance can play many different roles in power relations, such as that of adversary, target, support, or handle (Foucault, 1977; and Foucault, 1978).

The power of the web has the potential to erupt. This situation can occur as a result of the nature of power that is distribute widely, as well as various kinds of power relations in different parts and levels of the so-called the power web. Foucault provides a significant position on the concept of resistance. He connected his own theory of power to localized forms of power struggle. He argued that resistance sets itself against form of external determination that makes self-realization possible (Hillier, 2002). Through Foucault's study of power, he also studied examples of resistance and opposition to power, the anti-authority struggles; opposition of power over women; administration on the people and others. Foucault distinguishes three types of struggles, namely: the struggle against forms of domination; exploitation and subjection (Foucault, in Faubion, 1994).

More recently, Hillier (2002) argues that Foucault's work aids understanding of power in the multiplicity of micropractices that comprise everyday life as well as understanding power as a relational process rather than as a commodity operating from the top down. Nevertheless, Foucault's concept of power relations provides an important critique on the professions (such as the planning profession) that claim to serve the communal good.

John Forester (1982) confirms the importance of an awareness of power when he says that "planners do not work in a political vacuum". In his seminal work, *Planning in the Face of Power* (1982), Forester explored the control of information as a key source of planners' power. He identified five perspectives on information as a source of power, namely:

1. The power of technical information;
2. The power of 'knowing the ropes' (Forester, 1982:68) within an organization;
3. The power of information to enable underrepresented groups to participate in planning processes;
4. The power of information to legitimize/rationalize existing power structures; and
5. The power of information to enable citizen participation (without rationalizing existing power structures), while recognizing the structural and political barriers that 'may unnecessarily distort' such information.

The question of the relationship of planning and politics is densely interwoven with the question of planning, planners and power. On one hand, power can be seen as the

motivation for planning. On the other hand is the question whether, and to what extent, planners really have the power to influence the outcome of planning.

In discussions concerning power, the emphasis is always placed on the form of dominatory forms of infra power such as juridical, economic and political power, and panopticism[25] (Foucault, 1994). However, there are other forms of power that exists and is active in the power web for instance, a professional power[26], the community/neighborhood power[27] (Coetzee, 2005; Hillier, 2002), as well as community and social power (Habermas, 1984). By looking at these different forms of powers within the scope of Foucault's web of power, every form of power has its own strengths and weaknesses that can cause imbalanced in power relations. In the negotiation/mediation process, normally the weaker party will lose, because the negotiation/mediation is usually applied in the form of political strategy in such a way so that it will favor the party that holds the power at hands (Hillier 2002).

This creates a variety of power relations that are contingent and fragile (Allmendinger, 2001) and relationships that are marked by conflict and power struggles. Once again it can be seen that the relations of power, power struggle and conflict is something typical in the planning environment (Flyvbjerg, 1996; 1998a and 1998b; 2001;

[25] According to Foucault in Faubion edt. (1994), panopticism is one of the fundamental characteristics of power relations in our society. It is a type of power that is applied to individuals in the form of continuous individual supervision, in the form of control, punishment and compensation and in the form of correction. It implies the molding and transformation of individuals in terms of certain norms.

[26] Professional power relates to the power of e.g. planners - to influence developments, processes, procedures decisions, communities, etc. (Forester 1982). Planners' information and knowledge is a strong source of power. It can be used to influence groups, etc., it legitimizes and rationalizes the maintenance of existing power, control and ownership (watchdog). The information provides planners with the advantage of knowing where and how to find things and do things etc.

[27] Neighborhood and community power is a type of power that is created through democratic rights, "the voice" of individuals and groups and social expression (Forester 1982).

Allmendinger, 2001; and Hillier, 2002). Planners often work in an environment where there is an imbalance of power, conflicting with political goals and communication infrastructure that are formed by the power structures (Hillier 2002).

Although Flyvbjerg discussed the disagreement that the two philosophers had with each other, there is a benefit in the marriage of these two perspectives. Flyvbjerg states "If Foucault's framework can be likened to phronesis, then Habermas' framework can be likened to episteme*"* (Flyvbjerg 2001: 106). This implies that the two frameworks can support each other in the employment of one efficient framework that pays attention to what the focus of social science should be and how this science can be conducted.

When discussing the volatile role of the planners in the web of power relations and planners' contingent and fragile relations with other powers in the web, particularly within the context of the scope of the lifeworld and realpolitik[28], it is significant to focus on the discussion of power relations presented by Bent Flyvbjerg. Flyvbjerg's work, largely based on the work of Foucault (Flyvbjerg, 1998b) provides a new insight on the conflict between power and rationality. Based on a case study in the City of Aalborg (Flyvbjerg 1998a), Flyvbjerg concluded that power defines rationality, and the greater the power, the less the rationality.

2.8: Conclusion

When the modernist project began to decline over the past decade, at the same time a postmodern planning theory were developed and gains a foothold in planning, such as

[28] Refers to politics or diplomacy based primarily on power and on practical and material factors and considerations, rather than ideological notions or moralistic or ethical premises.

communicative turn. The emerging focus was given to people, human action, planning practice (and power). This led to the transformation in theory and practice of research methodology in the field of planning. Not only the theories of planning prompts new debates and ideas in planning and planning theory, but they also opened up a new space and more diverse postmodern approach to research, particularly in the social sciences.

Not only was the modernist planning approach criticized because of its rigid, objectivist, structural, and rational focus, in fact this approach has also been criticized because it dominates certain types of research, and does not fully describe human actions. This critique, supported and contextualized by social rationality and the postmodern, has directed the focus of the planning research towards the study of planning practices, human action, and the web of social and power. As planning has become more concerned with the social sciences (or part of it), planners began to adopt qualitative methods developed and applied by social sciences, especially within the context of postmodern. Postmodern theory creates space for the emergence of new thinking and new theoretical claims.

Planning research that focuses on social and postmodern approaches that are open and flexible have raised concerns from planners who still believe in the modernist planning paradigm. They argue that planning through such social and qualitative research will not be able to achieve scientific results. This challenge is recognized by the postmodern planners, and they discussed ways in which hermeneutics could be applied in postmodern research.

So far, much has been said about the communicative turn in planning; new theories, debates and propositions on planning; and the emerging postmodern planning methodologies. In the context of new theories and trends, methods of research on practice,

human actions and behavior, especially in the web of social relations and power were developed - per Flyvbjerg (1998a; 1998b; 2001); Allmendinger (2001); Hillier (2002); Fischer (1998) and Schram (2012; 2013).

In the context of practice, Flyvbjerg (2001) presents a contemporary view of Aristotle's concept of phronesis. Although phronesis has no specific meaning in modern language, it can be translated as prudence or practical wisdom. He argues that phronesis or he referred to as phronetic planning research is associated with the highest expert level of learning as described by Dreyfus model. According to Flyvbjerg (2001: 63), phronetic planning research is associated with a focus on values, a writer's closeness of their study; focusing on the details of the practice that form the basis of life; using case studies, use of narrative as a revelatory tool; and leaning dialogical allowing voice to be heard other than the author. This type of research is clearly practice-oriented, as it mainly focuses on practical activity and practical knowledge in particular context and everyday situation.

Phronetic research has become specific and appropriate in the study of power relations. Flyvbjerg (2001), is largely based on the Foucault's theory of power, combines with the principle of phronesis. In this context, coupled with the dimensions of power, he emphasized the practical knowledge and practical ethics and argues that phronesis is a sense of the ethical practical. According to Flyvbjerg (2001) this proposition implies that practice is interpreted in terms of politics and ethics. This underscores the need for "researchers to use a methodology that takes account of the complex and unstable process according to which discourses can be both an instrument of power and its effect" (ibid, 124).

CHAPTER 3

CLIMATE CHANGE AS POLICY PROBLEM

Changes in global climate are not only caused by natural factors, but by human activities as well, and the evidence is stronger than ever. A United Nations forum of scientists – the Intergovernmental Panel on Climate Change (IPCC) was established to accumulate and summarize information related to climate change. It was concluded that global pattern of warming during the past half century cannot be explained by natural causes alone (IPCC, 2007b).

This chapter will outline the relevance of the climate change problem, by reviewing climate change in the past century, the possibility of changes in the future, and the expected impact of climate change. I outline how climate change emerged as a field of study in the natural sciences, and has now become an issue of major political and social. I also explain the difference of opinions and positions between science and politics resulting from the reaction of these issues, and particularly to the scientific uncertainty about climate change. This chapter provides an insight into some of the challenges faced by policy makers in engaging with stakeholders over climate change, and demonstrates why there is a need for phronetic planning to provide value judgment into the value-rational response to climate change policy.

3.1. Climate Change as Scientific Issues

3.1.1. Scientific Evidence for Climate Change

Greenhouse gases naturally occur in the atmosphere (such as water, carbon dioxide, and methane), and this considerably increases the temperature of the earth. It is estimated that without the natural greenhouse effect, the earth's average temperature would be 30°C colder than normal (IPCC, 2007b). The greenhouse effect is undeniable occuring, and these effects have been described since the early 19th century. In 1906, the probability increase the effect of greenhouse caused by human activities that result in carbon dioxide (CO_2) emissions from fossil fuel combustion and other combustion processes, was mentioned for the first time. Since then, this hypothesis has been greatly debated in the literature of natural science and the theory expanded considerably. Furthermore, this theory has also been supported by measurement data (Hof, 2010).

An indicator commonly used to measure the changes in climate is a global mean surface temperature (or global temperature). Several different research groups have been monitoring the patterns of the changes in global temperature, such as the Climate Research Unit of University East Anglia in conjunction with the Met Office Hadley Centre (HadCRUT3v dataset; Brohan et al., 2006), the NASA Goddard Institute for Space Studies (GISTEMP dataset; Hansen et al., 2006), and the United States National Climatic Data Center (NCDC dataset; Smith et al., 2008).

All three of these datasets provide global temperature records since 1880. This datasets are based on two components: land surface temperature, and sea surface temperature. These two components are combined to produce the estimation of global

temperature. Data for land surface temperature obtained from thousands of meteorology stations around the world. Meanwhile, sea surface temperatures are obtained either by size ship measurements or, more recently, on satellite observations (Hof, 2010).

However, there are two main differences between these three temperature datasets. The first is related to the temperature data used, for example, the components of the latest sea surface temperatures from NCDC dataset does not include satellite observations, in which the other two datasets have satellite observations. The second is related to the methods used to calculate the average global temperature. For instance, HadCRUT3v does not include the vast areas of the Arctic and Antarctic, where monitoring stations are sparse, whereas GISTEMP extrapolates data from monitoring stations available nearest to Polar Regions (Hof, 2010).

Figure 3.1 illustrates the global temperature trend in the period of 1900 to 2009 obtained from the three datasets. Arguably, the difference between the data set is relatively small, but all three data sets have shown an increase in the global average temperature from 1900 to 1940. It became stable after that until approximately 1980, before rising again rapidly. These data lead IPCC (2007b) to conclude that the global surface average temperature was .74 ° C ± 0.18 more than 100 years ago.

The concept of radiative forcing is important in order to understand the reason why the increase of global temperature has occurred, because an increase of radiative forcing lead to the increase of global temperature (IPCC, 2007b). Radiative forcing is a measure of how the energy balance of the earth-atmosphere system is influenced when factors that

affect the climate are altered. It is usually measured as the rate of energy change per unit area of the globe as measured at the top of the atmosphere, and is expressed in Watts per square meter (IPCC, 2007b).

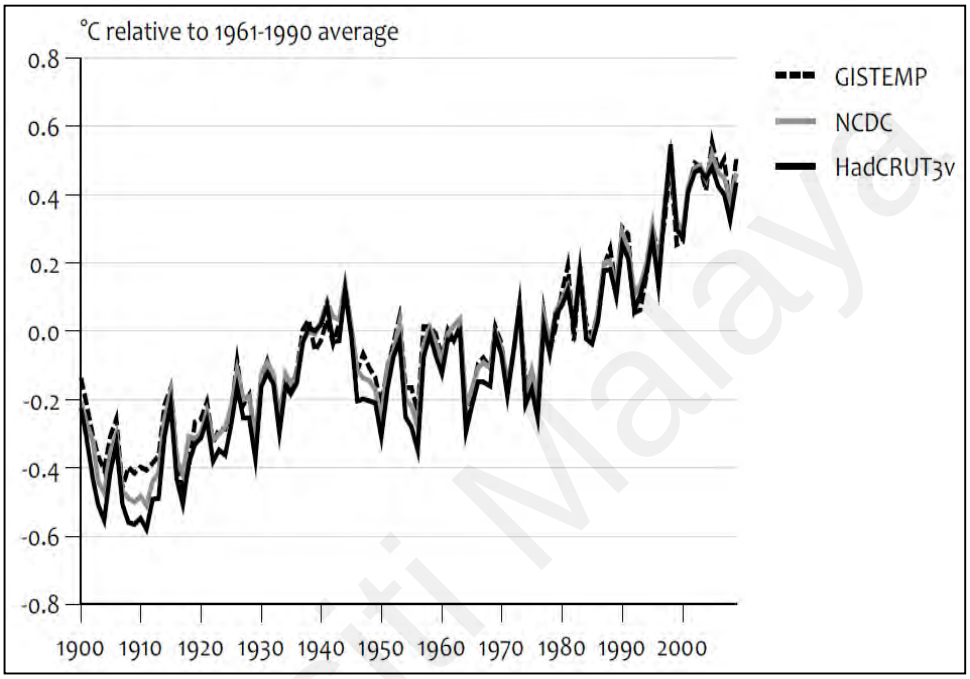

Figure 3.1: The global temperature trend in the period of 1900 to 2009 obtained from the three datasets (Hansen et al., 2006; NCDC dataset (Smith et al., 2008); HadCRUT3v dataset; Brohan et al., 2006**;** and Hof, 2010)

Human activities and natural causes can affect the radiative forcing. It can occur through changes in the climate change driver such as greenhouse gases, aerosols (small particles), cloud microphysics and solar irradiance (IPCC, 2007b).

In addition, climate is also influenced by the local land cover, among others, through changes in the earth's albedo (reflected radiation). The main issues in dispute between scientists are the increase in temperature over the past century can be explained solely by natural factors, or whether human activity has probably contributed to this change. To assess this, the IPCC (2007b) summarized the various natural and human

factors which have contributed to a change in the radiative forcing since 1750. Although a small positive impact from natural sources is found, which is an increase in solar radiation, the impact of human activity is larger (Figure 3.2).

As illustrated in Figure 3.2, the main contributor to the increase in "radiative forcing" since about 1750 (the beginning of the industrial revolution) are greenhouse gases: carbon dioxide ($C0_2$), methane (CH_4), nitrous oxide (N_20) and different groups of halogenated gases (CFCs, HFCs, PFCs, SF_6). Direct and indirect measurements show that the concentration of these gases in the atmosphere has increased rapidly since 1750. CO_2 concentration in the atmosphere is now about 380 parts per million (ppm; number CO_2 molecules per million molecules of air), compared to between 275 and 285 ppm in the period between 1000 and 1750. CH_4 concentration is now about 1,775 ppb (parts per billion), compared with between 400 and 700 ppb, which is 750 years before the start of the industrial revolution. N_2O concentrations are now about 320 ppb, compared to about 270 ppb before the start of the industrial revolution. There is strong scientific consensus about the impact of greenhouse gases on the radiative forcing, and uncertainty in the quantitative effect on radiative forcing is relatively low (IPCC, 2007b).

Other components also influence the impact of radiative forcing, although it is more uncertain. For example, aerosols have various direct and indirect impacts on radiative forcing, and the combined effect of aerosols is negative. However, the net effect of human activities on the radiative forcing is positive. The strength of this effect is uncertain and is highly dependent on the negative effects of aerosols on the radiative forcing (Hof, 2010).

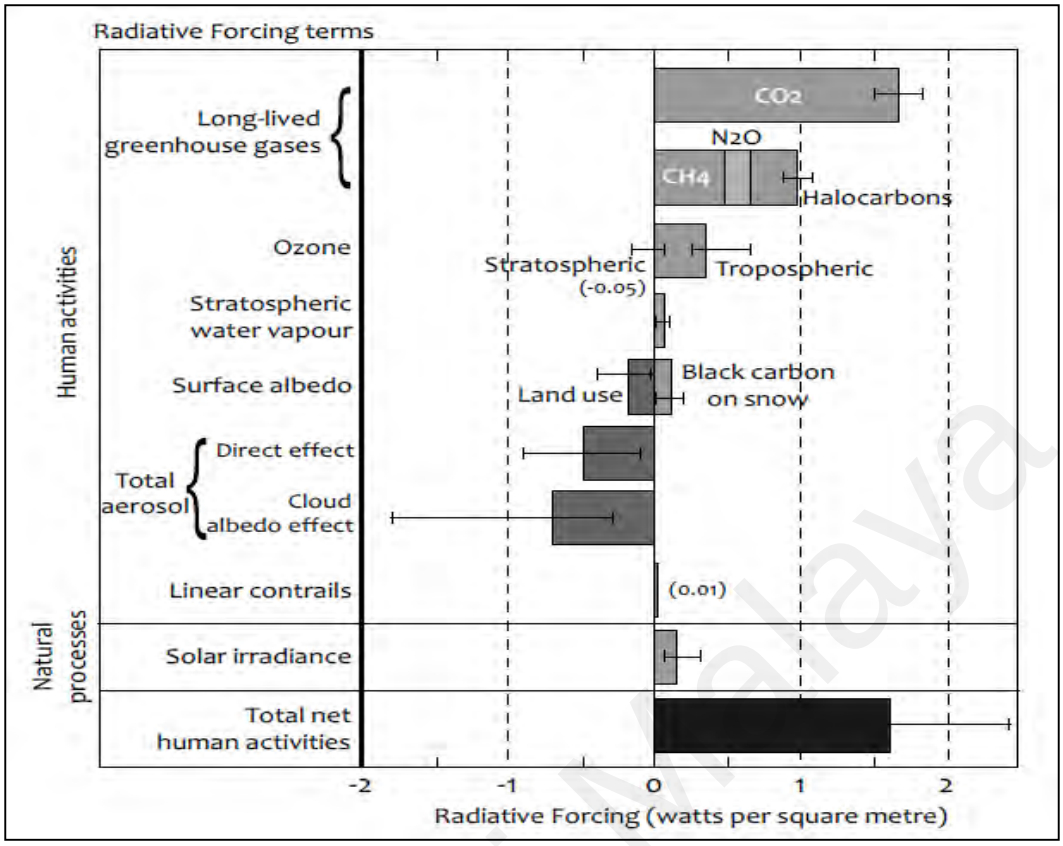

Figure 3.2: Summary of the principal components of the radiative forcing of climate change (IPCC, 2007b)

It is clear that human activity contributes to the increase of greenhouse gases such as combustion of fossil fuels for transportation, building heating and cooling, and manufacturing (CO_2 and N_2O), agricultural activities (CH_4), and forests (CO_2). Human activities ranging from fossil fuel and biomass burning surface mining and industrial processes also cause an increase in the amount of aerosols.

Seeing the situation has become more serious, in 1988, the Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization (WTO), and the United Nations Environment Program. The role of the IPCC is to evaluate and present the current scientific knowledge about climate change, its predicted impacts, and the policy responses. The IPCC claims that the greenhouse effect is caused by human

activities, especially the burning of fossil fuels, which has led to an increase in the greenhouse effect, including through the addition of synthetic gases, perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulfur hexafluoride (SF6). Climate scientists have devoted many efforts to discern any human induced effects on climate change from the naturally occurring variability, including effects such as the El Nino Southern Oscillation (ENSO) (Schipper, 2004).

The effects of the increase in greenhouse gases has been debated for decades, but the IPCC as declared in the Second Assessment Report described that increasing greenhouse effect on climate change is "the balance of evidence suggests that's there is a discernible human influence on global climate" (Houghton et al., 1995). This claim was later strengthened by the evidence compiled in the Third Assessment Report (TAR) (IPCC, 2001). Changes in climate are expected to result in positive and negative consequences on humans and the environment, even if the uncertainty remains high on the future composition of the atmosphere, the nature of the changes and the impacts of these changes on ecosystems and human. It is due to the natural uncertainty and expected negative consequences that sparked the significant concern among scientists. This uncertainty is also used as a reason to delay the action to be taken to reduce greenhouse gas emissions. These reasons are mainly propounded by private industry for fear of economic loss as a result of stricter regulations or enforced reduction in production, despite that evidence of climate change is already observed (IPCC, 2001).

The IPCC defines climate change as "a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically

decades or longer). Climate change may be due to natural internal processes or external forcing; or to persistent anthropogenic changes in the composition of the atmosphere or in land use" (Houghton et al., 2001: 788).

IPCC published several reports on climate change in the years 1990, 1995, 2001, and 2007, representing the views of the majority of the world's climate scientists and also involved government representatives from around the world, whose task is to "assess the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation" in a comprehensive, objective, and transparent manner (IPCC Website, 2013).

According to O'Riordan (2000: 187), climate change is "the ultimate interdisciplinary issues", because it involves not only the natural science but also, the economy, politics and ethics. Two relatively large discourses have developed from this initiative to take action on this matter, which is based on climate science, and the other is policy. Under the IPCC, climate science is intended to be an interdisciplinary field of research by implementing the natural sciences and social science. Similarly, climate policy is unique in various aspects. One consequence of the Northern lifestyle and patterns of development, climate change may be described as having multidimensional influences rather than mere pollution problems (Schipper, 2004).

Therefore, climate change no longer implies a solely scientific phenomenon; it is a political issue, and has become a platform to highlight the inequities between North and

South as countries, who "contribute most to the emissions of radiative forcing gases are, for the most part, least likely to be most inconvenienced, impoverished or physically vulnerable to the consequences of their behavior" (O'Riordan, 2000: 171).

3.1.2. Projected and Current Impacts of Climate Change

The expected level of the climate change depends on several factors, such as greenhouse gas emissions future, the level of concentration resulting from this release, and the sensitivity of the climate system to increased greenhouse gas concentrations.

The first uncertainty is related to what can be expected that high future emissions associated with a rapid increase in population, if people adopt energy-intensive lifestyles and produce energy from fossil fuels. Conversely, a low future emission may be expected if technology improves rapidly and populations adopt less energy-intensive lifestyles. Various scenarios are used to obtain information about potential development release. Scenario is consistent description of the conditions of the future under a set of plausible assumptions. Van Vuuren et al. (2008) provide a range of conditions of potential emission in the absence of climate policy, based on the assumptions and model different scenarios (see Figure 3.3). In 2100, global emissions are expected to amount to 70 to 140 Gigatonne CO_2 equivalent (Gt CO_2 eq., see Box 3.1), compared to 40 Gt in 2000. This increase is mostly due to a strong increase in energy use, resulting from both population and economic growth.

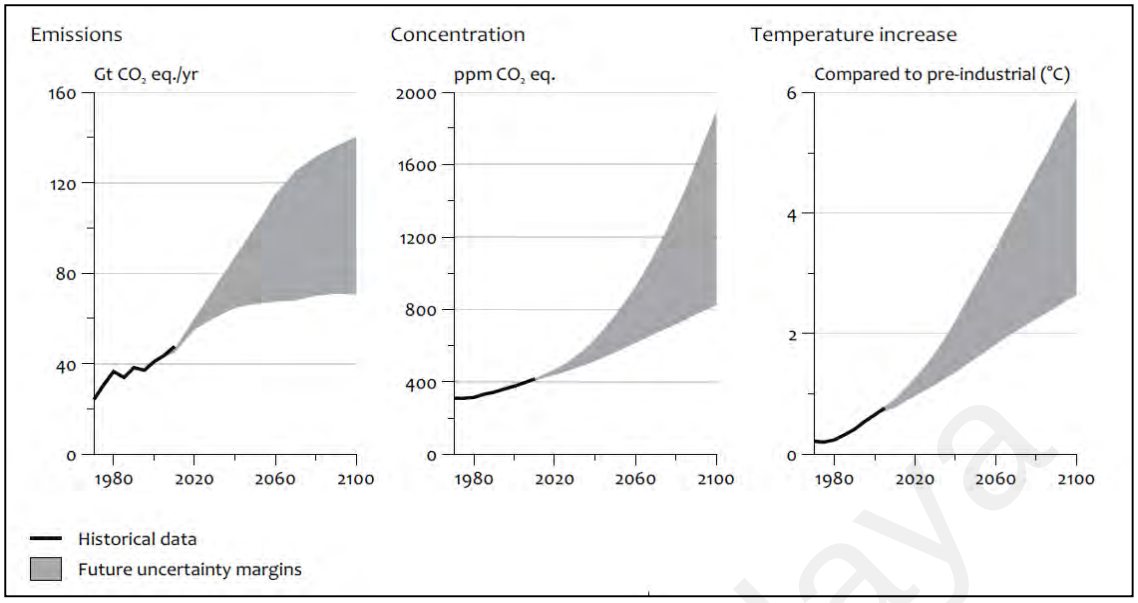

Figure 3.3: Global greenhouse gas emissions, concentration and temperature change. The indicated range includes the uncertainty in emissions, carbon cycle feedback and climate sensitivity (PBL (2009a) based on van Vuuren et al. 2008; 2010; Hof, 2010)

One of the important factors causing uncertainty about the increase in temperature is the uncertainty in how the emissions affect the future greenhouse gas concentration. The main factor here is the strength of the carbon cycle feedback, which is the impact of climate change on the carbon cycle (Dawson and Spannagle, 2009). Figure 3.3 also shows the expected level of concentration in the coming century, which takes into account both the uncertainties in carbon emissions carbon cycle feedback. It is expected that by 2100, the concentration will be between 800 and 1900 ppm CO_2 eq. (see Box 3.1).

The last is related to the uncertainty in the relationship between greenhouse gas concentrations and temperature. This uncertainty is formulated with the term referred to as equilibrium climate sensitivity. This term is defined as the equilibrium level of global average surface warming resulting from a doubling of carbon dioxide concentrations (IPCC, 2007b). Due to the response time of the climate system is slow, and therefore it took centuries before this equilibrium temperature is reached. Based on various studies, IPPC

(2007b) concluded that equilibrium climate sensitivity is likely in the range of 2 to 4.5°C, with a best estimate of about 3°C. Figure 3.3 shows the expected conditions from the various temperature changes without climate policy, which takes into account the uncertainty in production, carbon cycle feedbacks and climate sensitivity. The total range is a change in global mean temperature of 2.6 to 5.9°C above the pre-industrial level (Hof, 2010).

The concept of CO_2 equivalent concentrations has been created in order to express the total contribution to greenhouse gas forcing of all different greenhouse gases in the atmosphere in one collective number, namely in an equivalent CO_2 concentration that would cause the same forcing. The equivalent concentration is measured as parts per million CO_2 equivalents (or ppm CO_2 eq.). In this thesis, concentrations are always measured in ppm CO_2 eq., unless stated otherwise. In 2005, the greenhouse gas concentration in the atmosphere was about 380 ppm CO_2 eq. (IPCC, 2007b).

Total greenhouse gas emissions are expressed in CO_2 equivalents as well by weighing emissions using Global Warming Potentials (GWPs). Current climate policies, such as the Kyoto Protocol, use GWPs to allow substitution across the different gases, as such benefiting from the increased flexibility under a multi-gas approach. Alternative metrics have also been proposed, such as metrics that directly focus on reaching a chosen temperature target. If a substitution metric is chosen that focuses on the long term only, the value attached to short-lived gases, such as methane, are set at a lower level. The economic impact of using alternative metrics appears to be relatively small.

Box 3.1: CO_2 and CO_2 equivalents (Hof, 2010)

Several studies have reported that climate change will have an impact, and no doubt that these effects will increase with further increases in temperature. IPCC (2007d) determined the main risks associated with increases in temperature, and this is shown in Figure 3.4. This Figure shows the five areas vulnerable to climate change: water supply, ecosystems, food supply, coastal areas, and health. While there is still great uncertainty, an increase in temperature at low level is expected to have an impact on many of the sensitive ecosystems, such as coral reefs, and have mainly local effects, for example, decreased water availability in the mid-latitude or increase damage to the system due to an increase in coastal flooding and storms.

Prolonged climate change increases the risks of large-scale effects. These effects include large-scale extinction of species, decreasing productivity in cereals in low latitudes, large-scale loss of coastal wetlands due to increasing, sea level rise, and substantial negative health effects due to heat waves, floods, droughts and diseases. Not depicted in Figure 3.4 is the potential for climate change to lead to large-scale discontinuities, such as weakening of thermohaline circulation, release of methane from tundra/permafrost, and melting of the Greenland and West Antarctic ice sheets (Lenton et al., 2008).

A comparison of Figure 3.3 and Figure 3.4 shows that relevant and immediate action should be taken on climate change problem. An expected temperature increase of 2.6 to 5.9°C by the end of this century would result in serious risks to water supply, ecosystems, food supply, coastal areas, and health, especially at the high-end range of temperature increase.

Even devastating scenarios can also occur, where the Earth is no longer habitable. Given that the climate systems often do not respond to change in predictable ways, it is not impossible if the unexpected events, such as the release of methane stored beneath the Arctic could trigger sudden acceleration and uncontrolled climate change (Hillman, 2004). In fact, European scientists have stressed about the urgent issues recently, who has warned that action must to be taken now to stabilize the climate, so that catastrophe can be avoided (Whitmarsh, 2005).

Figure 3.4: Examples of impacts associated with global average temperature change. Note that impacts will vary by extent of adaptation, rate of temperature change and socio-economic profile (IPCC, 2007d)

Recent climate trends have indicated that climate change caused by human induced factors have affected human life and the environment (Glover, 2006). Scenarios such as increased flooding cannot be solely attributed to climate change factors; such as development on floodplain and changes in land use also contributed to this situation (IPCC, 2001b). Furthermore, it is impossible to recognize climate change as the cause of certain weather events.

However, Hulme in Whitmarsh (2005) argued that "there is no longer such a thing as a purely natural weather event". In other words, human industrial activities are important and have a strong influence on the dimension of global climate systems. Accordingly, some major decisions taken by the public now will determine the conditions of the future of climate. For that reason, in order to stabilize the climate, the IPCC has suggested that carbon emissions "need to decline to a very small fraction of current emissions" (IPCC, 2001a: 12). Although this has been implemented, the increase in temperature and particularly sea level will occur, even if emissions are drastically reduced, due to the time lag between cause and effect of changes in the atmosphere (Wigley, 2005; Meehl et al., 2005.).

This has led to policy makers to conclude that greenhouse gas emissions should be reduced (referred to as mitigation strategies), and also that adjustments need to be made to climate change (referred to as adaptation strategies).

3.1.3. Scientific Uncertainty, Complexity and Disagreement

Although opinion and scientific evidences are more likely to support the conclusion that current climate change is due to human-induced factors, there is still considerable uncertainty in the scientific understanding of this issue. Although scientists have a deep understanding of the basic physics of greenhouse effects, there are still many factors that complicate the measurement and prediction of climate change, especially on a regional scale (Houghton 2004).

There are two sources of scientific uncertainty in relation to climate change. The IPCC claims that these uncertainties arise from scientists' incomplete understanding about global processes and may be reduced by further research and the use of more accurate climate models (IPCC, 2001a).

However, the uncertainty arising from the inherent complexity and indeterminism climate system is more profound and intractable. Changes in climate occur due to internal variability (such as long-term cycle of geophysics), and various external factors of natural and anthropogenic. For instance, such as increased concentrations of greenhouse gases tend to warm the surface of the earth; other examples include the use of aerosols, volcanic eruptions, and reduced solar output that can produce cooling effects (IPCC, 2001a).

In addition, the capacity of land and sea as the absorption and storage agent, which acts as feedback systems on climate, also affects concentrations of greenhouse gases. Furthermore, anthropogenic influences on climate are shaped by technological development and changes in social, political, and economic systems. This becomes problematic when confident predictions are made based on these complex interactions about the impacts of climate change or the effects of particular mitigation strategies.

Houghton (2004: 220) described how, taking into consideration the considerable scientific uncertainty, some scientists involved in the IPCC assessments were concerned about making predictions of the impacts of climate change. Yet he concluded:

> It soon became clear that the responsibility of scientists to convey the best possible information could not be discharged without making estimates of

> the most likely magnitude of the change coupled with clear statements of our assumptions and the level of uncertainty in the estimates...the climate models, although subject to uncertainty, provide useful guidance for policy.

However, some scientists have questioned the basic conclusion of the assessment made by the IPCC, the current changes in climate resulting from human activities. For example, the Harvard Smithsonian Center has published a study that suggests that the climate of the 20th century is not relatively hot or the most extreme in the record (Whitmarsh, 2005). In addition, the scientific methods used to prove the change in climate have also been disputed - evidence from a variety of sources available, and the use of complex computer models to predict climate change is considered by some to be inaccurate or wholly unreliable (Hansen et al., 1998).

Finally, although the influence of human activities on climate has been adopted, some scientists suggest that the increased input of greenhouse gases into the atmosphere can be overcome with global feedback mechanism, which in turn stabilize the climate (Pearce, 2005). This argument has questioned the basic assumptions behind international action to reduce carbon emissions by suggesting that current climate change is natural, cyclical, and not a disaster.

Scientific debate within the scope of climate change is also centered on the qualifications, affiliation and agenda of the scientific leading roles. Many argue that research funding by the oil industry shows climate change is a natural phenomenon and undermines the integrity of the evidence. Bob May, former chief scientific adviser to the United Kingdom Government, argued:

> On one hand we have the IPCC, the rest of the world's major scientific organizations, and the government's chief scientific advisor, all pointing to the need to cut emissions. On the other we have a small band of skeptics, including lobbyists funded by the US oil industry, a sci-fi writer [Michael Crichton], and the Daily Mail, who deny the scientists are right. It is reminiscent of the tobacco lobby's attempts to persuade us that smoking does not cause lung lancer (May, 2005 in Whitmarsh, 2005).

Hillman (2004: 25) claims that the most prominent critics of climate change science and policy is not a climate expert, while the UK's most prominent scientists' agree that climate change caused by human activities is a true statement, and must be addressed drastically regarding the emissions. Claims in which the occurrence of anthropogenic climate change was established by the scientific consensus, consisting of scientists, politicians, and environmental non-governmental organizations (ENGOs) respectively argue for political action (Barkham, 2004; May, 2005).

On the other hand, not all have accepted the evidence of climate change in total. These climate change skeptics argue that the climate change evidence has been the subject of misrepresentation and politicization. Phillips (2004) argued that climate change has become a form of big business to interested parties. He added that political concerns about climate change have been exploited by scientists to secure major sources of funding for their research and to enhance their reputation. Similar criticisms have been made against the ENGOs, in which they were accused to exaggerate the evidence of extinctions as a result of the impacts of climate change in order to boost public donations (Day, 2004).

This scenario provides an interesting perspective on how scientific uncertainty mobilized by different actors to achieve their goals. Uncertainty is used by some, especially the U.S. government, to argue against political action to address climate change.

Environmental fund-raising campaigns may ignore scientific uncertainty about climate impacts in order to urge action. Finally, the uncertainty is used by scientific organizations (IPCC, 2001a; 2001b) to lobby for funding for further research.

Similarly, while advocates for climate change action using the weight of scientific evidence to support their case, the skeptics otherwise uses this for their own purposes. Some have likened their position as Galileo, who was punished for daring to question the mainstream view (Adam, 2005). John Maddox, former editor of Nature, has also expressed concern about the power and non-reflexivity of the IPCC, by calling the body as 'monolithic and complacent' (Adam, 2005). A similar view was presented by O'Riordan and Rayner (1991), who argued that the inter-governmental panel of science must be more open and represent scientific pluralism; not only the natural sciences, but also the social science, as well as opinion, especially when the "uncertainty is high and decisions stakes great" (O'Riordan and Rayner, 1991: 107).

As such, it can be seen that climate change is a controversial issue in science. In consequence, scientific theories presented are questionable in validity, although supported by the available data, because these data can be interpreted in a variety of other methods. Scientific evidence is essentially uncertain, and can be used to justify the personal and political agendas (Pielke 2004). Since the stakeholders cannot rely on the data (i.e., nature itself) to adjudicate their theories, they argue based on social criteria such as the validity of the experiment, data reliability, or credibility or political agenda of opponents. More than that, rhetorical claims about the nature of scientific knowledge have also been raised in the dispute.

For example, critics of climate change mitigation policies, such as journalist Melanie Phillips (2004) and science fiction writer Michael Crichton (2004), claim advocates of action have politicized science. Such unreflexive criticism assumes that science is value-free and can provide definite truth. This popular Enlightenment view of science is undermined by evidence of the social, political and institutional processes involved in the construction of scientific knowledge (Latour, 1987). 'Objective knowledge' and 'sound science' are socially-determined, often by consensus of a 'core set' of experts (Fischer, 1998; 2000).

3.2. International Responses to Climate Change

International political response to climate change is embodied in the UNFCCC and 1997 Kyoto Protocol. This section will briefly discuss the UNFCCC and the Kyoto Protocol, which will highlights two important aspects of political negotiations on climate change: developing country issues, and political conflict between adaptation and mitigation.

3.2.1. The United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol

Political attention on climate change has progressively germinated as a result of scientific work carried out to understand the effects of increasing concentrations of greenhouse gases in the atmosphere and the evidence of the enhanced greenhouse effect. Climate change policy debate has been ongoing since the 1970s (Oppenheimer and Petsonk, 2005), and although it took almost 20 years, the impact of this debate enough to invigorate momentum for the development of an international convention on climate change in 1992. Appendix 3.1 lists the chronology of events. Both political and scientific

aspects of climate change have the synergy with those who associated with the major issues of environmental changes (Schipper, 2004).

Due to this synergy, the convention on climate change, desertification and biodiversity loss are related, and it is not a coincidence that these issues are interrelated with forces of global climate change. In addition, the ozone layer depletion and acid rain are issues that have a significant link with climate change (Pittock, 2009). Recognizing that the issues that arise as a result of climate change are interrelated, a proposal on the 'Law of the Atmosphere' has been proposed to address the changes in the atmosphere, including acid rain, ozone depletion and climate change, as part of one legal instrument, rather than in separate protocols (Schipper, 2004). This proposal had been advocated by Canada in the late 1980s, but the initiative was eventually lost to the option to create a separate convention exclusively on climate change (Bodansky, 1993).

UNFCCC accepts various viewpoints on climate change, including those who agree with the climate change science, as well as those who advocate an alternative approaches to addressing this problem. UNFCCC views this as not something new. When reviewing briefly the history of this problem, it shows that the controversy, international political disputes, and concerns about equity, and environmental colonialism (Agarwal and Narain, 2003) has developed the characteristics of the climate regime that involves discussion of both policy and scientific (Ramakrishna 2000).

The Conference of Parties (COP)-9 Conference was held in December 2003, and compilations of emissions report from developed countries for the period 1990 to 2000

were presented to the Parties. The compilation report indicates that overall emissions from developed counties have risen, not fallen as is mandated by the UNFCCC (Gutierrez et al., 2003). However, the existence of this Convention may be considered evidence for the political collective commitment to responding to climate change, its causes, and its consequences (Bollin, 2007), and most of the government remains committed to the UNFCCC. This has been shown by the interest and the continued strong support, efforts and contribution to the intergovernmental regime, although the COP-6 in 2000 failed and has a current lack of entry into force in the Kyoto Protocol.

In 1979, the first World Climate Conference was held in Geneva. The conference is driven by the passion to review the natural and anthropogenic climate change knowledge, and evaluate the possible future changes and variability; and its implications for human activities (WMO, 1979). The conference was mainly attended by scientists, and the main topic being discussed among others is climate change would bring a warming or cooling effect (Bodansky, 1993).

Results of the conference set the framework for continued scientific research on climate change, and eventually political discussions on climate change become more profound in the 1980s when the scientific evidence prompted public concerns about the possibility of changes in climate (Giddens, 2009). The Villach Conference in 1985 and 1987, which was organized by World Meteorological Organization (WMO), *United Nations Environment Programme* (UNEP), and the International Council of Scientific Unions (ICSU), and the Bellagio Conference in 1987 has concluded that the evidence in the

increase of greenhouse effect is real and that negative impacts on humans and ecosystems might be experienced (Schipper, 2004).

Also in 1987, the World Commission on Environment and Development (WCED) published its report *Our Common Future* (WCED 1987), which was acknowledged by the UN General Assembly in December that year (UNGA 1987). WCED recognizes its income from Villach and Bellagio workshops; stressing four approaches that can be undertaken to manage climate change: (1) improved monitoring and assessment of the evolving phenomena; (2) increased research to improve knowledge about the origins, mechanisms and effects of the phenomena; (3) the development of internationally agreed policies for the reduction of the causative gases; and (4) adoption of strategies needed to minimize damage and cope with the climate changes, and rising sea level (UNGA, 1987). The Toronto Conference on 'Change the Atmosphere' was carried out in 1988 with the involvement of both scientists and policy makers. They declared the need to reduce greenhouse gas emissions by 20% by 2005. A heat wave and drought that took place in the northern summer of 1988 is considered an additional trigger for alerting the public to the potential impacts of climate change (Bollin, 2007). Therefore, the issue of climate change has evolved from a scientific agenda to a major political concern.

Recognizing the importance of climate change issues need to be addressed, by November 1989, governments has agreed that a convention to address climate change was desirable, and had a meeting in Noordwijk Ministerial Conference on Atmospheric Pollution and Climate Change (Bodansky, 1993). The meeting was fruitful, as the

Noordwijk Declaration was created. Not only that, the contents of the text and components of Noordwijk Declaration eventually included in the UNFCCC text (Glover, 2007).

In the same year, developing countries also held a conference on the impact of climate change, in which the North-South dimension of climate change was highlighted. Second World Climate Conference that held in 1990 reflects the involvement and a greater representation of developing countries, and it has now become "obvious that the climate change negotiation would not be simply about the environment, but about development as well" (Bodansky 1993: 471). On top of that, these factors also support that the UN General Assembly was considered the most suitable body to address the issue of climate change, instead of WMO or UNEP (Bodansky, 1993). In 1990 the General Assembly agreed to establish an Intergovernmental Negotiating Committee (INC) to begin the development of a framework convention on climate change (UNGA 1990a).

INC consists of diplomats addressing climate change from a political perspective. This spurs the IPCC to deal with climate change issues from the scientific aspect of the non-political context. IPCC has admitted that there is a great deal of uncertainty remaining in impact scenarios, especially in terms of socio-economic factors (Houghton et al. 1992). As shown in Table 3.1, INC meeting between Feb 1991 and the May 1992; causing UNFCCC to established in May 1992, and is open for signature at United Nations Conference on Environment and Development (UNCED) in June 1992. INC meetings are still held until the UNFCCC entered into effect in March 1994.

UNFCCC has been described as a "remarkable legal and political achievement" (Gupta, 1997: 16), and also "a weak, research intensive framework treaty which reflects a political balance of power rather than any firm direction derived from science" (Boehmer-Christiansen, 1994b: 192). Active debate among scholars, policy makers, activists, and business industry continues to take place, with questioning of the political mechanism under the UNFCCC, although there is scientific evidence was sufficient to convince the majority of scientists that climate change is a reality (Schipper, 2004).

The UNFCCC outlines the basic principles, commitments, institutions and mechanisms for the implementation procedures (Bodansky, 1993). It works through a negotiating body made up of countries that become 'Parties' to the Convention. The Parties met in one session of the COP, and in the two sessions of the COP's subsidiary bodies, the Subsidiary Body for Implementation (SBI) and the Subsidiary Body for Scientific and Technological Advice (SBSTA), annually. COPs schedule can be found in Table 3.1. At COP-1, the Parties adopted mandates for negotiating a protocol or a legal instrument to consolidate commitment of developed countries (decision 1/CP.1).

Berlin Mandate highlights the need to clarify the policies, measures and set calculable limits and reduction objectives within the stipulated time frame, such as 2005, 2010, and 2020, for anthropogenic emissions by sources and removals by sinks of gas greenhouse which is not controlled by the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer[29]. These tasks are performed by the Ad Hoc Group of the Berlin Mandate, which held eight sessions. The final session was held just before the opening of

[29] The Montreal Protocol is a protocol to the Vienna Convention for the Protection of the Ozone Layer, which entered into force in 1985.

COP-3; and that "the prospects for agreement appear very thin at the end of this session" (Ramakrishna, 2000). However, the days of COP-3 negotiations do not result in agreement. The Kyoto Protocol was adopted on December 11, 1997 and was opened for signatures on March 16, 1998.

Developed and Developing Country Parties under the UNFCCC and Kyoto Protocol
Developed country Parties are referred to as *Annex I Parties,* being listed in Annex I of the UNFCCC. Developing country Parties are generally referred to as *non-Annex I Parties*. This is particularly important in the legal provisions, such as decisions of the UNFCCC, since some Parties that do not consider themselves 'developing' are not found in Annex I. Therefore, referring only to developing country Parties would exclude these Parties. The UNFCCC also lists another group of Parties in its *Annex II*. These are countries that are also members of the OECD, and are committed to providing new and additional financial resources and facilitate technology transfer to Parties with economies in transition and developing country Parties. *Annex B Parties* refer to those Annex I Parties who have set emissions reduction targets, as this list was set out in Annex B of the Kyoto Protocol.

Box 3.2: Developed and developing country Parties under the UNFCCC and Kyoto Protocol (Schipper, 2004; Sinha 2010)

In addition, one of the obstacles faced is assumed that the atmosphere as a global common, and increased greenhouse gas emissions not only affect the emission-producing countries, but also have an impact on those most vulnerable to the effects of changes climate, that a majority of developing countries. Gap between developed countries and developing countries is very significant because it is difficult to find a platform for discussions under the UNFCCC, which somehow did not highlight the responsibilities that must be implemented by developing countries in the debate, in which both developed and developing countries is divided by a dichotomy of perspective and of intent (Schipper, 2004). The main focus of mitigation strategies for greenhouse gas emissions has created tensions about development, as the United States in particular, has insisted that its participation in the process to reduce emissions is dependent upon the largest developing countries taking the commitments in reducing emissions as well (Gupta, 2000b).

Furthermore, the objective of the UNFCCC states that efforts to address climate change should allow "economic development to proceed in a sustainable manner" (UNFCCC 1992).

3.3. Developing Countries in the Negotiations

Implementation of the concept of sustainable development is encouraged by the principles of the Convention in Article 3.4, which states that the policies and measures "should be integrated with national development programs". INC-10 states that "addressing climate change can be seen as one of the common components of sustainable development strategies aimed at enhancing national and regional capacity to deal with climate variability and climate change in the long term" (UNFCCC 1994a: paragraph 25).

However, some developing countries are concerned that by placing emphasis on the environmental issues, the problems faced by developing countries may "deflect worldwide attention from their economic problems, or even lead to the promulgation of restrictive rules that hinder their efforts to achieve sustained economic growth and a reasonable standard of living for their citizens"(Ramakrishna 2000).

In this case, the conflict between the provisions of the UNFCCC and counter-acting targets under the World Trade Organization (WTO) have been identified, particularly in matters concerning whether and how the rights and obligations of the WTO and Parties to the Protocol may give rise to conflict (Brewer, 2003). In this case, addressing the issue of climate change should be implemented, and the support of developing countries is significant. To get this support, recognition of aspects of sustainable development has been

used as a strategy (Schipper, 2004). As expected, the funding for these activities has also created a conflict, in which developing countries have been accused of seeking access to the treasuries of the rich North (Schipper, 2004), and the developed countries did not hesitate “to curtail the South's development” (Kandlikar and Sagar, 1999: 131).

Among the heated debates that have taken place in the vicinity of the UNFCCC is that if developing countries also need to be responsible for reducing greenhouse gas emissions, but the equity arguments often used to reject this contention (Kelly and Adger, 2000). Although there are those who believe that the UNFCCC stance on considerations of equity issues is clear, there is also the thought that “the only defensible allocation scheme is one which is based on equal per capita rights to the atmospheric commons” (Sachs, 2001: 7).

This debate is important to raise the awareness of the issues of equity between developed and developing countries. It is clear that, the commitment by the UNFCCC expressed in these structures is to separate the commitment between developed and developing countries, which reflects “the INC's initial premise that developing countries would not assume the same commitments as developed countries” (Bodansky, 1993: 505).

In the Protocol, developing countries do not have to commit to any emission reductions. For that reason, the Protocol does not address emissions from some of the larger developing countries, and in certain cases, this Protocol does not apply to small developed countries on the same order of magnitude. In addition, the principles of the UNFCCC reflects *‘*common but differentiated responsibilities and respective capabilities’ in different

countries (Article 3.1), a notion that has been recognized by other multilateral environmental processes, and principles enshrined in the Rio Declaration (Glover, 2007).

Equity-centered perspective refers to the development, equity, and sustainability as a key element in sustainable development, and that should be considered in the context of climate change (Munasinghe and Swart, 2005). Discussion of recent literature has raised concerns about the equity of intra-generational and inter-generational, particularly focusing on the relationship between equity and sustainable development (Banuri and Weyant, 2001).

Some observers suggest that that the Kyoto Protocol is a framework that perpetuates the inequality of international economic. Thus, the conflicts between developed and developing countries become a standard element in the climate negotiations under the UNFCCC (Najam et al., 2003). Conflicts arise not only about the 'ecological space' required by developing countries to develop (Houghton, 2004), but the 'polluter pays principle', in the hope that developed countries will lead the fight against climate change.

Situation in which developed countries have a large group of well-trained delegates who participated in the climate negotiations have caused developing countries in general to be placed in an disadvantage position due to the lack of specific training in diplomacy (Gupta 2000a). There are very significant differences in priorities in negotiations between developed and developing countries. In general, developing countries are in support of capacity building, technology transfer, and support for adaptation, although there may be differences of opinion and consensus on how the mechanism should be implemented to

achieve this goal. Most of the equity consideration was taken in the context of mitigation of greenhouse gas emissions. However, there is another emerging discourse on justice and equality in adaptation (Schipper, 2004).

Since the outstanding issues have been finalized and discussed at the 1998 Buenos Aires Plan of Action, it appears that adaptation has begun to take place in the policy agenda, particularly for developing countries (Najam et al., 2003). As was clear in negotiations during COP-9, funding for adaptation strategies has surpassed discussion on funding for other activities (Gutierriez et al., 2003), although the primary focus of these discussions addressed funding of technology for adaptation. Arguably, even though discussions and disputes may arise in dealing with the issue of funding for adaptation, hidden motives, and the end result does not necessarily confirm that the adaptation is considered very important. More than anything, the adaptation is now receiving a lot of criticism for hypocrisy.

There are at least three reasons for this. First, adaptation under the UNFCCC has been politically construed as any action taken to address the adverse effects of climate change, particularly to the developing countries. In this way, adaptation is used to refer to the technology to enable adaptation, and capacity needed to enhance the ability to adapt. Second, adaptation is used as leverage to compel developing countries to agree to emission reduction commitments. Third, the adaptation still remains seen as 'secondary' compared to mitigation, and is therefore considered that the need to promote the adaptation. The following section will discuss the relationship between adaptation and mitigation, so that

the original understanding of the motives of adaptation under the UNFCCC can be understood.

3.4. Adaptation and Mitigation as Responses to Climate Change

Focus on adaptation as a policy response to climate change has grown since the agreement on the 2001 Marrakesh Accords to the Bonn Agreements under the UNFCCC (UNFCCC, 2001). In the midst of this climate change, all societies to some extent need of either adapting or adapted to their climate, although the kind of adaptations is significantly differ, from behavioral to technical. Some opinions believe that individuals and society will be able to adapt to changes in climate with the same attitude, and do not believe that policy of adaptation is required (Smit and Wendel, 2006).

Adaptation and mitigation are both mentioned in the UNFCCC as a mechanism of response to anthropogenic climate change, but conflict between those favoring the prioritizing of either adaptation or mitigation has continued, as has been noted by negotiators, policy makers and scholars (Oppenheimer and Petsonk, 2005; Wilbanks et al., 2003). A separation between mitigation and adaptation is an important feature in the climate change literature (Cohen et al., 1998), and it is clear that it is not only related to the policy, but also in the treatment of both of these issues in a scientific forum (Huq and Grubb, 2003). Obviously, in order to reduce the enhanced greenhouse effect, these resources should be identified. Therefore, it is not reasonable if only climate policy focused on mitigation policies, especially energy policy (Klein et al., 2005).

The IPCC also adopted this argument in their earlier reports, which have a lack of attention on adaptation, vulnerability[30] or equity (Kates, 1997). Due to the main focus at the beginning of the negotiation period is mitigation mechanisms rather than adaptation, some scholars have concluded that the adaptation attempting to "occupy a more prominent role in climate policy" (Pielke, 1998: 160). In fact, the conflicts between adaptation and mitigation have contributed significantly to the framing of science and policy debates on climate change.

Mitigation focuses on causes of climate change, while adaptation dealing with the consequences. In theory, the relationship between mitigation and adaptation can be described as follows: the more mitigation is done, then the less adaptation will be required, and vice versa (Huq and Grubb, 2003). However, the mitigation effect is not expected to become apparent for years, while adaptation will have an immediate effect, or in the near future. But mitigation can become a slow process due to the delay in the implementation of effective policies, paralyzed during the enforcement framework for emission reduction under the Kyoto Protocol (Schipper, 2004), and the inertia in the global climate system.

There are great expectations during the early stages of the political negotiations that policy measures will become effective enough to reduce emissions (Wilbanks et al., 2003). The IPCC states that climate change is already happening, but what can be achieved through mitigation mechanisms may not be sufficient to prevent, or even to reduce, the effects of climate change, accordingly another method is essential. Adaptation to past emissions will therefore be necessary.

[30] Vulnerability refers to the sensitivity of exposed elements to damage and loss from a hazard event in that area. It also refers to the ability or capacity of impacted parties to respond to extreme events and to cope with the immediate effects of an event and rebuild (SPREP and UNDP, 2013).

Institutional division should focus on adaptation and mitigation as both these aspects have a significant impact on research and policy (Cohen et al. 1998). Research and literature on each of the two responses was thriving, but at different speeds, in which more work has been done on mitigation (Wilbanks et al., 2003; Fankhauser et al., 1999). Adaptation has been sidelined in the mainstream debate since the 1990s, and they called for the adoption of a greater priority in the debate on climate change (Apuuli et al., 2000; Pielke 1998).

There are several factors which have been identified as possible causes of adaptation are not given attention than mitigation. Adaptation strategies are considered as 'budge', in which they acknowledged that climate change is inevitable and will occur, and the effects of climate change will require adjustments. When looking at this aspect in the context of building support for mitigation framework, focus on adaptation was not seen as constructive (Schipper, 2004). Fear is clear that identifying adaptation options would be practically the same as to admit that climate change is really occurring (Sarewitz and Pielke, 2000) in an uncertain time high and a lot of 'climate skeptics'. It is also something that is 'dangerous' to talk about adaptation, because it may indicate that a particular country is less disciplined in terms of compliance with emission limits (Schipper, 2004).

In addition, discussions on funding for adaptation are also regarded as "an implicit acceptance of responsibility for causing climate change" (Sands, 1992 in Schipper, 2004: 51). Adaptation is also implicitly associated with a discussion of liability and compensation, in which the matter is to be avoided by developed countries. There are also signs of fear of developing countries that the discussion on adaptation would affect the

commitment of developed countries to reduce greenhouse gas emissions reduction (Schipper, 2004).

From the aspect of cost-effectiveness and urgency, adaptation is seen as a long-term strategy that should be taken as soon as the effects of climate change become more evident, and this makes adaptations secondary as compared to mitigation. In addition, the lack of clear definition of adaptation might be considered a constraint; the avoidance in funding for adaptation has not been identified as a known relevant factor (Schipper, 2004).

Another complication is that UNFCCC only address the nature of anthropogenic climate change, but does not extend to climate variability. To obtain Global Environment Facility Trust Fund (GEF) funding, which is the financial mechanism under the UNFCCC, adaptation measures have to demonstrate that it is related to climate change, rather than to climate variability. Lack of scientific evidence has become a constraint in distinguishing between climate change and climate variability, but according to the IPCC, this difference can be ignored because climate change includes climate variability (Houghton et al., 2001).

At the beginning of the establishment of the GEF, only projects with 'global benefits' and limited to the incremental costs can be funded, although it is recognized that adaptation has primarily benefited the local or national level. Such a situation has created methodology stumbling block for advancing adaptation work under the UNFCCC, which was foremost aimed at funding (UNFCCC 1994: paragraph 39).

Convention and the Kyoto Protocol have established a funding method called flexible mechanisms[31]. Through this mechanism, mitigation is associated with funding for developing countries. Clean Development Mechanism (CDM) was established by the Protocol, in particular, and allows developed countries to obtain benefits in the form of emission reduction credits so that investment in sustainable development projects in developing countries can be implemented, and thus to support arguments that mitigation is also to developing countries. This becomes important since up to and immediately after the negotiation protocol, developing countries see the CDM as a funding opportunity. However, this is no longer entirely the case, since developing countries realize that the CDM may not benefit them as they would originally expected (Pinkse and Kolk, 2012).

Adaptation has also been highlighted in the discourse of development. Since 2002, development agencies began to recognize the implications of climate change in development; as well as the potential for development that can overcome the vulnerability to climate change. Taking the Millennium Development Goals (MDGs) as an example, Levina (2007) stated that the MDGs have the potential to reduce vulnerability: eradicate poverty, providing education and public health services, improving living conditions in urban settlements, and providing access to financial markets and technologies. All this will improve the livelihoods of vulnerable individuals, households, and communities, thus increasing their ability to engage in adaptive action.

[31] The term "flexible mechanism" describes joint implementation, the clean development mechanism (CDM) and emissions trading. UNFCCC Article 4.2(a) and (d) set the criteria for parties to implement policies and measures jointly (joint implementation). Protocol Article 12 defines the CDM and Article 17 mandates the COP to establish "relevant principles, modalities, rules and guidelines, in particular for verification, reporting and accountability for emissions trading".

Therefore, many development agencies have taken action to implement adaptation into their development plans. One of the approaches used is mainstreaming. Mainstreaming involves the integration of information, policies, and measures taken to highlight climate change into development planning, and decision making process. It is seen as a method of designing and managing a more sustainable, efficient, and effective use of resources than designing and managing policies separately from ongoing activities (Klein et al., 2005). In theory, mainstream can avoid trade-offs between development and adaptation and creating no regrets for achieving both (Klein, 2008).

Mainstream development may be divided into two types. First, the 'technology-based view of mainstreaming' is the result of the approach of 'impact-based' in the adaptation; projections of climate change is taken into consideration in the decision making process at all relevant government agencies, so that the chosen technology is suited to the climate of the future. This is also referred to as the development of climate proofing – screening development through the lens of climate change. It involves systematic examination of an agency's set of policies, programs or projects, with the aim of identifying how concerns about climate change can be combined with the agency's development priorities (IPCC, 2007). This screening can identify current development projects, as well as projects that are threatened by climate change; and the opportunities to incorporate climate change more clearly in the future projects and programs.

This type of mainstreaming gets a lot of criticism in the UNFCCC approach to adaptation, that the impact of climate change is considered as separate aspect to development. As Ayers and Dodman (2010) suggested, this reflects the adaptation plus

development instead of adaptation as development. This approach produces a sense of a new set of conditionalities being attached to development programs, and enforcing priority of climate change in development programs, in which climate change is not a priority in development.

The second type of mainstreaming takes a development-based view of adaptation, which ensures that, in addition to climate-proofing, development efforts are deliberately aimed at reducing vulnerability by including priorities that are essential for successful adaptation, such as ensuring water rights to groups exposed to water scarcity during a drought. This latter option takes a more holistic approach to adaptation, seeing responses not as stand-alone or discrete climate-specific options, but also addressing the underlying drivers of vulnerability exposing people to climate-change impacts: Adaptation as development (Ayers and Dodman, 2010).

Finally, failing to take adaptation into account in development practice can result in maladaptation, where actions or investments enhance rather than reduce vulnerability to the impacts of climate change. For example, investment in an irrigation scheme that does not take account of the possible changes in rainfall variations under climate-change scenarios may not be sustainable in the long term. On the contrary, irrigation may actually increase dependence on water and water-reliant practices (such as the persistent use of water-dependent crops) in the short term, when in fact ways of increasing the efficiency of water usage or changing cropping patterns may be a more useful way of spending limited resources to make development investments climate-resilient and contribute towards adaptation.

3.5. Discussion

Climate change is an environmental crisis, as it provides a variety of harmful effects, in fact there are reports that human involvement as a causative factor. In understanding the climate change crisis, it involves assessing the extent to which the community can change or get better in determining the magnitude of the impact of climate change. The importance of the social construction of the crisis not only involved an assessment of the potential losses that may be incurred, in addition to the determination of the extent to which social action can shaped these impacts. Both the magnitude of the risk and danger depends on the extent to which they can control, due to the need for controlling both the social and natural aspects of the problem.

Climate change produced global impact, effecting on all nations and peoples in different extent, and it is the result of GHG emissions stemming largely from industrialized countries in the world. Reducing GHG emissions requires emission reductions by the majority of industrialized countries, and it should in accordance with the coordinated or agreed upon. However, due to the scientific uncertainty, the relationship between the levels of GHG emissions impacts of climate change has raised doubts. Therefore, the action taken involves national and International agreements, and there is conflict and controversy.

Viewed from one perspective, GHG are common pollutants, but they have some unique features. These pollutants produced from routine operation of an industrial society, or resulting from the basic source energy used by traditional industrial society. In addition, GHG are emitted effectively from every sector of the industrialized economy (agriculture, industry, energy utilities, transportation, residential and commercial), and in large

quantities. Reducing GHG emissions should involve the participation of every citizen in the industrialized countries, with emissions limits, technological innovation, or a voluntary agreement.

Total emissions also vary between countries. Differences within national in total of GHG emissions exist in comparison, such as between gross totals, per capita totals, historical accumulated totals, and per capita accumulated totals (see, e.g., Byrne et al., 1998; Gupta, 2001; and IPCC, 2001a). The Organization for Economic Co-operation and Development (OECD) countries produce higher total emissions, including India and China, while nearly all the developing countries produce a low amount of emissions and have low per capita rates. Within the national context, the differences in emissions can also be seen; for example, on a scale of firms, households, and individuals up to the industrial sector and region. Emission reduction provides a wide range of complex choices both within countries and between countries.

Some of the implications will result from these features, and it can be seen from political and ethical. For example, the present generation must take action on behalf of future generations, which is caused by decisions made by past generations. The impact of climate change will likely be borne by poor countries, where they do not produce large amounts of GHG emissions. Curtailing the use of fossil fuels will have obvious economic implications, which may inhibit the economic growth in developing countries. Companies involved in fossil fuel industry and transportation are among the largest in the world, along with commercial interests related to the use of their products, which involves the release of GHG (NRDC et al. 1999). Actions to reduce emissions by one nation may be rendered

useless by other increasing emissions, so many argue that international cooperation is essential for achieving overall reductions.

Due to the imbalance between the impacts and human action, climate change is not the cause of the local political resistance. As a global problem, although there are reports on the future impacts, political resistance is not local, but stems largely from the international and national institutional settings that formulates foreign and domestic policy. International political activity involves the actions of nations; policy outcomes are the result of both national positions and international negotiations.

National interests have a major influence on international climate change negotiations because they have implications for large companies in the world, as well as the interests of the country's own enterprises. National climate change policy reflects the interests of the country. Scientific information plays an important role in this problem, making control over the production and distribution of knowledge and implications of the politicized scientific being of great political importance.

Developing a rational policy response usually correlates with the relationship between the proposed action and the expected effects. For climate change, scientists have tried to develop an understanding of a highly complex system, through which policy responses can be developed. While scientific developments have made considerable progress, substantial uncertainty remains from identification, location, timing, extent, and severity of the impacts of climate change. Climate change is different from other

environmental problems, as climate change is a real-time single issue (there is only one global climate); therefore, the effectiveness of the actions taken are difficult to assess.

Positivist or in other words rational science, and rational policy is an important part of the modern state in response to environmental problems. However, postpositivist thought has rejected the single and technocratic formulation. They claim that the professionals, scientific institutions and states governance do not possess exclusive knowledge or authority in interpreting the world (Glover, 2007).

From the postpositivist perspective, the political implications are of authority and privilege of science is seen as an identical to the interests of a societies' center of power. Thus, scientific knowledge, corporate influence, and state political power are seen as mutually reinforcing each other. Value rationality is seen as not relevant to environmental issues as defined by modern society that depends on scientific analysis or instrumental rationality.

Postpositivist rejects the positivism of conventional science, particularly in the claims between the outcomes of the empirical scientific method and identifying an objective reality. In the context of the environment and society, postpositivist accounts of discourse are explicitly derived from an actor's perceptions and values.

Climate science has been placed within the framework of rational policy making, where the science is associated with policy - identified knowledge gaps, scientific programs designed to meet these requirements, the uncertainty resolved, and policy makers to

formulate appropriate policies with existing knowledge. In addition, an institution has been established for this role, and public funding has been provided. Under this framework, global change is best understood through identifying and analyzing natural and social causal factors, integrating these inputs in large-scale models, and using these outputs for policy creation (Jasanoff and Wynne, 1998 in Glover, 2007). Accordingly, biophysical systems are studied by the natural sciences, while social scientists examine social forces giving rise to these environmental problems.

However, Jasanoff and Wynne (1998) did not agree with the separation of knowledge in addressing issues of climate change, because for them, "the scale, complexity, and interconnectedness of the causes of climate change – and the fundamental links between climate change and other global changes – tested science's incremental and discipline-based approaches to investigating nature" (p: 2). Consequently, the institutions involved in formulating the policy response at the international or national level may face failure due to the inability of the approach to deal with the contested, open-ended, and geographically dispersed character of climate change.

The above discussion suggests that the current approach to value rationality in climate change policy is not given enough attention to the way in which the normative approach to risk, expertise, and scale can presents barriers in achieving meaningful inclusiveness.

Postpositivist provide a critique of positivist science, where postpositivist appear to accept something non-rational, such as values, culture and ethics. If political economy

recognizes the importance of capital and political power to influence the direction, priorities, and application of scientific activities, postpositivist thought is concerned with rationality of science itself. Therefore, the challenge for postpositivists in science is to study how science is made valid as an issue of legitimacy, and asks whose interests are expressed in science and who has use of the outcomes of science.

Postpositivist thinkers such as Foucault, Fischer and Flyvbjerg, have asserted that knowledge cannot exist independently of the institutions that generate them, but it was embodied with values, power and interests. In this sense, science cannot be understood as a procedure or methodology, but as a form of rationality that is socially conditioned.

One common approach from political science that seeks to democratize climate change explanations and decision-making is deliberative governance. Deliberation is seen as a rational, reasoned debate around a policy problem, which ideally can result in consensual decisions that are perceived by all stakeholders involved as legitimate, rational, and just (Rosenberg, 2007 in Fischer, 2009). In relation to environmental governance, deliberative institutions have been proposed as a way of empowering climate change discourses, and thus making climate change policy more inclusive.

Jurgen Habermas (1985), saw deliberation as a means of bringing citizens together to discuss public policy in a setting that emphasizes equal participation, mutual respect and reasoned argument, for the governance of complex and uncertain problems. Through communicative rationality, as proposed by Habermas, instrumentally rational agents will

take the optimal course of action to achieve their desired goals, and during deliberation, consensus will be reached through rational argument.

Another approach to deliberation has been discussed by Michel Foucault (1977, 1980a), who argues that all discourse should be placed in a broader knowledge system. Foucault noted that the shared perception is achieved through deliberation, often the result of a variety of social and political influences, rather than reasoned argument. This perspective on deliberation serves as a tool for inclusive policy making, particularly climate change policy.

Foucault's work to some extent influenced the deliberative theory, which gives significant attention to the power of discourse in determining the deliberative outcome. The Foucauldian perspective has accepted that the discourse can become excessively powerful, even dominant, restricting opportunities for alternative discourse to be any influence at all, rather than accepting that different discourses equally reflect a rational point of view. This approach views the statement of scientific truth as storylines or narrative as capable to dominate the hegemonic discourse. In developing this approach with regards to environmental discourses, Maarten Hajer (1995) significantly proposed that narratives and storylines created surrounding environmental problems are fundamental in dictating the discursive concept of power, arguing that "the discursive construction of reality becomes an important realm of power" (Hajer, 1995:21).

Responsibility of the IPCC is to provide independent and objective advice on the latest scientific understanding of all aspects of climate change, but the role of the IPCC has

been politicized. Science becomes a tool of debate about climate change; including the seriousness of the threat, the nature of causal mechanisms, and the possible impact and economic costs associated with such action. Scientific knowledge used by the actor in climate governance for defending the position and as power to legitimate its authenticity. This is due to the perception that science is objective, which causes the actor to believe that it provides them an advantage over others. However, the decisions of whose knowledge can be taken into accounts, one has the power, and how knowledge is framed and presented is a political process that implies the use of power. As Foucault argues, "we should admit […] that power and knowledge directly imply one another; that there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not at the same time presuppose and constitute power relations" (Bulkeley and Newell, 2010: 27).

The development of a postpositivist alternative starts with the recognition that the formal models of deductive and inductive reason provide an inaccurate interpretation for both the scientific and the practical modes of reason. The models of both inductive and deductive reasoning provide insufficient descriptions of both academic and practical reasoning (Fischer, 2009). The reason of the physician, judge, historian or even policy makers, for instance, are incomplete if only dependent on formal models of deductive and inductive, and more appropriately conceptualized as forms of Aristotle's concept of phronesis and the informal logic of practical reason (or in other term as value judgment) with its own rules and procedures. Such practical reason connects theory to practice and action (Fisher, 1989; Flyvbjerg, 2001).

The importance of value judgment can be viewed in terms of, for example dangerous climate change, is a term that refers to the level of climate change that would violate Article 2 of the UNFCCC 1992. Article 2 states that the main objective of the UNFCCC "is to stabilize greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system". Such a level should be achieved within a time frame sufficient to:

- allow ecosystems to adapt naturally to climate change;
- ensure that food production is not threatened; and
- enable economic development to proceed in a sustainable manner.

Although Article 2 does not use the term dangerous climate change, it is usually used in the context of dangerous anthropogenic interference, and refers to the man-made emissions that caused climate change beyond natural variation. However, the UNFCCC does not clearly define what constitutes dangerous anthropogenic interference - there is no clear defined limit or thresholds that would indicate a breach of any of the three principles. In fact, it is quite impossible to objectively determine such threshold value. Consideration of what constitutes dangerous change ultimately depends on the value judgment, where it depends on who and what is affected, who making the judgment, and what is considered as acceptable or unacceptable (Dawson and Spannagle, 2009).

The ties of the IPCC with political processes aimed at climate action have remained strong ever since its inception. The IPCC has made it very clear over the years that the answers to such political questions, although they must be scientifically informed, basically

involve value judgments. The first sentence of the Third Assessment Report (TAR) Synthesis report, for instance:

> Natural, technical, and social sciences can provide essential information and evidence needed for decisions on what constitutes 'dangerous anthropogenic interference with the climate system'. At the same time, such decisions are value judgments determined through socio-political processes, taking into account considerations such as development, equity, and sustainability, as well as uncertainties and risk (IPCC, 2001b, SPM, p. 1).

Accordingly, there is good reason for this statement. Climate change is a complex problem which raises issues across and between a large number of disciplines, including the physical and life sciences, political science, economics, and psychology, to name just a few.

In an effort to position value judgment in mainstream policy analysis, postpositivists like Flyvbjerg (2001) have turned to phronesis to connect theory to practice and action. Phronesis, distinguishes contextually between the realm of theory, the mastery of methods, and the experiential knowledge required to put techniques to work in concrete cases. Countering social science's emphasis on generalizations, the practical logic of phronesis is oriented towards the particular case itself, rather than an attempt to fit it into the confining frameworks of induction or deduction. Toward this end, it stresses an assessment of problems in their particular contexts, seeking to determine which approaches are most relevant to the questions at hand.

This discussion has shown that phronesis in climate change policy have normative elements, they have a purpose to evaluate, and it is difficult to separate them from moral judgments related to 'what to do' as a result. The questions put forward by phronesis

require judgments to be made. Practical questions of climate change policy are not limited to technical aspects, such as 'how this effect produced?' They are just as much concerned with the question 'what should we do?' Values are part of the framework within which decisions are made. If phronesis is about developing a guide to action, then the norms that guide action are part of the process.

It should be noted here that there is a strong relationship between how one defines planning as a practice and how does one make a scientific study of planning practices. Appropriate research methods are needed to reflect that planning as a *value-rational* process in which actors exercise power in many different ways.

For this purpose, Flyvbjerg (2001; 2003) has developed what is known as phronetic planning research (Chapter 4). Referencing to the writings of ancient philosopher Aristotle, Flyvbjerg noted that scientific studies consider only two of the three intellectual virtues needed in a good research, namely episteme and techne. Phronesis, the third intellectual virtues generally lost, or 'deliberately forgotten' in the practice of science. Episteme is about scientific, universal knowledge, whereas techne is more practical, and focused on the creation or building something, and phronesis refers to a kind of practical knowledge that enables a wise decision is made. Thus, there are three different kinds of knowledge.

3.6. Conclusion

Governments around the world have introduced policies aimed at addressing the problems of climate change on the understanding that it is to be a physical reality that has the potential to create social instability, economic and political importance. Despite the

contested nature of climate change and whether there is a need to deal with it, it has achieved the status of mega-global problems which require multilateral coordination in the form of agreements such as the Kyoto Protocol.

Scientific knowledge plays an important role in understanding and responding to climate change, since the issue has principally been detected and defined through scientific measurement and modeling. However, climate change is a particularly complex and necessarily inter-disciplinary area of science in which traditional scientific assumptions of certainty and prediction are fundamentally challenged. Furthermore, climate change is not simply a scientific issue; it is a fundamentally social, political, cultural and moral one. The causes, impact, and solutions cannot be separated from human societies and economies, their values and lifestyles.

Policymakers play an important role in taking well-considered policy decision aimed at reducing vulnerability to climate change. The challenge for the decision-makers is, according to the IPCC, "to find out which actions are currently appropriate and likely to be robust in the face of the many long-term uncertainties" (Klein et al., 2005). Through systematic assessment of adaptation measures, policymakers are able to make well-informed choices about what measures to implement.

Understanding the climate change problems and the participation of these countries in international negotiations process has gone through various stages; with different countries and alliances play key roles in a wide range of issues and areas. Different groups have been formed in these negotiations, with different purposes to justify their agenda in

the climate change negotiations, such as G77, and the least developed countries. There are some countries that have stood firm to protect their own economy and have never taken part in the negotiation process. Some countries also play power game in the negotiations. So far, it is seen varied progress of negotiations as well as the cooperation arrangements between the countries involved.

The issue of climate change in developing countries is one of the serious issues which need to be resolved. Climate change has been given the priority that must be addressed, to mitigate and to protect the earth. The profound impact of climate change has created many problems throughout the world, and this effect is acknowledged to be a challenging issue for many scientists and scholars who are working in this field.

Different countries have taken different measures to fight with the effects of climate change in their own territory and also at the international level. Various policies have been prepared to reduce the impact of this global problem. As climate change is a worldwide problem, it should accordingly be resolved at the international level. Different actors, such as government, ENGOs, and industry, play an important role within their respective country and at the international level to deal with the problem. The problem of climate change can be solved if a global platform is created to foster coordination among the different countries. Mutual understanding and cooperation between the rich and the poor countries will be able to avoid the impact created by the climate problem. However, it is unfortunate to note that some developed countries are driven to protect their economic interests, and are shying away from global negotiations on climate change.

CHAPTER 4

PHRONETIC RESEARCH APPROACH IN STUDYING THE NATIONAL CLIMATE CHANGE POLICY IN MALAYSIA

4.1. Phronetic Research: A Case Study Approach

Some social thinkers such as Weber, Foucault and Habermas states that the turning point in Western epistemology begins from the time of the Enlightenment, in which instrumental rationality (*Zweckrationalitat*) which has become the main driving force of modern society, and over-shadowed the value rationality (*Wertrationalitat*). Flyvberg (2004) refer to it as 'Rationalist Turn' which correlates to the rise of the risk society. Flyvbjerg argues that the Aristotelian focus on value rationality is needed to balance the instrumental rationality. He stated (2004: 53) that "problems with both biosphere and sociosphere indicate that's social and political development based on instrumental rationality alone is not sustainable".

By incorporating value rationality in social science, reality can be studied. In order to give meaning to the good or bad, phronesis introduce power and values in research planning, acknowledged that social reality produces knowledge and rationality that can only be judged either good or bad in relation to values and interests. In the planning practice, knowledge and rationality cannot be separated from values and interests; and power plays a major role in the production of knowledge and defining what is rational.

Flyvbjerg also argued that, the dominance by instrumental rationality means that the methodology of social science requires reformulation to reintegrate the values and expand current understanding of rationality. Flyvbjerg was particularly interested in Aristotle's intellectual virtue, episteme, techne and phronesis (2001: 57.)

Episteme is generally translated as science or scientific knowledge and concerns things with fixed principles, such as universal truths. A theory in the epistemic sense is completely independent of context; independent of time, place and circumstance. By using a theory about a constant, complete and accurate predictions can be made. An epistemic theory is the ideal especially for natural science (physics, mathematics), and epistemic theory is the dominant type of theory in modern science in general. General truths and exact predictions do not exist in phronesis. Phronesis is practical knowledge that is not about constants, and for that reason one that may be interpreted differently, depending on the context (Flyvbjerg, 2001; 2004; 2004a). In contemporary work, episteme is considered to be a form of expert propositional knowledge, which is claimed to be true, provable, or at least consistent with a given theory, formulated in abstract terms, fully cognitive, and transmittable from one person to another (Birmingham, 2004).

Planning research practiced as episteme is characterized by basic science which aims to achieve universality and searching for generic truth or the laws on planning. Historically, positivism and rationalism still had a great influence, even with the rational choice theory in economics, political science, and in a number of sociology. Thus, according to Fischer (1998; 2000), criticisms of positivism and rationalism must be continued (Hillier, 2002; Flyvbjerg, 2004).

Techne refers to craft and arts. It is about making or producing in the sense of fabrication: about how one should go about effecting or providing something under varying circumstances and conditions. Value-laden questions are outside the scope of techne. It is a form of activity under the firm control of an objective (Schwandt 2007). With techne, one applies technical know-how and skills in an instrumental way, with direct control. Value-laden questions are outside the scope of techne. With techne, one applies technical know-how and skills in an instrumental way, with direct control (Flyvbjerg, 2001; 2004; 2004a). This is the kind of knowledge possessed by an expert in a specialized craft – a person who understands the principles underlying the production of an object or state of affairs, for example, a house, a table, a safe journey, a state of being healthy. Moreover, this kind of knowledge fits smoothly into a means-end framework: The materials and tools (including method) of this kind of practical knowledge are means used by the maker to bring about the end product or result. Practical knowledge itself *(*techne*)* is a means to the achievement of the final product as the end of the activity (Schwandt, 2007).

Phronesis is about acting or doing – about what should be done in a given situation, and "what permits one to chase away false opinions and make good decisions" (Foucault, 1984 in Flyvbjerg, 2001: 110). It is an ethical mode of knowledge, based on practical reason, experience and judgment, which includes deliberations on value-laden questions and decision made in the manner of a virtuoso social actor. What makes phronesis something important is, it will ensure the ethical employment from other knowledge domains. In the context of doing research, it is associated with active reflection – which is beyond the scope of neutral science – and associated with processes and phenomena such as politics, values, means/end, and power.

Contemporary interpretation by Flyvbjerg (2001) of the Aristotlelian concept of phronesis, can be interpreted as prudence or practical wisdom. Flyvbjerg argues that phronesis goes beyond both sciences as defined by Aristotle, in which episteme (empirical, natural science), and techne (craftsmanship) and phronesis demands value-judgments of the type required from "virtuoso social and political actor" (Flyvbjerg, 2001: 2). Based on the five levels of human learning identified in the Dreyfus model, Flyvbjerg (2001) showed that phronesis is closely related to the highest level, or the expert level of learning. Phronesis is not on the lower level, which implies more about context-independent facts or rules, but is less dependent on contextual factors.

As a context-dependent science, phronesis is concerned with praxis. In relation to this matter, Flyvbjerg (2001: 4) attempts to "restore social science to its classical position as a practical, intellectual activity aimed at clarifying problems, risks, and possibilities we face as humans and societies, and at contributing to social and political praxis". Therefore, Flyvbjerg (2001) argues that social science as phronesis is distinct from natural science, and an "attempts to reduce social science and theory either to episteme or techne, or to comprehend them in those terms, are misguided" (Flyvbjerg 2001: 2). For that reason, social science fails when it tries to be (or become) the natural sciences. He argues that if social science is to be considered important again, then the concept of phronesis should be a priority. He stated in Making Social Science Matter (2001: 3) that in their role as phronesis is as follows:

> social sciences are strongest where the natural sciences are weakest: just as the social science have not contributed much to explanatory and predictive theory, neither have the natural sciences contributed to the reflexive analysis and discussion of values and interests, which is the prerequisite for an

> enlightened political, economic, and cultural development in any society, and which is at the core of phronesis.

Phronetic research interests focus on practical activities, and practical knowledge in particular everyday situations. This can provide a scope, but it may not limited to, a focus on known sociological, ethnographic and historical phenomena such as everyday life and everyday people. What is meant here is to focus on the actual daily practices which comprise a given field of interest, in spite of either the practices is taking place in the stock exchange floor, grass roots organizations, hospitals, or local school boards (Flyvbjerg, 2001 p. 134).

In addition, Flyvbjerg (2001) suggested that if social science hoping to remove its looser part in the science wars, then social sciences have to stop imitating the natural sciences' focus on prediction. Social sciences also need to focus on things that are contextually matter to the local regional and global communities, with an emphasis on values and power:

> We may transform the social science to an activity done in public for the public, sometimes to clarify, sometimes to intervene, sometimes to generate new perspectives, and always to serve as eyes and ears in our ongoing efforts at understanding the present and deliberating about the future. We may in short arrive at a social science that matters (Flyvberg, 2001: 166).

A key feature of phronetic social science is the importance of context and judgment in order to understand human behavior. Social science should avoid scientific and instrumental rationality, but study for practical reasons in its entire contextuality. In other words, Phronesis calls for intellectual virtues, able to handle "context, practice, experience, common sense, intuition, and practical wisdom" (Flyvbjerg, 2001: 54). The phronetic

research is focused on values; and the aim is to balance instrumental rationality with value-rationality. This is to be achieved by increasing the capacity of individuals and society to think and act in value-rational terms. The essential of phronesis is the socially and historically conditioned context – and not the rational and universal foundation. The practice of a dynamic and highly social relevant, reflexive social science follows the socio-analytic methodological indications teased out of works by Nietzsche, Foucault, Bourdieu, and MacIntryre among others. Phronetic knowledge has been emphasized before epistemic knowledge in their studies on society (Flyvbjerg, 2001).

4.2. Key Questions and Methodological Guidelines

The methodological guidelines for phronetic planning research should not be seen as imperatives; but these guidelines are rather "cautionary indicators of direction for researchers who would like to introduce an element of phronesis in their work" (Flyvbjerg, 2004: 290). Phronesis rejects the fact-values distinction that has become dominant in social science. Phronetic research is not method-driven, but it is problem-driven. It emphasize producing research that can enhance phronesis by increasing understanding in specific context (Schram, 2012). For this reason, there is no a priori method for this type of research, such as statistics, discourse analysis, or qualitative methods. Methodological flexibility seems thus the appropriate way to go about, as long as one sticks to the basic ambitions of the phronetic research approach. But, and this is of great importance, each of these methods may contribute in a specific way to tackle the problems at hand. "It is impossible to be truly problem driven and at the same time committed to a certain method" (Flyvbjerg, 2004: 291). At the core of phronetic research are the four value-rational questions:

- Where are we going?
- Who gains and who loses, and by which mechanisms of power?
- Is this development desirable?
- What, if anything, should we do about it?

'We' in relation to the four questions representing the group studied. Phronetic researchers should be aware that each different group has different world views and different interests. In view of that, phronetic research may provide a method for analyzing power relations, and suitable for analyzing results and particular interest groups. 'We' are always situated in relation to a particular context in a particular case. This consists of researchers and researchers those who shared the concerns, such as those in the community organization or planning. Furthermore, when there is a 'we', of there must be a 'they'; which often occur in planning conflicts, where adversarial may occurred. Phronetic research should take into account both 'we' and 'they'. 'We' and 'they' share the same basis as the 'stakeholders'. In the context of this research, 'stakeholders' as identified by Bryant and Bailey (1997) can be defined as a person or group of persons having an interest in the physical environment. Stakeholders can be categorized as – states, institutions, business and non-governmental organizations (NGOs).

'Power' is defined as the involvement of citizen in terms of taking parts in public debate. Habermas' view of power and democratic process is directly linked to judicial institutionalization. It differentiates contemporary and classical phronesis. Phronetic research should analyze the context of power. Besides focusing on questions (1), (3), and (4), which are the classical Aristotelian questions, a contemporary phronetic research also

poses questions about power and outcomes: 'Who gains, and who loses?'; 'Through what kinds of power relations?'; 'What possibilities are available to change existing power relations?'; 'And is it desirable to do so?'; and 'What are the power relations among those who ask these questions?' These questions should be asked with the intention of avoiding the voluntarism and idealism typical of so much ethical thinking (Flyvbjerg, 2001; 2004).

This thesis applies a phronetic approach to the research process. Flyvbjerg (2001) has outlined several criteria methodological for phronetic research. These include:

- A focus on values;
- Placing power at the core of the analysis;
- Looking at practice before discourse;
- Studying cases and contexts;
- Asking both: How? (understanding); and Why? (explanation) through narrative;
- Joining agency and structure; and
- Dialoguing with polyphony of voices.

Phronetic research is unequivocally practice-oriented. Flyvbjerg (2001: 134) states that "Phronetic research focuses on practical activity and practical knowledge in everyday situations".

Flyvbjerg points out that Nietzsche also emphasizes the need for many people to be involved with phronetic research as this research method does not assume the truth is in the method. Phronetic research is most properly conducted when "the reader will test what we say against his or her own experience, will argue with us when what we say does not fit,

and…will join the public discussion by offering interpretations superior to ours that can then receive further discussion" (Bellah et al., 1985 as cited by Flyvbjerg, 2001: 139).

4.3. The Case Study

Case study method is used to provide a means for creating knowledge based on the in-depth exploration of the context-dependent social phenomenon (Yin, 1994), and as such corresponding with both social and phronetic approach to inquiry. Case studies are tailor made for exploring new processes or behaviors or ones which are little understood (Hartley, 1994: 213). They can provide detailed information about the 'little things' (Nietzsche, 1974, Flyvbjerg, 2006: 238) in daily life, where methods such as large-scale quantitative surveys that are less capable to do so due to their insensitivity to context. Yin argues that "the distinctive need for case studies arises out of the desire to understand complex social phenomena" (Yin, 1994: 4), and that they are particularly suited to answering the types of research questions I am asking in this thesis, namely 'how' and 'why' a particular phenomenon occurs.

> A case study is one which investigates...to answer specific research questions (that may be fairly loose to begin with) and which seeks a range of different kinds of evidence, evidence which is there in the case setting, and which has to be abstracted and collated to get the best possible answers to the research questions (Gillham, 2000: 1).

Researchers such as Yin (1994) states that case studies have a unique purpose in contributing to the knowledge of the individual, organizational, social, and political phenomena. Not only that, the case study methodology has been a common strategy used in research psychology, sociology, political science, business, social work, and planning.

> Cases facilitate the analysis of real management problems, seek solutions and help managers make better decisions. (Stonham, 1995: 230)

Case study has been selected as a methodology to deliver research results for several reasons. Firstly, case studies enable a real-life problem in a particular case to be investigated in order to identify problems, finding solutions, and improve upon the past. However, the results of the case study are very contextual and depending on the particular case. Therefore, findings tend to be very specific to the particular case, as well as having little value in other cases.

> Natural sciences research is aimed at generalizable findings (which may have general implications for theory). But in human behavior, generalization from one group of people to others, or one institution to another, is often suspect – because there are too many elements that are specific to that group or institution (Gillham, 2000: 6).

Typical research questions most commonly asked in this study is 'how' or 'why' questions, therefore case study are an appropriate method for the study of human behaviors. As quoted by Yin (1994), in general, the 'what' question might be exploratory, in which research strategies such as experiments, surveys, archival analysis, history or case study could be used. If the research question is about the prevalence, then surveys or analysis of archival records would be more appropriate. And, if the research questions are 'how' or 'why' questions, then the more relevant strategies become case studies or histories.

Although useful case study for answer the research questions specific for the particular case, but Flyvbjerg argues, the case study is also useful in the development of knowledge. Case study is a useful tool for developing a tacit skills which involves experts (including researchers) operation. Furthermore, the characteristic conditions of natural

science is a physical fact, but for social science, it is a patterns of behavior, characterized by "expert exercise of tacit skills" Flyvbjerg (2001: 45). As does expert knowledge, phronesis, more than anything else, requires experience (Flyvbjerg, 2001: 57). In a large number of cases, experts have been shown to draw on intimate knowledge of their respective areas of expertise. Therefore, Flyvbjerg described the case study as a method of learning. The closeness of a case study to real-life situations and the depth of knowledge allow one to generate "the development of a more nuanced view of reality, including the view that human behavior cannot be meaningfully understood as simply the rule-governed acts found at the lowest levels of the learning process and in much theory" (Flyvbjerg, 2006: 223).

Furthermore, Flyvbjerg views that case studies can produce the kind of knowledge that makes it possible to progress from the lower levels of human learning to the higher levels (Flyvbjerg, 2001). Flyvbjerg also explains that "if people are exclusively trained in context-independent knowledge and rules, that is, the kind of knowledge which forms the basis of textbooks and computers, they will remain at the first levels of the learning process" (Flyvbjerg, 2001: 71). He added that the detailed and closeness conditions to real-life situations that obtained in the case study can help in developing a view that reflects (nuanced) reality. However, case studies are also important for their researchers' own skills through "concrete, context-dependent experience" (Flyvbjerg 2001: 72), where it is crucial to progress to higher levels of learning.

Perhaps the best word to justify this approach can be found in a book written by Flyvbjerg, *Making Social Science Matter*. By drawing from Eysenck's words (1976), we

use a case-study "not in the hope of providing anything, but rather in the hope of learning something" (Flyvbjerg, 2001: 73).

The justification of using a case study approach is reinforced by Flyvbjerg's (2001: 82) point of view that this approach "can 'close in' on real-life situations and test views directly in relation to phenomena as they unfold in practice". Additionally, Flyvbjerg (2001: 83) also argues that, by complying with human learning models, researchers have the opportunity to acquire the most advanced level of understanding when the researchers place themselves in the context studied.

4.4. Data Collection

Data collection for this research was conducted in several ways. The first was through semi-structured interviews. A pre-prepared interview guide was applied, but the conversations were also allowed to follow what the interviewees were interested in and knowledgeable about. The aim of the semi-structured personal interviews was to get the interviewees to open up and express freely their true feelings about what was asked in order to help the researcher understand that individual's 'reality'. Individuals selected for interview have a variety of backgrounds, including major players in climate change policy in Malaysia. This has included politician, academician, environmental NGOs and the private sector (Bryant and Bailey, 1997).

This selection has been done based on the number of reports and repertoires, in which the main players are directly involved in the formulation of climate change policy. However, the key individuals who can be categorized as a specialist in environmental

issues were also selected in this interview. This was to get outside view on this policy. Selection of participants from different backgrounds has been the key to our case study research method.

Overall, I have conducted a total of 27 interviews (Table 4.1). Related to this, on the basis of mutual consent, all personal information such as names is not disclosed in this thesis in order to protect the identity of each individual.

Apart from the interview, data were also obtained from library research reports, journal articles, and government documents related to this policy.

Table 4.1: List of interviewees and respective organizations

Interviewee initials	Designation	Organization
University / academician		
University 1	Principal Research Fellow	Institut Alam dan Tamadun Melayu ATMA National University of Malaysia (UKM)
University 2	Senior Fellow/Assoc Prof. Dr.	Institute for Environment and Development (LESTARI) National University of Malaysia (UKM)
University 3	Director/Professor	National Antarctic Research Centre University of Malaya
University 4	Head of Unit	Sustainable Campus Unit Vice chancellor Office Universiti Tun Hussein Onn Malaysia
University 5	Assoc. Prof. Dr	Faculty of Administrative Science and Policy Studies UiTM
University 6	Director/Professor	Institute Of Biodiversity And Environmental Conservation University Malaysia Sarawak (UNIMAS)
University 7	Professor	University Sains Malaysia (USM)
Non-Governmental Organization		
NGO 1	Research Officer	Consumers' Association of Penang (CAP) Penang
NGO 2	Chairman of the Board/Founding Executive Director	Centre for Environment, Technology and Development, Malaysia (CETDEM)
NGO 3	President	Environmental Protection Society Malaysia (EPSM)
NGO 4	Programme Manager (retired)	Global Environment Centre (GEC)
NGO 5	Environmental Education Manager	Malaysian nature Society (MNS)
NGO 6	Executive Director	Centre for Environment, Technology and Development, Malaysia (CETDEM)
NGO 7	Honorary Secretary General	ENSEARCH
Private/industry		
Industry 1	Group Manager	Conservation & Environmental Management Division Yayasan Sabah group
Industry 2	Deputy Chief Executive Officer	HSBC Malaysia
Industry 3	Chief Operating Officer	Airod Aerospace Sdn. Limited
Industry 4	Director	ICSU Regional Office for Asia and the Pacific

Table 4.1: List of interviewees and respective organizations (continued)

Government agency		
Government 1	Chief Assistant Director	Sub-Seksyen Sumber Air (SA) Economic Planning Unit (EPU)
Government 2	Chief Assistant Director	Sub-Seksyen Sumber Asli (AES) Economic Planning Unit (EPU)
Government 3	Director	Seksyen Ekonomi, Alam Sekitar dan Sumber Asli Economic Planning Unit (EPU)
Government 4	Officer	Operations Division Green Technology Corporation
Government 5	Assistant Chief Secretary	Environmental Management and Climate Change Division Ministry of Natural Resources and Environment (NRE)
Government 6	Director	Sabah Biodiversity Centre (SBC)
Government 7		Government agency
Government 8	Program Director	Technology, Innovation, Environment and Sustainability (TIES) division Institute of Strategic and International Studies (ISIS)
Government 9	Chief Executive Officer	Malaysian Palm Oil Council

CHAPTER 5

ANALYSIS OF NATIONAL POLICY ON CLIMATE CHANGE IN MALAYSIA BY THE PHRONETIC APPROACH

The National Climate Change Policy is part of the 9th Malaysia Plan and acts as a guide for government agencies, industry, the community and stakeholders to meet the challenges of climate change as a whole. This policy was approved by the Cabinet on 20th November, 2009 and officially launched on 30th August, 2010 by Tan Sri Muhyiddin bin Yassin, at the Putrajaya International Convention Centre (PICC). The process began with the policy of the existing guidelines, which took about three years; beginning around 2006 but only in 2007 did the government began drafting this policy seriously.

National policy formulation on climate change has been carried out by the Conservation and Environmental Management (CEMD) under the Ministry of Natural Resources and Environment, in collaboration with the Institute for Environment and Sustainable Development (LESTARI), UKM. Also, the government has negotiated with various parties such as non-governmental organizations, industries, and academia. Consultation with stakeholders involved four phases. The first phase included eleven meetings between 2005 to 2008, to understand the contents of the document. In the second phase (2007 to 2008) - involving seven meetings - the process was used to inform policy-making to the parties concerned. In the third phase, a total of five meetings were held in 2008 to review the policy framework, and to solicit the views of various parties. The last phase was undertaken to review the draft policy and key actions. The National Climate

Change Policy has been developed in such a way as to ensure that this policy is acceptable to all parties.

Chapter 5 examines a case study of the climate change policy in Malaysia. Using the phronetic approach as a research method, as discussed in chapter 4, this chapter will unlock the climate change policy of Malaysia. This chapter is divided into several sections, including the background of the policies related to the environment in Malaysia; implementation of environmental aspects in policy development; and analysis of the climate change policy. Analysis of climate change policy will be divided into four main questions: 1) Where are we going? 2) Who gains and who loses? And by which mechanisms of power?; 3) Is this desirable?; and 4) What if anything, can we do about it?

5.1. Environmental Inclusion in National Development Policy Programs

The twenty-first century has been acknowledged as the 'century of the environment'. With any sociological ideas, the central tenets and features of environmentalism or simply pro-environmental behavior have also undergone several evolutions throughout history which can be simplified in the following discussion as three waves.

Table 5.1: Three waves of environmentalism (Ahmad Hezri 2011)

First wave (1900-1980s)	Second wave (1990s-2005)	Third wave (2006-present)
Nature Protection	Governmental Reform	Green Investment
Nature conservation Pollution control Adversarial advocacy	Supra-structures New instruments Agenda 21	Low carbon growth Energy switch Technology localization

The first wave was sparked in response to rapid industrialization and forest clearance in both the developed and developing countries. Inspired initially by nature writers and conservation officials, the first wave gave birth to the conservation movement. The nature protection can be describe as, the conservation of wilderness areas deemed as important for scientific, aesthetic and economic values; and the concern over environmental pollution caused by the use of chemicals such as pesticides. The second wave was firmly established by the early 1990s. Series of reports such as by the World Commission of Environment and Development and international meetings such as United Nations megaconferences (Rio 1992 and Johannesburg 2002) had established the position of the environment as an important agenda of public policy. Throughout the 1990s, governments undertook a flurry of environmental goal-resetting activities. Alongside policy statements, came the deployment of new policy instruments be they regulatory, economic, or a mix of both. Climate change was firmly established as a critical global concern. This has sparked the third wave of environmentalism. Addressing climate change in a development mode demands policy environment which reconciles green technology with the objective of full employment. As mentioned above, the third wave saw the pouring of investments by both governments and the private sector into green businesses (Ahmad Hezri 2011).

To minimize adverse environmental effects of industrial development, policy makers have formulated policies that implemented environmental planning into development planning. Therefore, the aim of Malaysia to become a developed country, sensitive to environmental issues makes it an attractive target for environmental policies which can provide a balance between many different environmental development activities.

Historically speaking, Malaysia has expanded its environmental regulations to protect the natural resources since the early 1920s. The analysis of this must begin with a clear understanding of environmental policy in the context of socio-economic and political situation in the country, in which it is necessary to analyse the environmental problems as well as the current state of environmental law and policy instruments. This includes, among other things, environmental issues such as water, air, atmospheric changes, protection of natural areas, environmental regulation of the industry, the community, and the analysis of the ecological consequences of mining, agriculture and fishery. The effectiveness involves the role of government and the legal framework (Ambali, 2011). The awareness of the environment is expressed in the Third Five-Year Plan, which began in 1975, defined in broad terms, a general commitment to protection of the environment. The importance of the environment was officially recognized for the first time in the Mid-Term Review of the Second Malaysia Plan.

> The emerging problems associated with rapid development will require equal attention. One such challenge is the management of the environment. The Outline Perspective Plan [first] stresses the importance of industrialization for the country. Yet we also know the environmental costs of industrialization and urbanization. We must therefore evolve appropriate policies and programs so that accelerated industrial development goes hand in hand with sound management of our environment (GOM 1973).

On this basis, an Act was passed in 1974. The Malaysian environmental policy planning developed from the experience of the UN Conference on the Human Environment in 1972. A general policy was approved by the Malaysian government in 1973, and became a guideline emphasizing the use of natural resources in rational manner in the implementation of national development. Formulation of policies that reflect the environment-development prospects are seen as a guideline stems from the constitution of

Malaysia, which includes provisions for natural resources controlled by the state and used for public welfare. Instead, from this scenario it is seen that environmental questions are more likely to define more broadly in terms of resource utilization. The elaboration of legislations, regulations and related programs outlined in the plan indicates that Malaysia's political elites have emphasized environmental issues, which are becoming a trend in the discourse of the Western world (Ambali 2011).

Under the administration of Mahathir Mohammad, the Second Outline Perspective Plan (OPP2) set the same goals in environmental protection as the First Outline Perspective Plan (OPP1). This plan covered the period 1991-2000 for ten years, including the Sixth and Seventh Malaysia Plan. OPP2 development strategy is based on four principles[32]. However, the fourth principle focuses on environmental protection. The fourth principle is the promotion of prudent management of natural ecosystems and water resources, and the preservation of its natural beauty and clean environment to ensure sustainable development for present and future generations. Department of Environment (DOE) plays a role in promoting the implementation of the environmental dimension in project planning. During the Seventh, Eighth and Ninth Malaysia Plan, the government continues to balance growth with environmental concerns in the Malaysia Plan objective.

Although economic development is the foundational concern of policy makers, environmental considerations have been increasingly integrated into sectoral policies to ensure a balance between economic and social development. Environmental and resources management was guided by the National Action Plan (NAP), which aims to promote

[32] The first principle captured and focused on a strategy for growth with equity, while the second principle emphasized a balanced societal development for social and political stability. The third principle called for nurturing of a Malaysian society that is responsible, resilient, progressive and caring for people.

environmentally sound and sustainable progress in economic, social and culture. The *Tenth Malaysia Plan* devoted an entire paper on environment and development, emphasizing sound environmental and ecological principles in land-use planning, forestry management, wildlife preservation, water and air pollution control, marine and coastal zone protection, fisheries, renewable resources and energy, and human settlements (Ambali, 2001).

5.2. Existing Environmental Related Policies

The Malaysian Federal Government has responded to the challenges of environmental degradation resulting from resource exploitation. Meanwhile, state governments have also given a mandate and cooperation to the federal government related to environmental issues. In 1971, the National Forestry Council (NFC) was drafted, followed by the Wildlife Act in 1972 to protect wildlife resources in protected areas. In terms of logging, the Pahang decision to log Endau-Rompin forest reserve under the jurisdiction of the state has caused a dispute between the states of Pahang and the Federal government. Consequently, the National Forestry Policy was formulated and approved at the date 1977. At that time, public awareness of the importance of environmental conservation began to increase. Civil society organizations began to voice their concerns, both nationally and internationally. This marked the beginning of environmentalism in Malaysia; and they began to fight for environmental protection in Peninsular Malaysia. In 1982, an international controversy erupted in Sarawak, where the Eastern Penan tribe opposed logging activities in Baran-Limbang. The situation became worse, as the government planned to construct a power-generating dam at Bakun in Sarawak, which would result in the destruction of forests and habitats (Aiken et al., 1982; Aiken and Leigh, 1992). Therefore, the National Parks Act 1980 and the National Forestry Act was enacted

in 1984 as a policy instrument to protect forest areas under the jurisdiction of the Department of Wildlife and National Parks (DWNP) (Ambali, 2005).

During colonial rule and the first two decades after independence, Malaysia had laws to control pollution (Table 5.2). Laws were introduced, but were not specifically aimed at associated environmental problems; they were intended to promote wise use and sustainable yield of resources. They were single-issue regulations, fragmented and inconsistent, and generally ineffectual in environmental management (Ahmad Hezri and Mohd Nordin, 2006). This led to the establishment of the Environmental Quality Act, 1974 (EQA, 1974) which aimed to make the law more comprehensive, focusing on pollution control and providing a legal framework at the federal level, enforceable throughout the nation.

Table 5.2. Statutes established to address sectoral management issues of natural resource use (Ahmad Hezri and Mohd Nordin, 2006)

Management issue	Statutes
Faunal conservation	Straits Settlement Ordinance, No. 3, 1894 Wild Animals and Bird Protection Ordinance, 1955 Fauna Conservation Ordinance, 1963 (North Borneo)
Sustainable forestry	Straits Settlements Forest Ordinance, 1908 F.M.S. Forests Enactment, 1914 Forests Enactment, 1935
Water and river conservation	Waters Enactment, 1920 F.M.S. Silt (Control) Enactment, 1922 Drainage Works Ordinance, 1954
Land and soil conservation	F.M.S. Mining Enactment, 1929 Land Conservation Act, 1960 National Land Code, 1965

Energy policies, such as the National Energy Policy 1979 and the National Depletion Policy 1980, sought to ensure the nation's long-term security of energy supply; the latter by imposing production limits to reduce overdependence on oil, the Government adopted a fuel diversification policy in 1981 to move towards a balanced mix of oil, gas,

hydroelectricity, and coal. In 1985, following years of discussion, the necessity of requiring environmental impact assessments (EIA) to be filed was legally recognized, with the EIA Order of 1987 coming into effect in 1988, mandating EIA for 19 categories of activities.

5.3. Phronetic Perspective in National Climate Change Policy in Malaysia

Beginning in the twenty-first century, the government has focused on finding adjustments to environmental policies and methods of effective implementation of the policy. In contrast to the previous policy approach, government agencies have begun to consult with the public and stakeholders in order to find effective solutions. This consultative approach has resulted in broad agreement on the direction of sustainable development, as stated in the policy statements such as National Biodiversity Policy 1998, National Policy on the Environment 2002, and the National Climate Change Policy 2009.

In March 2004, a cabinet reshuffle was carried out, and issues related to the environment were held under a new ministry - the Ministry of Natural Resources and Environment. The idea was put forward by Prime Minister Abdullah Ahmad Badawi as a comprehensive plan to end the fragmentation of the public sector, and bring all things to do with the environment under a single authority.

In line with international trends, the ministry has incorporated the goal of a low carbon economy. In response to the low carbon agenda in 2009, it incorporates green technology portfolio into the newly established ministry, the Ministry of Energy, Green Technology and Water. The key role of green technologies was emphasized in economic development agenda after the drafting of the Green Technology Policy and the restructuring of the National Energy Centre as the Malaysian Green Technology Corporation. The

administration of Prime Minister Dato' Sri Najib Razak is clearly intended to create an encouraging policy environment to attract both creators and users of green technology.

In line with this development, National Climate Change Policy was launched in 2009 in a short period with a maturity of seven years for the National Environment Policy, for example. However, the haste with which the policy was formulated raised opinions and perspectives from different stakeholders. This section is intended to reveal the significant role of instrumental rationality, value rationality, and power in the National Climate Change Policy in Malaysia.

5.3.1. Where Are We Going?

The first question will unlock the direction of the climate change policy. This section is divided into several subtopics. First we need to look back, then forward. This section tries to uncover what is really happening in the policy formulation, the stakeholders, global communities, and Malaysia's development agenda including the trends of the environmental component in national development agenda.

5.3.1.1. Environmental Aspect in National Development

Development is a key issue in the planning of Malaysia. In the pursuit of national development, a lot of criticism has been directed at the government, claiming that the government is not sensitive to environmental issues. Nevertheless, on the issue of development and the environment, the government's role should be clarified. Government 2 explained that the rationality of the main role of government is to provide for the country's development plan, or how this country should be developed.

Nonetheless, Industry 2 has a relatively neutral view. For Industry 2, the balance between development and environmental protection should be emphasized.

> I think we'll need to see policy made more explicit [...] and of course the balance between human development and environmental sustainability, and sometimes it's a very difficult choice. I think difficult choices will have to be made. But it's about achieving a balance, [...] in terms of Malaysia's own development and the development of the people [Industry 2].

Government 10, the CEO of the Malaysian Palm Oil Council, speaks frankly about sustainability and the conservation activists. He argues, "oil palm is the most effective energy plant. It leverages Malaysia's natural advantages - strong sunlight, ample rain, rich soil, and provides a critical source of economic growth". While there are some who despair at the expense of forests required, economic data has proved to be correct. The palm oil sector contributed a massive RM17.0 billion or 3.3% to GDP in 2009 and accounted for RM49.6 billion in exports (GOM 2010). With such returns, it is not surprising that the expansion of the plantations in Malaysia has been staggering, increasing from 2.03 million hectares in 1990 to 4.69 million hectares in 2009 (Teoh 2002).

In this respect, the development of Malaysia emphasizes the equilibrium of economic, social, and environmental factors. He added that each country is different in the pattern of development, and Malaysia is no exception. Malaysia's development is still in the developmental stage – what is meant by Government 2 is, not an open market economy, and not too socialist. "We are in between", he said. Accordingly, in the early stages of the 'developmental stage', the government will no doubt make specific interventions as deemed best for the country and society [Government 2].

Therefore, for the development plan, the government has prepared the Outline Perspective Plan (OPP)[33], which has a horizontal period of 10 to 30 years. In between this long-term plan, medium-term plans (Government of Malaysia, 1973) have been put in place to fill the void or the inadequacy of the long-term plan when the plan is being implemented. With the existence of this plan, the government's efforts to achieve the target of OPP are clear, "so, that is the outcomes that we want to reach, or the objectives that we want to go; and to do that, we cannot say we want this and that; we have to come out with the output, the activity that can produce the output", explained Government 2. In other words, the EPU's role is to ensure that Malaysia will achieve the status of developed country by the year 2020.[34]

However, in Malaysia, the balance between development and the environment has still not been achieved, and the environment is seen as something that must have care implemented for it.

> It is due to the lack of appreciation of the complexity of how it should be managed. It should go back to the goal in terms of policy change. Some countries are brave enough to see real opportunity in focusing the environment as a major public policy goal. We see [the managing of the environment] as 'necessary evil' that as something we have to take care […] we look at it as an international pressure [Industry 2].

[33] Malaysia's Outline Perspective Plans consists of: First Outline Perspective Plan (1970-1990); Vision 2020 (1991-2020); Second Outline Perspective Plan (1991-2000); and Third Outline Perspective Plan (2001-2010). http://www.epu.gov.m

[34]In the developing countries, agriculture is a socioeconomic activity commonly driven by technocratic economic planning known as development policy. Economic development policy is viewed as a sector-based process of planning by targets and instrument, such as the 5-year planning system which sets out future objectives and programs. The planning process for the agricultural sector is mainly state-led, driven by top-down developmentalism (Rist, Gilbert. 2000. *The history of development: from Western origins to global faith*. New York: Zed Book and UCT Press).

EPU has listed certain criteria for Malaysia as a developed nation. This includes the population will have high income and a better quality of life, in which people are happy, and a healthier environmental quality. The emphasis on environmental protection began in the Third Malaysia Plan. In a chapter entitled *Development and Environment*, the following was suggested:

> It is vital that the objectives of development and environmental conservation be kept in balance, so that the benefits of development are not negated by the costs of environmental damage (Government of Malaysia, 1973: 218).

Nonetheless, to achieve a developed nation status, economic patterns will of course change Malaysia from an agricultural economy, to an industrial and service-based economy. "That is why we should have a policy that can give perspective because at the end of the day, the economy matters – the economy is a priority" Government 1 added. However, Government 2 admitted that, throughout this process, it is inevitable that the environment will become a victim in the name of development; therefore, it is the policy which allows the climate change policy to play a role in balancing between the development process and environmental protection. "But then, to do that, whether we want to pursue the economy alone, or do we want to take into account other things? This is where the nation needs a climate change policy, because we want to be a developed nation – as a high income country, but with good quality of life and good environment", Government 2 added.

As mentioned in Chapter 3, climate change issues are covering various sectors; therefore, this issue is of concern to the various sectors in the country. Overall changes to improve environmental management since the provision of Initial National Communication

in the year 2000 have increased the ability of the country to deal with the complex issues of climate change.

"This is the current reality that must be taken into account", as pointed out by Government 2. Although there is uncertainty in climate change, the assertion by the international community about the state of climate change has led Malaysia to be ready with adaptation and mitigation strategies. In the face of scientific uncertainty in climate change issues and precautionary measures, Malaysia has adopted a precautionary principle approach and the no regrets policy, (MNRE, 2011) in which "action, justified in their right, could be taken to mitigate or adapt to climate change, even though there are still scientific uncertainties" (Solar, 2011: 8).

These strategies can be realized with the existence of climate change policy. He added that the NRE has formulated this policy after taking into account stakeholder's views. In the policy, it includes a number of strategies – some to be implemented by the ministry that issued the policy, and some strategies to be incorporated or collaborated about with other agencies or ministries; plans of actions; finally, inputs from stakeholders and activities for effective outputs [Government 2].

The government's decision to outline the adaptation and mitigation strategies in the face of the crisis of climate change is supported by CETDEM. In the interview, NGO 2 claimed that efforts in the climate change movement started in 2004 by CETDEM. However, realizing that the government would not have a policy in the near future, CETDEM has proposed to the government a climate change action plan. Regrettably, the

government did not take any action; and the reason given was the ministry is being converted from MOSTI to NRE. After three years without any action by the government, this situation began to change when the Consumers Association of Penang (CAP) put pressure on the Secretary-General and the ministry, which is also a member of the national climate change committee [NGO 2].

5.3.1.2. Malaysia's Stand on the Issues of Global Climate Change

Malaysia is not alone in facing the crisis of climate change. Malaysia is directly involved in the international negotiations on the issue of climate change. International negotiations will also directly determine the direction of development and the importance of environmental protection in Malaysia.

Like Government 2, Government 1 also agreed with the action taken by the Malaysian government in an action plan to address the crisis of climate change such as adaptation strategies and mitigation strategies. However, Government 1 saw things from the perspective of economic development interests, in which adaptation and mitigation strategies should be tailored to the needs of the current economy. He added that such a situation occurs in the real world not only in Malaysia, and Malaysia is not only but a follower of a trend worldwide. He also stated that we need to abide with the actions taken by the UNFCCC. The UNFCCC was established at the international level, and because it is a universal problem, "it is not something just about everyone jumping together saying about climate change, and we also want to talk about climate change" [Government 1].

The rationality of climate change policy enshrined in the UNFCCC is not only supported by the government alone. University 1 also provides insight with respect to climate change policy formulation. Malaysia issued a climate change policy in 2009, following the general belief of UN. All the countries in the world believe that we are experiencing climate change caused by human factors. Due to the general belief, we had to agree. "It is good in the sense that we like to come out with a policy that sort of tries to lessen the impact of climate change […] I suppose it is ok that Malaysia is very obedient, whatever the world says, we follow" [University 1]. What we want to do is usually based on the general perception of the world. However, University 1 agreed less with the travesty of scientific facts and scientific findings which indicate that the greatest contribution of climate change is the result of human actions. Climate change is something bigger than the present. It has been happening for thousands of years and what challenges the world population are only the fragments of human activities that contribute to climate change.

> What people are thinking now is more of the anthropogenic factors that contribute to climate change. The important thing is we have to look at the geological history of the earth. We were having this climate change since the earth was formed – climate rise cycle since 10,000 years ago. Climate change is not occurring 2, 3 or 20 years ago. The climate is changing, we are experiencing the rise of climate and nobody can stop it because it happened before. Now is the inter-glacial period. I don't believe that the present climate change is due to the contribution of human beings. We might consider humans contribute just a little bit in terms of e.g. greenhouse gases that lead to increase in temperature. So I believe that we are experiencing climate change but not due to human activities [University 1].

Adhering to the belief of scientific findings, climate change is caused by anthropogenic factors; climate change related concerns are addressed through various sectors such as energy, forestry and natural resource management, land-use planning,

agriculture, solid waste, drainage and irrigation. For that reason, Malaysia subscribes to various protocols that aim to reduce the carbon of up to 40% [NGO 4].

As previously mentioned, Malaysia has a wide range of policies related to the environment. However, each policy has different goals and objectives. Therefore, in order to consolidate all policies to the common objective, Dato' Sri Mohd Najib Abd Razak, the Prime Minister of Malaysia has pledged:

> I would also like to announce here in Copenhagen that Malaysia is adopting an indicator of a voluntary reduction of up to 40% in terms of emissions intensity of GDP by the year 2020 compared to 2005 levels. This indicator is conditional on receiving the transfer of technology and finance of adequate and effective levels from our Annex 1 partners, that correspond to what is required in order to achieve this indicator (Sumiani 2010).

The pledge made by the Prime Minister is the trigger for implementation, where previously each policy in Malaysia relating to the environment did not have the same goals. Therefore, with this pledge, the relevant policies will have the same goal, which is to reduce 40% of emissions [Government 4].

The Pledge is not just a statement made at the international level, but this target has also been mentioned in the 10th MP, where the main goal of Malaysia is moving towards becoming a high-income country. This also indirectly determines the direction of Malaysia's economic development. However, external factors have also been considered in this action plan. This includes financial capability, and technology. However, it is found that from the year 2009 until now, the target has still not been met. But the government is trying, by providing policies that lead to the 40% reduction target, such as the formulation

of Green Technology Policy, and National Climate Change Policy. I admit, "We have a constraint, but if we are too dependent on the developed world, it is quite difficult. Therefore, we need to take our own initiative" [Government 3].[35]

Although from a low base, these statements reflect an increase in political and public awareness on climate change in Malaysia. A survey conducted by HSBC at the time of the Copenhagen talks, found that only 35% of Malaysians agreed that "climate change and how we respond to it are among the biggest issues they worry about today" (HSBC, 2009). The potential impact of climate change on Malaysia can be serious, with the Fourth IPCC Assessment Report warning that climate change may "impinge on sustainable development of most developing countries in Asia as it compounds the pressures on natural resources and the environment associated with rapid urbanization, industrialization and economic development" (IPCC, 2007).

That announcement came after a deep discussion. When Dato' Sri Mohd Najib Abd Razak announced the pledge, we were in the height of negotiation, and developed countries have been pressing the developing countries to create and implement many mitigation actions, and not adaptation. This is because developed countries are only interested in mitigation strategies. However, Malaysia had, during the era of former Prime Minister of Malaysia Tun Dr Mahathir Mohamad in the Rio Convention, pledged that the country would maintain a green cover of 50%, and this has been translated to maintain 50% forest. So, he realized that "we've implemented all the action, what more do developed countries want?" This situation gave rise to the controversy in which the actions of developed

[35] Personal communication.

countries in GHG emissions were not noted by other parties. To cope with this situation, Malaysia has assembled think-tanks and listed the actions taken to address environmental problems. From then on, the government realized that the target of 40% could be achieved. However, the target is dependent on the availability of funding for two reasons - 1) we were aware of the importance of funding to carbon reduction; and 2) we want to remind the developed countries that it is their duty to provide the technologies and funding, as defined under the UNFCCC [Government 5].

Malaysia is committed to the global requirement. Often, actions taken in the realm of climate change are guided by Malaysia's international obligations and commitments, namely three conventions: 1) United Nations Framework Convention on Climate Change (UNFCCC); 2) United Nations Convention on Biological Diversity (CBD); and 3) United Nations Convention to Combat Desertification (CCD) (Solar 2011).

Malaysia became a Non-Annex I Party to the UNFCCC when it signed the UNFCCC in 1993. As a Non-Annex I Party, it has no obligations towards reducing emissions of greenhouse gases (GHGs) under the Kyoto Protocol. Following the ratification of the convention in 1994, efforts have been strengthened to address climate change in Malaysia (Solar 2011). However, Malaysia (along with the rest of developing countries) is subjected to the following obligations as articulated in Article 4 of the UNFCCC (Sham Sani, 2009):

1. To develop, periodically update, publish and make available to the Conference of Parties, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol,
2. To formulate, implement, publish and regularly update national and where appropriate, regional programs containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change.
3. To promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems.
4. To promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations.
5. To communicate to the Conference of the Parties, information related to implementation, in accordance with Article 12.

5.3.1.3. Rationalization of National Policy on Climate Change in Malaysia

Historically, in the early stages of the 9th MP, the government did not propose to set up a climate change policy, because at that time the government was still looking for the right policy, and then also a lot of views from government officials expressed the view that Malaysia does not need a climate change policy. Some have suggested that Malaysia requires a policy that covers all aspects of sustainable development because these issues

can be placed under the environment of sustainable development issues; and some have suggested that the issue of climate change may be placed under the environmental policy, and the environmental policy coincidentally has a section that explains about climate change.

However, the results came from the top management, and all the ministers agreed that the issue of climate change is a matter that pertains to all. Climate change issues are holistic and should be in the mainstream - all activities that contribute to climate change should be in the mainstream so that it can achieve a goal (3 main objectives of climate change in Malaysia[36]) which is mainstreaming the environment in national development plans. Thus, the key issue of climate change policy is how to implement it, and not where to put the issue of climate change under the appropriate policy [Government 5].

Environmental issues have been much discussed since independence, and environmental policy has been in effect since 2002. However, at that time the issue of climate change was not quite clear. The reason why government prepared the policy is to mainstream the environmental consideration, in order to reduce the impact of climate changes. Climate change causes are not one-sided; it involves all parties responsible for the contribution of climate change, the impact of which will involve us as well. Then, after several years, we realized that environmental policy should be supported by a more specific policy, then that is where the National Climate Change Policy came into existence. We

[36] National Policy on Climate Change has three main objectives (NRE 2010):

1. Mainstreaming climate change through wise management of resources and enhanced environmental conservation resulting in strengthened economic competitiveness and improved quality of life;
2. Integration of responses into national policies, plans and programs to strengthen the resilience of development from arising and potential impacts of climate change; and
3. Strengthening of institutional and implementation capacity to better harness opportunities to reduce negative impacts of climate change.

need a clearer policy, and although environmental policy considers changes in climate, it is different from climate change.

As a result of the lack of understanding about climate change at that time, Malaysia was able to talk about the issue of changes in climate. However, now the issue is climate change. This gives the impression that changes in the weather and rainfall have been caused by activities that occurred in the early days of development. But then, at that time, we did not consider that scenario as climate change, because we deemed it was as a result of changes in climate due to development activities. Now, changes in climate have been recognized as climate change – as the impact of development [Government 2].

Initially, the government planned to just create guidelines for climate change, then after discussions with stakeholders, ultimately it was agreed to create a policy, although there are some stakeholders who disagree with the policy formulation. This policy is quite comprehensive, claimed Government 5. It has undergone a thorough process from 2006 to 2009, with more than 50 discussions with stakeholders, listening to all views and opinions of all stakeholders and the priority issues of climate change. As a result of these deliberative meetings, the main content of this climate change policy is as follows:

1. Balancing between adaptation and mitigation. The Ministry of Natural Resources and Environment (MNRE) strategy is to encourage the community to talk about mitigation as well as adaptation strategies. This is because most people only talk about mitigation strategies, such as change the way of life. And for MNRE, climate

change policy is needed as an approach by the government in addressing climate change.

2. Many actions have been made by the government on the issue of climate change. However, most of this action are segregated or separated between each other. It is not consolidated. The worst case is replication of the government agencies. Thus, climate change policy is to consolidate all actions by government agencies as well as to avoid duplication, and serve as a clear objective.
3. Coordinate between sustainability and development. In pursuit of development, the impact on the environment cannot be avoided. As a developing country, development is a priority, and we cannot run away from the issue.

MNRE as well as other stakeholders undergo a very thorough process in the climate change policy making process. The project is a collaboration between the ministry and LESTARI, UKM. Furthermore, environmental policy is too general; we prefer the climate change policy so that it is seen to be more comprehensive, and includes key action. Key action is derived from discussions with the stakeholders [Government 5].

Although it is said that the climate change policy took three years to complete as well as through in-depth discussions with the stakeholders, University 1 has the opinion that this is only a short period to formulate a policy. To take environmental policy as an example, he noted that environmental policies have started since 1982, which at that time it was not in a form of policy, but rather in the form of environmental policy objectives, until it was gazetted in 2002. Although it is said that the climate change policy covers all aspects of social, economic and environmental; and has a goal in mainstreaming climate change

issues to all stakeholders, it is somewhat surprising because of some parties, especially the public is not aware of the policy. “In fact, I did not know we came up with the National Climate Change Policy. Perhaps, the outcome of the climate change policy will probably be a mess”, he added.

The question that arises after completion of the policy is what kind of monitoring is required to climate change policy. Incidentally, shortly after completion of the policy at the time, the Green Technology and Climate Change Council (GTCCC) was established under the Green Technology Council, which consists of eight committee members who happen to talk about the terms of reference, trying to coordinate the things embodied in the climate change policy, and this committee is taking up the strategic actions [Government 5].

The establishment of National Green Technology and Climate Change Council (GTCCC).

In 2010, the government established the National Green Technology and Climate Change Council (GTCCC), chaired by the Prime Minister of Malaysia, to coordinate and facilitate the implementation of the National Policy on Climate Change and National Green Technology Policy (KeTTHA 2012). Several Working Committees support the Council: including one on adaptation. The Working Committee on Adaptation is anchored by the MNRE, with members from multiple agencies to promote implementation of adaptation programs at all levels.

MNRE and Ministry of Energy, Green Technology and Water (KeTTHA) established GTCCC, chaired by the Prime Minister. Here, the role of the Prime Minister is to coordinate all action plans related to climate change. In addition, the Prime Minister also

acted as a mediator to avoid overlap of powers between ministers that represent their respective ministries. As stated by Government 5, “ministry with ministry, when power is overlapped is quite difficult to move”.

The establishment of the National Green Technology Council (NGTC) is a key strategy in the policy. In the National Green Technology Policy, the establishment of the NGTC is the component of the Core Strategic One and a high-level platform to coordinate the issues of green technology between the ministries, agencies, private sectors and stakeholders on the ways to implement the policies (Box 5.1).

The Cabinet, in its meeting on 20th November 2009, agreed to the proposal of a Cabinet Committee of Climate Change and Environment which is under the MNRE combined with the Green Technology Council under the Ministry of Energy, and Water, chaired by the Hon. Prime Minister.

Although GTCCC had been established, it is very difficult for the committee to meet and discuss matters related to climate change. For smooth implementation of the climate change policy and the Green Technology Policy, the work of the committee is divided into eight sub-committees in accordance with the key issues related to green technology and climate change. However, meeting is only conducted once a year. With the establishment of this big council, with the Prime Minister as the head of the event, it can be said that the committee is trying to do something, even if its action is quite slow [NGO 3]. Although the NGTCCC was established to function on the actions in climate change policy, its role was seen to focus more on green technology. As stated by NGO 3:

> [It is] disappointing that it is called Green Technology and Climate Change Council; because it gives priority to green tech, whereas we feel that climate change should be the overarching policy and green tech as the enablers towards addressing the climate change; but we feel that climate change is coming to address green tech, whereas it should be the other way around.

FUNCTION

To formulate policies and identify the strategic issues in the National Green Technology Policy development and climate change. It also coordinates, monitors and evaluates the effectiveness of the National Green Technology Policy and Green Technology programs and climate change at the national level.

STEERING COMMITTEE

The Steering Committee will meet up a month before the meeting of the Green Technology and Climate Change Council. This committee involves the Secretary General within the Ministries concerned and is chaired jointly by the Secretary General of KeTTHA & NRE. The Steering Committee will advise MTHPI the following matters:

1. Coordination and cooperation between various government agencies
2. Effective government policies and their implementation
3. Improving the fiscal and support mechanisms
4. Assessment of national policy mechanisms to support the objectives and policies of the Green Technology and Climate Change Policy.

WORKING COMMITTEE

Eight (8) Working Committees were established under the Steering Committee to assist MTHPI associated with a specific focus area and involving the other stakeholders, especially the private sector and agencies. The Working Committees are as follows:

1. Industry Working Committee
2. Human Capital Working Committee
3. Research and Innovation Working Committee
4. Promotion and Public Awareness Working Committee
5. Transportation Working Committee
6. Green Neighbourhood Working Committee
7. Adaptation Working Committee
8. Green Development Working Committee.

Box 5.1: National Green Technology and Climate Change Council

On paper, the climate change policy is comprehensive, and covers the aspects of adaptation and mitigation. However, the main focus should be taken into consideration is the implementation of the policy. As asked by NGO 3, “Ok, it’s good, it’s comprehensive, but how do we implement this? So, we haven’t really seen the evidence of that yet”. This is

because there are still other facts to prove that the climate change policy is successful - what was seen is only in terms of green technology.

In Malaysia, when talking about green technology, it is more focused on business. For example, the city of Malacca had been declared a green technology city. When the concept was examined in more detail, the goals to be achieved in green technology can be disputed. What happened was, green technology just involves a lot of business, especially in the construction of buildings and facilities. If green technology is only viewed from the aspect of construction and artifacts alone, and not to reduce greenhouse gas emissions or the impact of climate change, then that is not the real goal in green technology. In this case, these themes should be used with caution, so that the true meaning and the target in green technology can really be achieved [University 1].

Focal National Coordination Bodies and Ministerial Actors**.** Climate change policy had been given an allocated amount in the range of RM200-300 thousand under the 9th Malaysia Plan. At that time, the ability of MNRE was quite limited, as it focussed on Conservation and Environmental Section. This section then, is further divided into two: 1) Environmental Conservation Section, and 2) Sections affected by pollution of green section and brown section. The brown section is broken down into categories that keep atmospheric, water, haze, chemical, and climate changes. Generally, the officers in charge of climate change are few, and the officers are not only involved in climate change issues, but other issues such as trans-boundaries haze and pollution.

In 1994, the National Steering Committee on Climate Change (NSCCC) was established under the Ministry of Science, Technology and the Environment (MOSTE). Subsequently, the Ministry of Natural Resources and Environment (NRE) was established on March 27, 2004, following the formation of a new cabinet by the Prime Minister. Note that the Secretary General of the NRE chairs the NSCCC, which also acts as the focal point for the UNFCCC. The Committee consists of representatives from relevant ministries and agencies, the private sector, and NGOs (Box 5.2).

Secretary General, Ministry of Natural Resources and Environment (NRE) – Chairman
Conservation and Environmental Management Division, NRE – Secretariat
Malaysian Meteorological Service
Ministry of Energy, Water and Communications
Ministry of Plantation Industries and Commodities
Ministry of Finance
Ministry of Education
Ministry of International Trade and Industry
Ministry of Agriculture
Ministry of Foreign Affairs
Economic Planning Unit
Attorney General's Office
Others as and when required

Box 5.2: Membership of National Steering Committee on Climate Change (Solar, 2011)

In contrast to other issues such as chemicals, where the Department of Environment has become a specialized agency in managing the issue; for the issue of climate change, there is no single specialized agency under the ministry responsible. Thus, the issue of climate change is managed by ministry officials themselves. For example, chemical issues had been placed under the responsibility of the DOE, under the Hazardous Materials Unit which manages everything. Although climate change is technical, it does not require an officer who can do science experiments and laboratory experiments. Government 5 pointed out that the issue of climate change is not necessarily up to that point, because the issue of climate change is a matter of much broader scope. It is not a technical problem that can

only be managed solely by the Department of Meteorology. However, as the Meteorological Department holds the information, it is the only department that monitors climate change. But now, the issue of climate change has become increasingly widespread. "First we talk about the physical science of climate change itself, then we talk about mitigation, later we talk about adaptation, technology, lost and damage, financial mechanisms, in order to mitigate the causes of climate change" [Government 5]. This issue has become very complicated. It involves agriculture as well. The Meteorological Department is not in charge of climate change in general; even so, NRE alone is also less able to handle the climate change issues.

He also claimed that Malaysia has a strong set-up because of KeTTHA. He further added that green technology is an issue that can be directly attributed to the issue of climate change. Discussions between MNRE and KeTTHA are always held, in which the MNRE talks about the problem, but the solution is subjected to KeTTHA - because technology is one of the mitigation strategies to find solutions - while MNRE is responsible for the issue of adaptation. MNRE has divided the issue of climate change in Malaysia to three subsections:

1. Physical science, in terms of research and systematic observation are held accountable to the Department of Meteorology as it involves scientific information such as climate modelling, data, and so on. Through this department, we can know if there is a rise in temperature and consequently, how many degrees the temperature rises.

2. Adaptation - placed under the responsibility of the MNRE. Many adaptation issues in Malaysia involve two aspects, namely flood or drought. Flooding was put under the Department of Irrigation and Drainage Malaysia (DID). The causes for certain flooding events must be considered before concluding that it is caused by climate change. Sometimes, flood is caused by a clogged drain, or irregular irrigation system. The ministry is indirectly involved in the issue of adaptation. But in fact, in a broader context, the role of local authorities is vital. Local authorities are involved in planning. But an even greater role lies under the State Government and local authorities.
3. Mitigation - mitigation are the responsibility of KeTTHA. Malaysia as a member of the UNFCCC has to produce a national report. From the National Communication report, it appears that the main contributor of GHG comes from the energy sector, including transport or electricity generation. Most of these issues lie under the authority of two ministries i.e., the Ministry of Transport and KeTTHA.

The goal of climate change policy is to provide a similar direction to the other policies, promoting integration between ministries and government agencies (Table 5.3). For example, the forestry policy does not touch the question of climate change, and does not address the issue of carbon emissions. It is more focused on timber production and to ensure an adequate supply of wood. Only a few aspects of biodiversity are discussed. Aspects of climate change in the forestry policy are tied to climate negotiation under REDD+. Climate change has not triggered an environmental policy discussion.

Table 5.3. Implementing agencies (Solar, 2011)

Content	Implementing agencies
Adaptation Service Providers	Ministry of Natural Resources and Environment: Ministry of Land and Co-operative Development; Forestry Department Peninsular Malaysia; Forest Research Institute Malaysia; Department of Environment; Department of Wildlife & National Parks Peninsular Malaysia; Department of Irrigation and Drainage; and the National Hydraulic Research Institute of Malaysia Ministry of Energy, Water and Communication; Ministry of Agriculture and Agro-Based Industries; Ministry of Plantation Industries & Commodities; Ministry of Health; Ministry of Education; and the Malaysian Meteorological Department
Adaptation Knowledge Generation and Management	Department of Statistics; Ministry of Science, Technology & Innovation; and the Ministry of Higher Learning; LESTARI, University Kebangsaan Malaysia; University Malaya Climate Change Centre; University Sains Malaysia; and University Putra Malaysia.
Adaptation Planning and Coordination	Sabah State Economic Planning Unit; Sarawak State Planning Unit; and the Economic Planning Unit, Prime Minister Department
Multiple Purpose	Ministry of Transport; Ministry of Housing and Local Government; Ministry of International Trade and Industry.

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The environmental policy is very much under the DOE jurisdiction. In the Environmental Quality Act, it does not address CO_2 as an agent of pollution; therefore, DOE does not monitor CO_2 emissions. These have been disconnected because of the structural set-up, the silo type of set-up by the government agencies. NGO 2 has given an example of the narrow interpretations with the attorney general.

> Recently there was a move under KeTTHA to do Energy Efficiency Act; and they wanted to include transport, because there was a lot of emission coming from the transportation sector. But the Energy Commission said no you cannot. You only have the jurisdiction on electricity. You have to take out transport. How can you have energy efficiency when the Ministry of Transport is not looking at energy efficiency? At least KeTTHA is looking at it. Why can't you let transport being addressed under it? But then they said you are stepping into the jurisdiction of the Ministry of Transport. That is the other complication.

5.3.1.4. Discussion: Where Are We Going?

As a result of these interviews, it was found that the main goal is the development of the economy, specifically Malaysia, to achieve a developed nation status by 2020. Quoting Government 1 again, "that is why we should have a policy that can give a broader perspective because at the end of the day, the economy matters – the economy is a priority". To achieve this goal, several OPPs have been provided by the government, ranging from the 1st MP to the 10th MP. It is undeniable that, changing economic patterns from an agriculture-based economy to a service-based economy, will lead to the destruction of the environment. However, environmental aspects are not ignored. In the 3rd MP, the government began to realize the importance of environmental protection.

The development of an environmental policy in Malaysia has been closely influenced by the three waves of environmentalism (Table 5.1). In the response to this environmental shift, Malaysia had adapted its policy towards development needs and environmental change. This coupled with the ultimate goal of climate change policy in the mainstream govern all acts performed by any government agency. In this case, any plans of action in all the agencies will prioritize on environmental issues that indirectly contribute to climate change. This is due to the environmental issues experienced by Malaysia since its independence.

Although economic development is a priority in the development of Malaysia, the application of environmental protection awareness began to gain a place within policy formulation. This can be seen from the implementation of the Environmental Quality Act (EQA) 1974 up until the National Climate Change Policy in 2009. The Malaysian national

development must be consistent and in equilibrium with economic, social, and environmental factors. Therefore, the establishment of climate change policy is seen to balance between the processes of development and environmental protection.

In the response to this environmental shift, Malaysia had adapted its policy towards development needs and environmental change. This coupled with the ultimate goal of climate change policy in the mainstream govern all acts performed by any government agency. In this case, any plans of action in all the agencies will prioritize on environmental issues that indirectly contribute to climate change.

Although the National Climate Change Policy is said to be a comprehensive policy by some, covering adaptation and mitigation strategies; its impact is still unclear. The formulation of this policy is only to show the world that Malaysia as a developing country, is prioritizing economic development, but at the same time remains concerned about the issue of climate change to the global impact. In terms of the political aspects, the establishment of this climate change policy was to show that Malaysia is serious about environmental issues at the global level. This also shows that Malaysia has the same view on climate change issues faced around the world.

As a member to the United Nations Framework Convention on Climate Change, Malaysia had signed the Kyoto Protocol on 4th September, 2003. The Kyoto Protocol came into force on 16th February, 2005. At present, Malaysia as a developing country and not yet categorized as an Annex 1 country, has no quantitative commitments under the Kyoto Protocol. However, during the 15th session of the Conference of the Parties (COP15) held

in Copenhagen, Denmark in December 2009, the Prime Minister of Malaysia, Dato' Seri Mohd Najib Tun Abdul Razak, officially announced that Malaysia would voluntarily implement measures in reduction of greenhouse gases by up to 40%.

The report of Lord Stem in 2006 and the economic studies of climate change in Southeast Asia by the Asian Development Bank (ADB) in April 2009 also outlined in detail on mitigation and adaptation to climate change. If viewed in more detail, the Prime Minister's commitment to reduce carbon emissions by 40% were included in the criteria, as long as Malaysia receives funding from developed countries. However, without such contributions, Malaysia will be unable to achieve carbon reduction of 40% (Konsumerkini 2010).

Tensions between palm oil compared to forest conservation and its impact on climate change is part of a larger debate over Malaysia's right to choose his own course for economic development. The same countries that have sacrificed their natural assets to stimulate economic growth, centuries ago, is now trying to prevent Malaysia from taking the same path. Government 10 explains some parts of the conservation movement, as “one big conspiracy to stop developing countries from developing. Developed countries can replant forests and they all lost economic growth”. He is not alone in this view. Former Prime Minister Dr Mahathir, vigorously retains the right to development of the poorer countries, against the eco-imperialists position of rich countries of the North.

In addition, climate change policy has been formulated as a defence mechanism used by the government to fend off political attacks to the Malaysian national development policies. In my interview with University 2, he stated that the climate change policy does

not bring real benefits to the country or the people. On the other hand, climate change is an issue which plays well in the West, particularly by developed countries, to take advantage of a developing country like Malaysia. In order to cope with the pressure of foreign countries, top leaders of the government at that time, have implemented the National Climate Change Policy, as well as to maintain their credibility in the eyes of the leaders of the world.

Having signed the Kyoto Protocol in 2003, from the agreement reached by the UN Framework Convention on Climate Change (UNFCCC), Malaysia is now under pressure to achieve the targets as agreed in the protocol. This is because, in 2020 (seven years from the time of this writing) Malaysia aims to become a developed country and listed in the Annex 1 countries. Annex 1 countries are countries that are under the monitoring of this protocol, which is necessary to achieve the target reduction in greenhouse gas emissions (GHG) collectively, by 5.2% compared to 1990 (United Nation, 1997). As a result, this policy serves as a framework for deploying and providing guidance to government agencies, industry, the community, and stakeholders to meet these challenges.

5.3.2. Who Gains And Who Loses? By Which Mechanism of Power?

Power is not always easy to reveal, since it often works discreetly. Power is often indistinct but can be embedded in social structures, culture and language. In answering the question ‘who gains and who loses, by which mechanisms of power’, we need to reassess the question of ‘where are we going?’ As a result of this question, it can be identified that the main goal of the government is in the country's economic development and the progress

to achieve a developed nation by 2020. In addition, the government seeks to instil the importance of the environment in all development plans.

5.3.2.1. Benefits for the Industry

Recognizing the economy as the main goal; the main focus is on the adoption of green technology, as well as its applications in the industrial sector.

The trend is from the use of the capitalist approach to push the climate change agenda, whereby this is necessary because the main contributors are big companies. NGO 5, from one of the NGOs, claimed that the policy is comprehensive, but the policy does not encourage sustainable development. Climate change policy is only attractive for the business or industry sectors, where the government is dedicated towards; with the establishment of Green Tech Malaysia, and KeTTHA. This is because of world trends moving towards green energy. Consequently, the government is using the economic or market based instruments, for instance, clean development mechanism (CDM), gas reduction, reduce emission, and green building index – to attract companies in Malaysia to participate in the success of climate change policy; but focused on the development or application of green technology in the production process. This policy is focusing on big companies for investments in clean or solar energy [NGO 5]. As for the industry, Green Technology Corporation provides green tech incentives [Government 4]:

- Green technology financing scheme
- Save rebate program
- Feed-in tariff
- Solar PV fit quota

- Green Lane Policy for Innovative Malaysian SMEs
- Tax incentives (MIDA)

However, Government 5 adheres to his views that the climate change crisis upon Malaysia can be overcome with the use of latest technology. Technology is not only focused on by the people, but it should be the priority of the industry. To support this argument, Government 5 had applied the mitigation abatement cost curve (Figure 5.1). Using nature-profit businesses, the activities to save costs will be quickly implemented by the industry. Things like this will cause companies to adopt such plans, as Malaysia has a scheme called CDM, under the UNFCCC, to fund the cost of mitigation if in the negative (refer graph abatement negative part). For those in need of funds, the financial mechanisms that come from the UNFCCC are available to fund the technology or project. At such a small cost, developed countries are willing to fund the project, as to reduce 1 ton of CO_2 in developed countries are more expensive than in developing countries; because developed nations are efficient or technologically advanced. When developed, they are out of options (refer to graph abatement positive part) [Government 5].

> It has been proven that when we do this, we not only use expensive technology—we adopt—we will be able to save more cost. Example of energy efficiency, we can start by changing the light bulb. Another is the palm oil industry, first using an old and inefficient boiler, but then switched to the new; of course it is expensive, but in the 5-year period for example, by saving energy and the boiler efficiency, it actually cuts costs. A new boiler investment is RM 2 million, after a period of 5 years the company can save RM 5 million, so the company gained profit of RM 3 million [Government 5].

For example, under the climate change policy, industries must reduce greenhouse gas emissions and install new green technology; through the installation of new technology,

there are costs to be incurred, particularly in the private sector, which must bear some additional cost. The impact of rising costs may also be borne in part by the public, such as the cost of goods and services. But, if the industry strategically organizes its management to reduce greenhouse gas emissions, technically they can reduce their utility bills, and employees will be working in a better environment. In short, this can lead to a lot of savings. Maybe in the beginning, they must make costly investments in new technology, changing technology that are outdated and installing newer green technology for capital investment, but in the long run it should save money. The other benefit is that by moving for green technology to reduce greenhouse emissions, we create new jobs in the sunrise industry for example, wind technology, solar, or hydro technology, as such resources are easily available in Malaysia [NGO 1].

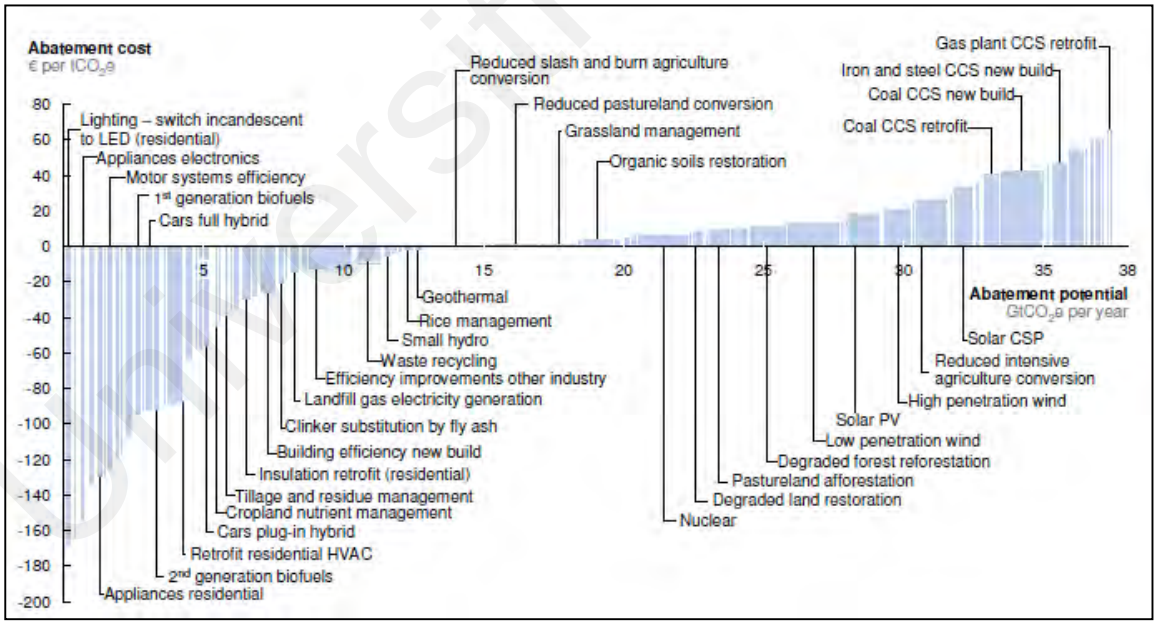

Figure 5.1. Mitigation abatement cost curve ("Impact of the Financial Crisis on Carbon Economics GHG cost curve V2.1")

University 5 has acknowledged that some companies do not see these actions in the context of climate change. And as a company, they would see in the context of profit and

loss. By taking the profit and loss approach, especially for SMEs, the government provides financial incentives. Many financial incentives are geared to green technology especially those under the curve. In CDM projects, to attract investment, the government has agreed to implement the tax exemption from income – Certified Emission Reduction (CER). For instance, MIDA and Green Technology Corporation are agencies offering this program [Government 5].

5.3.2.2. Advantage for Sectors

It is undeniable that in Malaysia, the issue of climate change must be considered in the context of development. And development is the most basic policy for the government. However, the issue that arose was that development has coincided with certain environmental issues. It has been acknowledged that there are some parties who do not agree to sacrifice the environment for the sake of national development. However, this is a fact that must be accepted by Malaysia as a developing country. Therefore, to justify the formulation of climate change policy, Government 5 had presented facts affecting the development process for developing countries. The issues of developing countries are set out in the UNFCCC, where under Article 4 Paragraph 7 states that the priority for developing countries is economic development and poverty eradication.

> 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 and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties (UNFCCC 2013)

With the adoption of this article, all acts done in developing countries seem to be 'allowed' to a certain extent to utilize the environment for economic development and poverty eradication. Thus, it is recognizable that this policy is concerned about development, but from the perspective of sustainable development [Government 5].

Thus, development activities within Malaysia have an impact on the environment. From the data obtained, the Malaysian government, especially the NRE had identified the key sectors contributing to GHG emissions (MNRE, 2011). In the INC inventory for 1994, the Energy sector contributed about 68 percent of the total emissions followed by the Waste sector, which accounted for 19 percent. In NC2, the Energy sector contributed 66 percent, LULUCF sector 13 percent, and the Waste sector 12 percent (Figure 5.2). Most Non-Annex 1 (NA1) countries reported that the Energy sector followed by the Agriculture sector, were the major contributors to greenhouse gas emissions in their Initial National Communications. Malaysia had a different ranking, as the Energy and Waste sectors were the highest contributors of the greenhouse gas emissions in the INC.

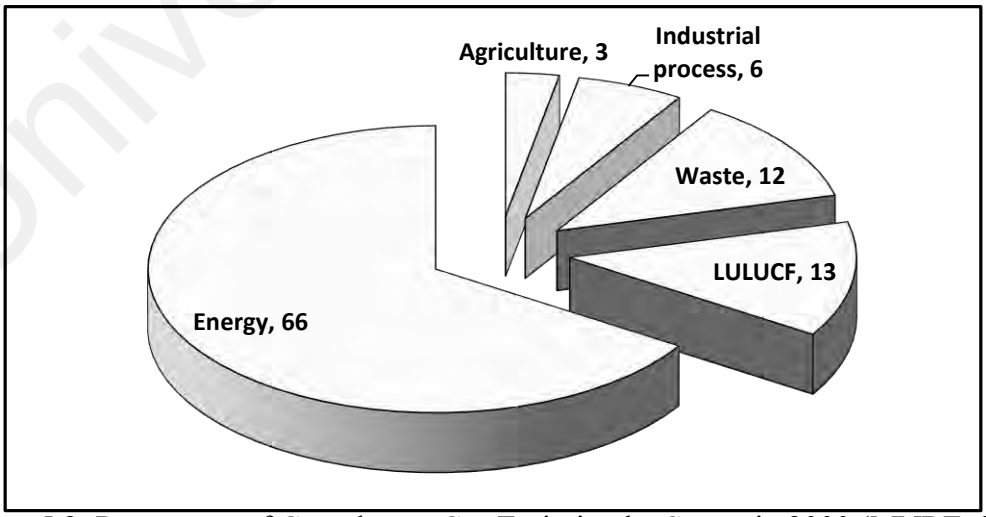

Figure 5.2: Percentage of Greenhouse Gas Emission by Sector in 2000 (MNRE, 2011)

A total of 167.44 Mt CO_2 was emitted in 2000. Emissions from energy industries was the highest at 58.48 Mt CO_2 (35%) followed by emissions from transport (21%) as shown in Figure 5.3. Emissions from energy industries are due to the fuel used by the power and auto producers (self-energy producers) for producing electricity, petroleum refining, and natural gas transformation. Manufacturing industries and construction was the third largest contributor to CO_2 emissions (16%). Forest and grassland conversion came in fourth at 14 percent.

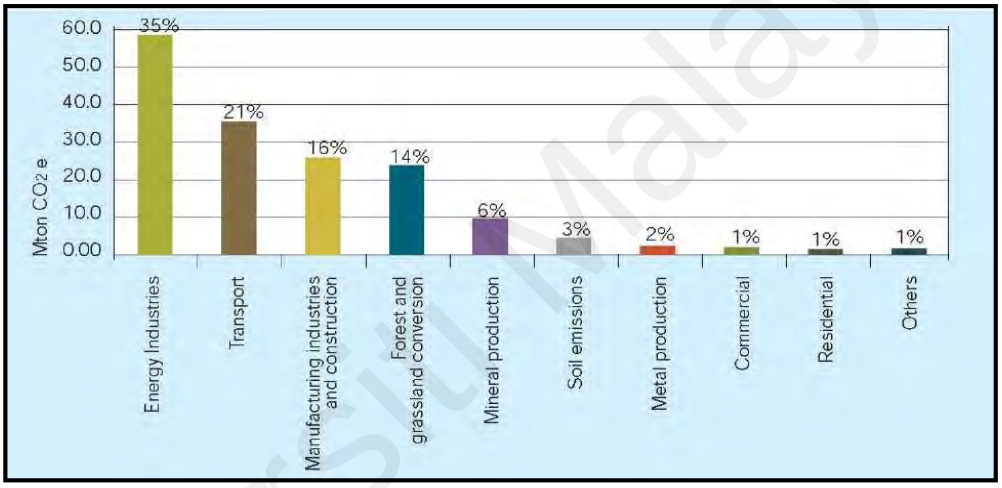

Figure 5.3: Major source of CO_2 Emission (MNRE, 2011)

A total of 52.41 Mt CO_2 eq was emitted. The highest emission was from landfills (solid waste), which accounted for about 47 percent and followed closely by fugitive emissions from oil and natural gas, amounting to 42 percent (Figure 5.4).

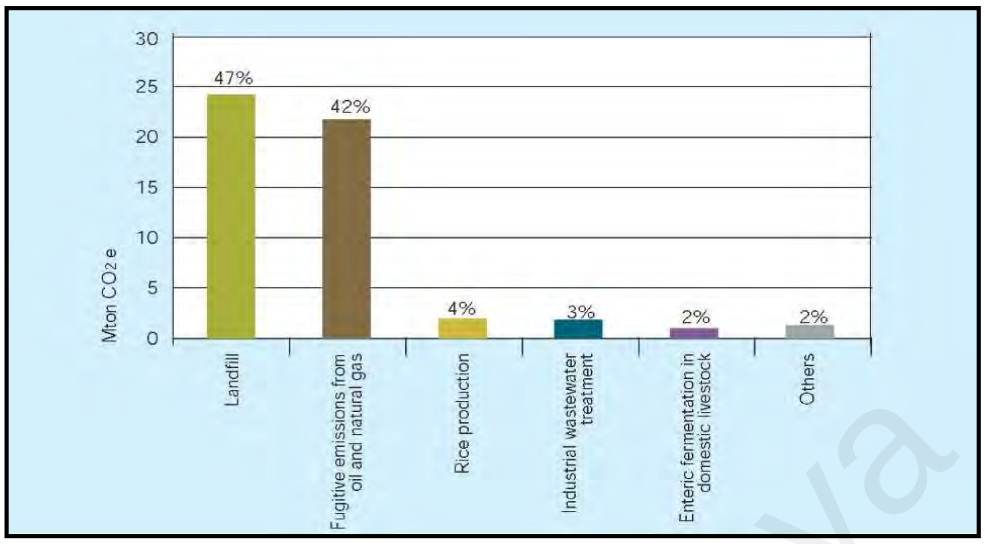

Figure 5.4: Major Source of CH_4 Emissions (MNRE, 2011)

For the year 2000, the highest emissions were from the energy industry, followed by transport and the manufacturing industries and construction respectively which ranked as key sources (Tables 5.4). Emission from the solid waste of landfills is ranked fourth. The agriculture sector is not a high ranking key source in Malaysia, simply because rice cultivation and animal husbandry activities are relatively small-scale.

Table 5.4: Comparison of key source analysis (with LULUCF) (MNRE, 2011)

Sector	Key category	GHG	Emissions (Gg CO_2 eq)	Level assessment	Cumulative total
Energy	Energy industries	CO_2	58,486	26.2	26.2
Energy	Transport	CO_2	35,587	16.0	42.2
Energy	Manufacturing industries and construction	CO_2	26,104	11.7	53.9
Waste	Landfills	CH_4	24,541	11.0	64.9
LULUCF	Forest and grassland conversion	CO_2	24,111	10.8	75.7
Energy	Fugitive emissions from oil and gas systems	CH_4	21,987	9.9	85.6
Industrial processes	Mineral products (cement production, lime production and limestone and dolomite use)	CO_2	9,776	4.4	90.0
LULUCF	Emissions and removals from soil	CO_2	4,638	2.1	92.1
Industrial processes	Metal production (iron and steel production)	CO_2	2,797	1.3	93.4
Energy	Commercial	CO_2	2,122	1.0	94.4
Agriculture	Rice production	CH_4	1,861	0.8	95.2

These statistics show that the industry will significantly benefit. The present situation is quite different than that of 10 years ago, and now everything has become related to carbon business. In terms of CDM, many stakeholders make a lot of money because of the need to develop projects get more funding. The government agencies will continue to find it difficult to deal with climate change because it is not in their mandate - they have to deal with all the problems and their emissions because it does not address the specific reasons such as the capability, knowledge, labour capacity, and the defragmentation problems of law and policy. Therefore, these are the big issues that must be dealt with in a more systematic manner [Government 9].

Green technology development should focus on the potential and networks between the business sector and the industry with grassroots efforts. In terms of corporate social responsibility, green technology networks aim to generate business opportunities for the people and to develop indigenous technology with potential within the scope of green technology. However, the issue of indigenous technology is that whether it has the potential or not is not of any concern to the government and industry [Government 9].

In Malaysia, the green technology plan is a type of capital-intensive intervention. When we talk about capital intensive intervention, of course the people with capital will be the beneficiaries of the project [Government 9]. Some projects may not benefit society at large. Some ministers quickly align themselves with the green agenda. Some would say “I will bring in new green technology” but with certain percentage. It is benefiting the elites. There is now a potential for localization of technology that is ideally benefiting the people. “The question is how to do it? You cannot do that if you have a dominant group. Generally

speaking, we have the potential but we must know the innovation process, at least at the bureaucracy" [Industry 4].[37]

5.3.2.3. The Relationship between Green Technology and National Climate Change Policy

The relationship between green technology and climate change can be traced back to 2007, when climate change became a major discussion after the conference in Bali in 2007[38]. At that time, Minister Datuk Seri Azmi Khalid felt the need for Malaysia to set up a committee under the Prime Minister or the Deputy Prime Minister. He realized that the Ministry of Natural Resources was unable to act alone in resolving the issue of climate change. Each ministry has its own portfolio. The solution to climate change can be implemented if the source can be identified. As stated by Government 5:

[37] Personal communication with Industry 4.

[38] The 2007 United Nations Climate Change Conference took place at the Bali International Conference Centre, in Bali, Indonesia. Delegates from over 180 nations, together with observers from intergovernmental and non-governmental organizations, met and negotiate a new pact to succeed the Kyoto Protocol, which expires in 2012.

Governments adopted the Bali Road Map, a set of decisions that represented the various tracks that were seen as key to reaching a global climate deal. The Bali Road Map includes the Bali Action Plan, which launched a "new, comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to and beyond 2012", with the aim of reaching an agreed outcome and adopting a decision at COP15 in Copenhagen. Governments divided the plan into five main categories: shared vision, mitigation, adaptation, technology and financing.

Other elements in the Bali Road Map included:

- A decision on deforestation and forest management;
- A decision on technology for developing countries;
- The establishment of the Adaptation Fund Board
- The review of the financial mechanism, going beyond the existing Global Environmental Facility.

Not everyone signed up to the pact. The United States, the world's biggest carbon emitter, opposed the Kyoto Protocol in 2001, saying it would be too expensive and should include targets for developing nations. Australia also strongly opposed ratification of Kyoto, arguing it would unfairly damage Australia's energy-export based economy and cost jobs (http://unfccc.int/meetings/bali_dec_2007/meeting/6319.php; Aldred, Jessica. Q&A: Bali Climate Change Conference. 3 Dec 2007. http://www.guardian.co.uk)

> We (MNRE) cannot do anything on energy. Energy issues belong to Ministry of Energy. LULUCF only has a small part within the MNRE. Then the issue of waste—waste belongs to the Ministry of Housing and Local Government (MHLG).

The formation of the committee is consisting of members from various ministries, among others, the Natural Resources and Environment; Works; Energy, Water and Communications; and the International Trade and Industry Ministry, has been seen as a step forward by the government in translating the policy into action. The establishment of the committee is more of a concerted effort to address environmental issues, as some ministries do not see climate change mitigation as their responsibility (MTC 2012).

Azmi Khalid saw the complexity of the pattern of administration of the ministries in the country, and realized that it would be difficult if mitigation strategies were implemented by MNRE itself. Further action suggested by him included the use of the platform where the higher authority - the Prime Minister or the Deputy Prime Minister presides. By using this platform, we will be able to mainstream every action for each ministry to address the issues of climate change, including adaptation and mitigation strategies.

At the same time, green technology has begun to grow in Malaysia. The Prime Minister of Malaysia is very interested in green technology. He has also realized the importance of green technologies and climate change. For MNRE to perform their tasks effectively, they need a platform. Thus, at the insistance of the Prime Minister, the Green Technology Council (GTC) was established.

At the same time, MNRE has created the Cabinet Committee on Climate Change. The committee, chaired by the then Prime Minister, Datuk Seri Abdullah Ahmad Badawi, will draw the parameters of policies; the direction Malaysia will take in its commitment to fight climate change and proposals to the industries. The National Physical Council, under the Ministry of Natural Resources and Environment, will implement the policies, which will be a binding on all states (MTC2012). Although there is a view that consolidation of green technologies and climate change should not be carried out, in the opinion of the Prime Minister after several discussions with his ministers, consolidation is still feasible.

The opinion which states that the climate change and green technology can be combined is supported by a report issued by the UNFCCC in respect of a long-term action plan to address the issue of climate change. The report states that there are four action plans which are – mitigation, adaptation, technology transfer and financial mechanisms. After making an assessment of the action plan, it was found that Malaysia as a developing country cannot afford to implement the mitigation strategies, but was able to implement adaptation strategies. From the aspect of the financial mechanism, it is quite complicated. This is because finances are divided into developed nations, and developing small island states. As for the technology transfer, the government realizes that KeTTHA may play an important role in transferring greener technology, and this could indirectly contribute to the action plan on the climate change in Malaysia.

Therefore, on top of the rationalization of the report issued by the UNFCCC, we are looking for synergy about how the two ministries namely, MNRE and KeTTHA can join forces to address the issue of climate change. However, in the beginning, this consolidation

proposal did not receive much of a response from KeTTHA, since both ministries are looking at an issue in terms of two different aspects – MNRE focuses on issues and problems, while KeTTHA focuses on solutions. At the insistence of the Prime Minister, he is convinced that this matter should be consolidated. Furthermore, Azmi Khalid has convinced the Prime Minister that the Cabinet Committee on Climate Change and the GTC should be combined, and when they are combined then it becomes a Green Technology and Climate Change Council (GTCCC). Among other factors that influence this consolidation was the application of the structure of the ministry of other countries such as Denmark, which is the Ministry of Energy and Climate Change [Government 5].

In terms of structure, the main policy makers are Prime Minister's Department (JPM). Thus, members of this committee will set the direction of policy related to green technology. The word green technology is actually disputed by a lot of people because it is quite confusing. Among the problems that arose are instrumental perceptions of green technology. From a general view, green technology is just another form of hardware, such as air-conditioning units, or building design [University 1]. In addition, when discussing the green movement, the most accurate term is sustainability, and many proposals and suggestions have been recommended so that the term is changed to sustainability. Therefore, the impact of the term was brought up to the level of implementation. The image of technology, from the point of view of the people, is the product or equipment or the usage of technology. So, people are less aware of capacity building or the mechanisms behind green technology [University 4].

5.3.2.4. Experts and the Politics Of Knowledge

The issue of climate change is not a purely scientific issue, as discussed in Chapter 3. A climate change issue causes much uncertainty among scientists about the truth of climate change.

> Climate change policies are implemented at the national level. Thus, once the policy is enacted, nothing more can be done. If anyone wants to object, it must be done before the policy was implemented or enacted. In this context, the formulation of policies to see who the stakeholders that are involved in the drafting of this policy; selection policy committee; and experts involved. [University 1].

It has been perceived that some of the people involved know nothing about climate change, and yet when these particular people are appointed to a committee, they are seen to be an expert on climate change, because the ministry requires this particular person to be involved in the policy formulation process. The appointment of certain members of the committee is not based on the background of the individual expertise, but rather persons who have no difficulty dealing with the government, and who do not object to, but will comply with all the needs and requirements of the government.

As for what happens to the stakeholders involved in the policy making process, their involvement is only to complete this requirement in a meeting. In a meeting involving the government, the moment you open your mouth or disagree, you will be left out [University 1]. This scenario also happened to University 2, as he himself was removed from the list of stakeholders involved in the meeting of climate change policy formulation. Such a scenario is not surprising, because these situations are dominated by certain parties in agreement with the government, and they also have their own goals.

Standing on a neutral ground, not all those involved are individuals who have no knowledge of climate change; there may be some good experts, but unfortunately they are also not sure of the exact objective of climate change policy. However, getting the opportunity to work on this project for the country will open the door for some to develop their career. And, the people who claim to specialize in this area will benefit in terms of research grants, consultations, and even more projects [Government 9]. To acquire knowledge on climate change policy, Malaysia has sent experts to attend international conferences related to climate change. At the conferences, they gather relevant information. From this information, they develop ideas on how to shape climate change policy for Malaysia. However, sometimes an idea or suggestion that they get from the conference is not suitable to the needs of Malaysia. For University 1, that is one of the factors: suitability to the needs of the country, which should be noted by policy makers before formulating certain policies [University 1].

5.3.2.5. Discussion: Who Gain And Who Loses? And By Which Mechanism of Power?

The previous discussion in Chapter 2 regarding power has introduced a variety of contexts, dynamics, and mechanisms by which power is exercised, either covertly or overtly. For example, power may be exercised to create or strengthen existing social and political values; and institutional practices that limit the deliberative processes and decision making. In addition, it can also be done through relationships and practices that shape political consciousness. As a concept, power is often difficult to understand, and cannot be easily observed.

From the interview that was conducted for 'where are we going', it may be concluded that economic development is the main part of the agenda of Malaysia. Related to this, although the National Climate Change Policy was claimed to be a comprehensive policy, which covers all aspects or areas; this policy is more prone to the development of technologies that can reduce the negative effects on the environment. Thus, the direction of National Climate Change Policy focused on the development of green technology, which would then become, as discussed in Chapter 2, instruments of power.

Results from the interviews that were conducted showed that power is a wide range of special interest, to a large extent, influences the direction of National Climate Change Policy, although it is not explicitly stated. The special interests most often mentioned are those related to economic development, as well as the development and application of green technology in the industrial sector.

One of the most distinctive characteristics of political power is portrayed through tactics or instruments that influence and/or resist resolution of climate change problems. Furthermore, the perceived and/or real economic influences of a local industry can, and often does, result in non-decisions that favour and protect special interests. In general, economic development is considered by the interviewees to be a significant special interest.

The apparent beneficiaries from this policy are the industry. They get incentives from the Green Technology Corporation. Similarly, there is the green technology initiative, which is an environment-friendly instrument to be used as the core to achieve the reduction of carbon emissions. In this mechanism, developing countries like Malaysia will be the

recipient of environmentally friendly technology which is fully funded by developed countries to reduce the impact of pollution at global and national levels. Technology costs would be funded through the CDM, which acts as an easy means of carbon trading in developing countries. Meanwhile, Joint Implementation has been instrumental in allowing the donor to invest a sum of money to provide environmentally friendly technologies for pollution reduction efforts in developing countries. Donors will earn credit if carbon reduction targets are met (Debat Alam Sekitar, 2009). Developing countries can take advantage of advanced technologies to control environmental pollution. Thus, through this policy, Malaysia as a developing country can continue to control GHG emissions.

Not only that, if the policy is viewed in general terms, it has several advantages for Malaysia. Under the Kyoto Protocol, there are two mechanisms that had been established, namely financial incentives and green technology initiatives. Financial incentive mechanism is carbon trading involving developed countries listed in Annex 1 countries. If a country cannot achieve the targets that have been agreed upon, then the country can buy, as a penalty, the reduction of the other Annex 1 countries that are also listed in the Kyoto Protocol. However, developing countries, including Malaysia, are excluded because they are considered not to be the cause of the increase in GHG. However, Malaysia is still bounded by a commitment towards reducing greenhouse gases. With climate change policy, Malaysia can get ready for the challenges that are targeted.

Some perceive that the need for agenda setting is largely driven by business and economic interests. Decisions and policies that reduce business confidence and/or are

believed to impede investment tend to lend themselves to overt and covert conflict between competing interests.

Therefore, within the context of the climate change policy, the greatest gain has been seen by industry. Furthermore, the industry has received several incentives from the Green Technology Corporation. The condition was caused by a merger between climate change and green technology under GTCCC.

Furthermore, Government 5 believes that mastery of technology is a key solution to overcome the problem of climate change adaptation and mitigation strategies. As stated in the interview, "We need to master the technology. For mitigation, we need to use strategy, and to implement adaptation strategies also require the use of technology". This is also a result of understanding and trust of policy-makers: technology is a key solution to climate change. No doubt, technology can help in ameliorating the problem of climate change, but the technology has to be seen in a wider context. When the technology itself is seen from a broader perspective, technology is much broader than what is understood by policy makers. Technology is not just as a technology, but also a techne, per the social order in the management of technology (McGinn, 1991).

Government 5 used the model of 'mitigation abatement cost' to support his argument that technology is a key solution to climate change. A situation in which priority is given to the green technology is clearly apparent, due to the consolidation of climate change and green technology under one council – the GTCCC. Although at the surface it is seen to consolidate the commitment of each government agency in climate change, but

what happens behind the consolidation is – it is more focused on the government's agenda of the development of green technology.

The rationality of climate change and the implementation of green technology for the industry have been supported by the statistics shown in the Second National Communication. Empirically speaking, statistical data may or may not reveal the reality behind the numbers. For example, the energy sector produced 66% of GHG emissions in the year 2000. Rather, the interpretations of the survey results are important. The significant aspect in relation to the fate of the National Climate Change Policy is not whether the one or the other interpretation is correct or rational or true; but which party can put the greatest power behind its interpretation. The interpretation, which has the stronger power base, becomes the National Climate Change Policy's truth, understood as the actually realized physical, economic, ecological, scientific, and last but not least, social reality. This is consistent with the work of Flyvbjerg, in which he stated that power defines rationality.

There are those who are not satisfied with the consolidation of the climate change committee with the green technology. Of course, the idea behind this merger is related to the power of economic development in Malaysia. This also coincides with the criteria described by Foucault power, where there is power there is resistance**.** It was, however, the specific relationships (or clashes) between certain types of conflicting powers, e.g. the professional and political powers that created the most conflict and problems. This can be seen when views and argumentations from academicians are not taken into account; and some of the industries have not adopted National Climate Change Policy in their industrial activities.

This decision, amongst others, led to the creation of GTCCC, which eventually came to be focused on the development of green technology rather than climate change issues. This created a frustration amongst the NGOs, who were committed to the issues of environment in Malaysia. It also seemed clear that the funds made available by the government may be allocated to green technology initiatives in the industrial sector. This is the power clash between the NGOs and the government. Unlike the values and power of 'communicative action' and 'good arguments' as described earlier on, the above actions serve as a good example of how 'power defines rationality' as described by Flyvbjerg in Chapter 2.

Therefore, the focus of the government has become more concerned about green technology, which is said to be able to address the issue of climate change, causing climate change policy to become obscured by green technology policy. Furthermore, the incentives provided by the government to the industry on the issue of climate change have resulted in an industry attitude that simply takes for granted the incentives provided by the government.

Apart from the advantages of the industry, these advantages can also be seen at the climate change policy development process itself. A person involved in the climate change policy development process may expand their career development. Results from the interviews of some universities and NGOs, policy development is led by someone who is not an expert on climate change, but his involvement in this process has allowed the person to forge a career in climate change issues.

Experience in National Policy on Climate Change in Malaysia clearly shows that there is a perception that it is power-based, whoever is at the top, and also in the hands of scientists. Although much has been done to create and develop ways for democratic deliberation and communication, the case study that were set out in this chapter clearly shows that technocratic power remains strong in the climate change policy making process, as discussed in Chapter 2. These powers, and the use or misuse of power (over other weaker powers) is not something that can be seen as clear and unambiguous in the policy process. It can hide behind the knowledge or background of an individual who is labelled as someone who is experienced and scientifically knowledgeable. Circumstances in which power-control and domination are centralized at the top will create frustration and friction among others who are willing to give their views and arguments. This can be seen in this study, in which a number of academics and the representatives of industries do not quite agree with the formulation of climate change policy.

Power was also evidenced by several interviewees, as they described and commented on the organizational structure of climate change policy process.

Throughout the process, numerous examples were presented of the wide range of power that constitute the power web; such as the community or social (NGOs) power exhibited by some community forums; social group power presented by the various planning sections and factions within the planning sections; professional powers exercised by the professional planners and other related professions; technocratic power emerging in the democratic processes and management styles; different types of (good and bad) political power; and the power of instruments.

One interviewee pointed out, “If one of you don’t agree, they can stop you from the logical direction to go.” Furthermore, his comments have also illustrated how power demonstrated by some policy members who have exhibited political position that limit discussion and deliberation at the meetings. According to the same interviewee, “A whole lot of commentary from anybody is not going to change their thinking” because of what may appear to be pre-determined decisions and stances that are agreed upon between some members in advance of the meeting. These pre-determined agreements essentially provide a platform and set the agenda for what will or will not be discussed at the meeting, and what strategies and positions will be argued. While this shows the exercise of power, it also acts as a complication for a deliberative democracy that is constrained, with participants not willing to change their minds.

In a case study of National Policy on Climate Change in Malaysia, it appears that the power should not be seen only from the negative side, and in fact it should also be seen from the positive side. Power structures and power relations through the power of the web and the policy process have both a positive and negative impact on the transformation of policy formulation. It is positive, in the sense that, the process of policy formulation largely inspired, motivated, facilitated and directed by a different kind of power, and the combination of these powers. Among them are professional powers; the power of knowledge; the power and force of the better argument; the power of effective communicative action; the power of communities and pressure groups; and finally the good power of politicians who have used their powers to change the system for the better.

5.3.3. Is This Desirable?

This question concerns value-judgement, since it addresses preferences, social values, and ethics. It cannot be answered by science, but only by our democracy. This section tends to answer questions, such as; where do we want to go, and what are the things we want to avoid? What are good goals in National Climate Change Policy?

5.3.3.1. National Climate Change Policy Framework

Looking at the climate change policy framework in Malaysia, there are two major components, namely, adaptation and mitigation, and under each component, has a sub-component. Not everyone agrees with this policy framework. Government 9 has strongly criticized this policy framework (Figure 5.5). It is a retrofitting of international thought, which does not explain our original thoughts about climate change related to the situation in Malaysia. This framework does not explain about the major issues facing the country of Malaysia, including the key component of forest ecosystems – making methods for developing climate resilience uniquely a Malaysian problem. In addition, as the policy is in the development stage, the concept of low-carbon economy is still debated at the international level.

What has happened is that the low-carbon economy has been positioned as a component of climate change policy. It does not explain what is meant by low-carbon economy, and Malaysia's position on low carbon economy. It may even be said that KeTTHA for example, is now thinking of a legal framework for green growth; however, growth is not placed in the framework. “This is where, when you don’t have people who

know the subject matter; they just copy from the international framing just to be seen as someone who is solidarity with international thinking", Government 9 explained.

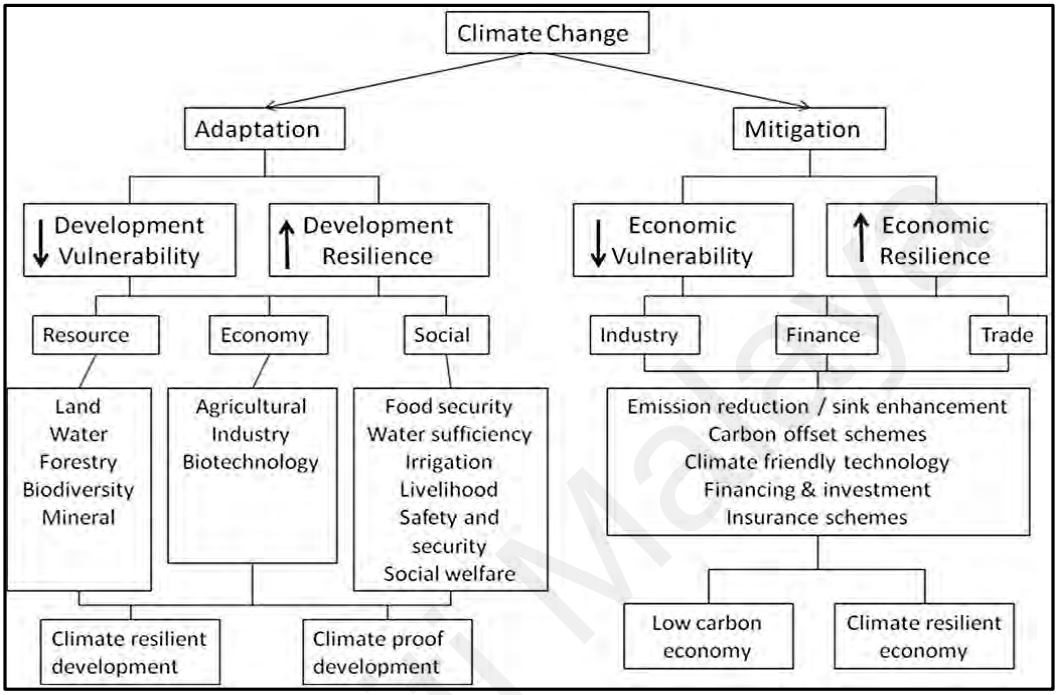

Figure 5.5: Framework of national policy on climate change in Malaysia (Lestari, UKM 2008)

It is simply a policy statement only. Government 9 pointed out that the whole framing of climate change policy is wrong. This policy does not state the method of calibration, and what tools should be used. It also provides some direction for action to agencies or stakeholders. The most significant weakness in the climate change policy framework may be seen from the aspect of expertise. The formulation of this framework can be done in many ways, but the criteria that should be emphasized is that it must be carried out by a group of experts, or at least have someone who understands climate change - the scientific aspects of climate change that are part of the policy. This requires an expert in climate change policy, or the person can obtain the scientific understanding of climate change from climate scientists. But in the case of climate change policy, it is led by

someone who is actually not an expert or does not have enough experience in both public policy and climate science. “I must say that they – the ministries got the wrong person for the job. But, what has happen is that, it is a convenient way to work with someone who you can work with”. Government 9 added, “[...] and to aggravate this condition further, this wrong person is also commissioned to do another policy study on adaptation”.

Policy integration is far from reality because the aspect of calibration between the policy objectives and the action plans is missing in the climate change policy. How do you allow the policy integration to happen if it is not clear enough? “The use of technologies from international documents is a reflection of a lack of understanding” [Government 9]. Government 9 argued that climate change policy should take into consideration of the scale of jurisdiction, for example city, state, regional, federal, and global climate governance. But in Malaysia, we only refer to climate policy which is supposed to be the national direction. “I don’t think we have that clarity for it to become a foundational basis for us to think about climate policy” [Government 9].

Climate change can become a very convenient thing for the politician to exploit as well; for example, the politicians made a statement about a flood and blame it on climate change. It can become an instrument of political expediency that ‘it is not our problem already’. Accordingly, this is the danger of the climate change issue in a country like Malaysia where evidence is secondary.

> If you blame everything on climate change, you tend to forget everything about more important issues which is very on the ground, very critical and they have real day-to-day impact on livelihood of people on the ground [Government 9].

The issue of national resources and the environment cannot be separated from politics. However, a major obstacle that needs to be faced is changing the mind-set of politicians. If the politicians are the people who are environmentally knowledgeable they will make decisions which will be supportive of a sustainable development. The political system in this country has to accept the reality that the politician themselves do not really understand environmental issues [NGO 6].

Government 9 has argued that climate change can be placed under the issue of sustainable development, as sustainable development includes biodiversity issues and the various sectors that play a role. But, what happens is that the issue of climate change has too much discussion over sustainable development. As stated by Government 9, "The framing is more favourable towards climate change; rather than climate change for sustainable development". If we could modify that framing, and state that framing is difficult because climate change is championed by NRE. They cannot talk about sustainable development. It has to be climate change for climate change, because sustainable development is supposed to be the forte of the EPU. EPU is doing the economics of climate change, so why is NRE doing climate change? This is the kind of entrenchment of understanding of the policy issue which is quite detrimental for the country. "I think this is what our climate change policy is not able to do, not only because of expertise and insufficient depth on the matter, but it is also on the structural issues as well" [Government 9].

5.3.3.2. Level of Participation among Stakeholders

Although there has been involvement from stakeholders such as the industry and institutions such as LESTARI, engagement parties are typically just mere participants, because the initiative came from the government or Ministries. They encourage participation from the various stakeholders. With this, there are some individuals who represent their respective institutions to come up with research report or papers. The industry was not really involved, only those who are close to the government that are usually invited in the policy formulation process. This is to prevent the industry from making a statement that they were not invited in the policy making, or in other words to fill a quorum only. So, what is happening here is that with the involvement of various groups from different institutions or organizations, the government or the ministry are safe in the policy making process [University 1].

There are a number of stakeholders who have stated that they did not agree with the formation of climate change policies. However, the fact that these views reject the formation of this policy has been refuted by Government 5. To defend the existence of climate change policy, he did not agree with the use of the word reject, because reject is a strong word. What they are trying to convey here is that all stakeholders need to be convinced of why Malaysia needs a climate change policy. The rationale behind the argument from the stakeholders that do not agree is that we already have two very relevant policies to address climate change issues: 1) the Environmental Policy, and 2) the principle of sustainable development[39]. In the view of Government 5, their argument is simple, specifically:

[39] Malaysia does not have a policy on sustainable development. When adopting sustainability in all development plans, then it automatically becomes the principle of sustainable development.

1. Climate change is an environmental issue, it is only necessary for the Environmental Policy to strengthen and incorporate elements of climate change. From this aspect, climate change is just a small part of the environmental issues, the same level as the management of hazardous materials, or haze.
2. For the principles of sustainable development, climate change is part of development issues. They questioned whether or not we need another policy for climate change. On the basis of perception and personal observation by Government 5, those with this view, recognized that climate change is caused by the development. If there is no development, there is no problem with GHG, especially energy to fuel development. Energy is the engine of growth. Developing countries like Malaysia need to increase GDP energy sources, such as investments. Through scientific proof, many countries, economic development (GDP) and GHG emissions are hand-in-hand; increased economic development (GDP) will also cause an increase in GHG emissions. Subsequently, for those who think that Malaysia does not require a specific policy, we only need a policy that can tackle the issue of development and climate change together. This means that development should be continued by taking a sustainable development approach. For example, we cannot stop logging completely, but we have implemented replanting projects, as well as control of a specific area.

Climate change is an issue faced around the world. Therefore, Government 5 said that it is not wrong for Malaysia to jump on the issues of climate change bandwagon since the issue of climate change have the same goal even if it is placed under any policies, and in any form. “It is the same thing, the same objective, just in a different form. This means that the

dispute only in terms of what form appropriate to highlight climate change issues" [Government 5].

In order to prevent the occurrence of dispute from stakeholders when policies are issued, the climate change policy making process undergoes screening from the consultation appointed by the government. Therefore, everybody is more or less satisfied. Nevertheless, of course, not everyone will get what they want. However, there is a compromise. In the end, arguably, all parties can accept it as it is. So, when we take it to cabinet, reviews from all relevant ministries gave a positive feedback [Government 5].

Public awareness of the importance of their interest has been growing since independence. This can be seen with the involvement of the public in the process of policy formulation. While the government welcomes public participation in policy-making, there are major uncertainties, as the government still keeps a lot of things hidden or secret until it is already at a stage in which decision has been made and the public participation comes into play. "What we get is a higher involvement, but it seems as if the engagement is only after the decision has been made" [NGO 7].

Stakeholder involvement in this process is not enough, although there are some consultations. To be fair, the government has tried, but most of the time they will be developed first, and then towards the end they will invite the NGOs, stakeholders, private sectors, and university people [University 3]. The involvement of stakeholders should be established at the very beginning. It is on the agenda to create a climate change policy, and a workshop conducted by the government is only thought of as a process. Accordingly,

most of the time, the government talks about a completed draft of the policy, and the completed draft is delivered to the stakeholders. It would be more effective if it involved stakeholders from the early stages of negotiations. This will identify what is needed, and what each stakeholder wants through the policy. Before thinking about the new policy, government agencies must bring everyone in to give inputs. But, what happens now is that the involvement of stakeholders is in the final stages of negotiations, before which the draft policy has already been prepared [NGO 3].

There are also experts who have questioned the need for Malaysia's climate change policy. In addition, Malaysia has no stance on policy formation; it is due to high-ranking officials who want to create their own name. As stated by University 2:

> This process should begin with the question "do we need this policy?" Rather than "we must have this policy". We should not follow people; we need to have our own stand - "what are the problems we face?" Use whatever tools are at hand, and strengthening them. This is just for glamour – "I created this policy". This is a mentality problem of government agencies in Malaysia, especially a few high ranking officials.

This is coupled with the manner in which the government officials, especially the Administration and Diplomatic Officer (PTD), perform their duties. They will invite stakeholders to attend a workshop to discuss the needs of the so-called climate change policy. But what happens is that the stakeholders who disagree and reject the formation of climate change policies in the discussion will not be invited to attend the next workshop. And there are also experts who withdrew from participating in the meeting when their views are not accepted [University 1]. No doubt, there was the knowledge of experts in the

workshop, but what is desired by the government is that the parties will agree only with the government's view. Experts who do not agree will be placed to the side [University 2].

> There is the process of expert knowledge. However, expert knowledge that the government want - "yes man".

PTD officers that have long served as policy makers dare to voice their views and opinions either to agree or disagree while attending a meeting at the international level. This is because these officers have specialized knowledge and experience in issues related to climate change that can be used for a debate at the international level. Simply put, what is happening now is that the PTD still has a lack of experience and knowledge to be appointed for a meeting at the international level. Therefore, they have no capacity to argue [University 2]. This occurs as a result of incompetence by the officer who is in charge of the policy, either related to the environment in general or climate change in particular. What the government needs are officers, as described by Government 9, who have a sound technical background on the subject.

5.3.3.3. Priority in National Climate Change Policy

The climate change policy has no direction - what is the policy's priority? This is because the government itself has several policies that try to address the issue of climate change. These consist of Environmental Policy and Forestry Policy, coupled with Green Technology Policy. These conditions cause confusion among the public about which policy should actually be followed. This situation also occurs in the financial aspects of the government agencies. In addition, the climate change policy has no economic gain, unlike

the Green Technology Policy that has economic gains. Preference will normally be given to policies that provide economic gains [University 2].

> In fact, the policy is flexible and can be altered. But they want the 'title'. Such people do not think much. By right, the National Environmental Policy should be strengthened, because the policy was enacted first. DOE is the most confused because there are two policies which should be held. Because, to implement policies requires financial budget, technology budget, infrastructure budget, personnel budget, and equipment budget [University 2].

Each policy (Table 5.5), as mentioned earlier, cannot be placed in the same parallel. This will cause confusion to the officers in charge and the public. The public is not aware of the existence of a climate change policy. Each policy is made for the people, and if people are not aware and do not understand the policy, then that is the cause of failure of a policy. The confusion is created by the overlapping policies [University 2].

Taking the example of the three policies, the Environmental Policy, National Forestry Policy, and Climate Change Policy, University 2 stated that the theme of the three policies has overlapped. According to him, the Environmental Policy and the National Forest Policy are fundamental to climate change policy. Both of these policies have answered the question of climate change, and many of the problems or issues of climate change can be solved. While there are some themes that are added in the Climate Change Policy, it is only as an add-on to the existing policy. But soon, no one will follow climate change policy [University 2]

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Table 5.5: Some selected national policies that are climate-related and already in place in the process of achieving sustainable development (Sham Sani 2009; KeTTHA 2012; Solar 2011; MyWCP 2011)

Content	Policies
National Policies	Malaysia Third Outline Perspective Plan (2001-2010) Ninth Malaysia Plan (2006-2010) National Policy on the Environment (2001) National Physical Plan (2005) National Urbanization Policy (2006) Tenth Malaysia Plan (2011-2015)
Sectoral Policies	National Environmental Policy • To promote continuous, social and cultural progress and enhancement of the quality of life of Malaysians through environmentally sound and sustainable development.
	The National Forestry Policy 1978 • To ensure the sound climatic and physical condition of the country; the safeguarding of water supplies and soil fertility; and minimization of damage by agricultural land.
	The Biodiversity Policy • Conserve Malaysia's biological diversity and to ensure that its components are utilized in a sustainable manner for the continued progress and socio-economic development of the nation
	The National Energy Policy • One of the major objectives of this Policy is to minimise the negative impacts of energy production, transportation, conservation, utilization and consumption on the environment.
	The National Transport Policy (Land) • Three major objectives: (1) To enhance public transportation infrastructure and to encourage use of public transport; (2) To encourage development and construction of public transportation facilities; (3) To encourage the use of natural gas in motor vehicles.
	Third National Agricultural Policy (1998-2010) • Sustainable management and utilization of resources will be the guiding principle in pursuing agricultural and forestry development. Rules, regulations and incentives will be strengthened to encourage "environment-friendly" agricultural and forestry practices and lo minimize the negative impacts of these activities on the environment.
	National Green Technology Policy 2009[40] • Five major objectives: 1) to minimize growth of energy consumption while enhancing economic development; 2) to facilitate the growth of GT industry & enhance its contribution to national economy; 3) to increase national capability and capacity for innovation in GT development & enhance Malaysia's competitiveness in global arena; 4) to ensure sustainable development & conserve environment for future generations; and 5) to enhance public education & awareness on GT and encourage its widespread use.

[40] Retrieved from an interview with University 2.

5.3.3.4. Roles of Officers and Ministries at the International Level

Climate change policy issues did not arise in the era of the former Prime Minister of Malaysia, Dr. Mahathir Mohamad. For him, the Environmental Policy was sufficient. This is because the issue or the problem of climate change is not an issue that exists alone; it arises from a variety of environmental issues. In the view of University 2, the problem of climate change can be controlled, if we controlled environmental problems in the first place. And politically, Abdullah Ahmad Badawi and Najib Razak just want to show to the global community and the United States and European trends that "I am the Prime Minister of Malaysia, and have a climate change policy" [University 2]. Some countries have their own climate change policy, such as Singapore and Thailand (Table 5.6) [University 2].

University 2 also does not deny that climate change will affect the whole world and everyone in it, although almost seven billion humans who live on the Earth today will not be affected in the same way. The effects of climate change are distributed unequally among different parts of the world. The ability to protect oneself is also distributed unequally.

However, we need to look at the context of Malaysia in GHG emissions compared to the other developing countries, as well as developed countries. Although some developing nations have fast growing industrial areas and are contributing more and more towards the climate problem, mainly China, India, South Africa, and Brazil, this should not disguise the fact that the current climate threat has been created historically by the developed world, especially North America, Western Europe, Japan and Australia. In fact 60 % of the emissions of the last 150 years originated from 23 countries in the 'developed' world (Oxfam, 2008).

Table 5.6: Other countries with their climate change policy (Pereira, 2009)

Country	Climate Change Policy	Proponents/Focal Point
Singapore	National Climate Change Strategy	National Climate Change Committee (Focal Point: Ministry of Environment and Water Resources)
Thailand	Thailand's Strategic Plan on Climate Change (2008 – 2012)	Ministry of Natural Resources and Environment
South Africa	A National Climate Change Response Strategy	National Committee for Climate Change (Focal Point: Department of Environmental Affairs and Tourism)
Sweden	The Swedish Climate Strategy	Ministry of the Environment
Poland	Poland's Climate Change Policy	Ministry of Environment
Finland	Energy and Climate Policy for the Near Future – National Strategy to Implement the Kyoto Protocol	Ministry of Employment and the Economy
	Finland's National Adaptation Strategy	Ministry of Agriculture and Forestry
	United Nations Framework Convention on Climate Change	Ministry of Environment

5.3.3.5. Bureaucracy /power:

Malaysia has a strong bureaucratic system. Each of the Director General, Chief Secretary, and Chief Secretary to the Government, all want to show their cleverness in climate change issues. Decisions made by them will ultimately confuse their own agencies and various related parties [University 2].

Political practices such as this have caused many views and opinions of research institutes to receive less attention. Much research has been conducted, but few have been taken into consideration. Institutions do not have the right to make decisions for institutional power; the executive power has been given to the politician. In Malaysia, politicians make judgments and decisions based on the duration of the period of five years and as such, they are aware that they will not hold a portfolio in the ministry for a long time. These are deemed by NGO 4 to be the abuse of power. On the other hand, the institution remains for a long time and the institution is responsible for the resources. He

added that research institutions can make the best decision for the issue of climate change, because the results are based on research and long-term monitoring [NGO 4].

The key question is how to tackle the problem. In this regard, strategies to overcome the problem of climate change should be seen within 50 to 60 years in the future. But, that sort of cycle is not how the government works. Government works on a 5 year cycle, dependent on the political master. Some of the policy may not be popular especially for development.

> It is not a long-term goal which is set. Like other countries, they set the long-term goals, so it doesn't matter which government at that time, the goal is still continued to be achieved. For us, we set short-term goals. Every time there is an election, there will be a new person who holds the portfolio with new resolutions or goals. Our goals are to tailored to our politics [NGO 7].

Subsequently, what happens is that all projects that may contribute to climate change will continue to be implemented, and then be protected. Protection measures will be costly because the issue is that there is no solution which is strong and cohesive. Long-term strategy can only be implemented by the university. It can monitor long term because the university has a longer cycle than political cycle. Therefore, universities have a role in this case due to the continuity of particular programs [University 3].

NGOs are monitoring the governance practices as a major factor in climate change issues, but NGOs do not have the power to make decisions. NGOs can only give out advice, but the whole government is paranoid of NGOs. If NGOs pointed out some of the government's weaknesses, the government is not willing to accept. The government is not planning ahead. When the NGO asked the government to plan ahead, the opinions provided

by the NGOs were not taken seriously by the government. The government always think of NGOs as bad people who only see the negative aspects of the government [NGO 4].

Malaysia practices a federal system of government in which federal and state powers and functions are clearly defined by the Constitution. Constitutional problems can be seen by taking the example of conflict between the federal government and the state government on environmental conservation. It was the federal government which enacted the Environmental Quality Act in 1974, and the Environment Quality (Amendment) Act 1985. However, the management of the basic resources (land and water) still remains within the power of the states. A successful implementation would be possible if federal-state co-operation can be achieved, but sometimes it is difficult to achieve, especially when there is a potential conflict of interests between the two parties (Sham Sani, 1993).

The constitution states that the power over land matters rests with the state government. And the state government is the executive council (chief minister), and this is how it is defined. In the executive council meeting, head of department act as observers; they have no voice in the executive council meeting. Furthermore, even though an expert opinion has been given (research, data, etc., the decision still depends on the politician. Institutions are just as a puppet in the administrative system [NGO 4].

There are 2 problems: 1) the ministries are not working together; and agencies which are not working together – crosses all the ministries; 2) conflict among the federal, the state, and local government that do not work together as a unit. On the ministerial side, for instance, transport contributes 30% of emission, and yet before we bring the transport

ministry to the climate change meeting, they said “We have nothing to do with climate change”. It took them 10 years to bring them to the meeting, as they stated “I am the Ministry of Transport and my job is to provide good public transportation, and I don’t care about anything else.” Then, Malaysia has the Ministry of Plantation, Industries and Commodities, and they said “My job is just to increase land to grow palm oil and I don’t care about anything else.” Then, we have the Ministry of the Environment, “Oh...we need biodiversity”, and then the Ministry of International Trade and Industry (MITI) comes in and “We need to bring foreign investments into the country, so we should support SCORE in Sarawak” [NGO 3].

> It is the nature of the constitution, the way we are federated and this is the way the ministries have been set up. And this is a problem everywhere in the world and it is just not in Malaysia. But in other countries they have become better working; across the different ministries. It is a legacy problem. What we are saying is to improve the system [NGO 3].

Therefore, all these are examples showing that the ministries or agencies are working on their own. NGO 3 has also stated that this situation will not work. What is a priority is the development based on sustainable development. We want development which continues economic growth while protecting the environment and providing the equity to the people so that everyone get the benefits from the development. The way the government ministries are structured, it does not help to protect the environment and does not contribute to sustainable development [NGO 3].

5.3.3.6. Research Data

The IPCC has also been criticized[41] for a wrong prediction of climate change. There are several studies that show that the Earth will experience the phenomenon of high temperature and low temperature. Over the past 20 years, there had been no major flooding or landslides caused by climate change. A debate also took place in the scientific study of climate change and has been done in Malaysia. Scientific evidence that supports this data is not strong. Although there were scientific studies, they are in bits and pieces, and it is not an ongoing process. For data collection of a scientific study of climate change, research should be conducted for a period of ten years. In addition, the phenomena of natural disasters in Malaysia were not caused by climate change. The example that was given to support this argument is that flash floods and floods are caused by illegal logging. University 2 also criticized the study made by LESTARI about rising sea waters in Klang which attempted to prove that it is caused by climate change. In reality, it has been caused by a natural phenomenon. Another example is the result of human actions such as soil deposition, which took place in Dengkil and was caused by mining. This showed that there is no comprehensive study (Appendix B) that proves the occurrence of climate change in Malaysia [University 2].

Factor that undermines the scientific basis can be seen from the aspect of the ministry. At first, climate change was placed under the Meteorological Department under MOSTE. When MOSTE separated into MOSTI and NRE, climate change was placed under the NRE. In such case, what happens is that the scientific input is only through inter-Ministry - meaning, scientific input on climate change will be made by the Meteorological

[41] Several critics of the IPCC can be read on the "IPCC flooded by criticism" http://www.nature.com; "IPCC controversy" http://www.colby.edu

Department, and then will be reported to the NRE and NRE to take further action. With a view of the structural separation of this ministry, it undermines the scientific input that was made into a National Policy on Climate Change in Malaysia. This is because between departments, or between ministries, they do not like to criticize each other. "Say for example, the NRE makes a policy, but has no solid scientific basis, the Meteorological Department will not criticize the policy or NRE, because they mutually keep their own portfolio" [University 3]. So, in terms of the accuracy of the findings made, it can be said that they were not properly investigated and criticized. Due to lack of expertise, they are provided to the technical committee. A technical committee established by the NRE is made up of representatives from the Meteorological Department.

This is a case of information uncertainty. For example, in the case of forest protection graft, none of the senior leadership wants to champion it, because they feel uncomfortable to talk about federal-state politics. So, there is self-censorship happening in academia. Research should show things that are really happening, and should bring the case more effectively and convincingly. "We should apply a call, spade to spade scenario" added University 7. We cannot say that this could make some people uncomfortable – that is self-censorship. This will aggravate the problem of information uncertainty. Per the precautionary principle, in the case of information uncertainty, we should be careful, but in Malaysia information uncertainty will be criticized [University 7].[42]

[42] Personal communication with University 7.

5.3.3.7. Implementation and Enforcement

NGO 2 said that we have a problem in determining the direction of climate change policy. We have a climate change policy heavily skewed towards green technology, and the policy is not comprehensive. He has also argued that there are many big gaps in climate change policy, and the policy does not have the performance or strategies and action plans. Then, the policy is a document that does not have any meaning. It is good for waving the international community - as we have a policy. A good policy is a policy that has a good framework. But this is meaningless unless it has description of clear strategies, have a clear role for each actor, and a monitoring mechanism to ensure the strategy is being implemented. For example, in the 10th Malaysia Plan, it does not flag anything on climate change policy. A matter of concern in the Malaysia Plan is sustainable energy, but if examined carefully, the sustainable energy under KeTTHA is very general. In fact, the target has shrunk from the 9th Malaysia Plan.

Malaysia has a number of policies that touch on the environment. What has been disputed by University 1 is the problem that this country comes out with lots of policies, but the main question that should be noted by policy makers is the capability in implementing it, in terms of laws, cooperation of general public, private sector, and public sector (Table 5.7).

This statement has also been supported by Industry 3. According to him, their company is not fully supportive of this policy. This is because, to do so, it requires a range of different parties, and this policy seems to be not in the interest of their company. The Malaysian Government requires each company and the parties involved to implement

climate change policies, although originally, parties have adopted the National Environmental Policy and the Environmental Quality Act 1974. Similarly, the company, Airod Aerospace Sdn. Bhd. is eligible to obtain a license MRD, from the standards of the Department of Civil Aviation (DCA) Malaysia. For example, the networks that they are dealing with include the European Aviation Safety Agency (EASA) Europe, the Federal Aviation Administration (FAA) of the United States and other countries, though the renewal is every year and the cost is borne by the companies themselves.

Furthermore, this policy is difficult to implement due to lack of a monitoring mechanism that is efficient and effective. The government commands and obliges the parties involved, including Airod Aerospace Sdn Bhd, to implement climate change policies, but there is no follow-up action from the government. In addition, the Advance Consulting Engineering which is a consulting company for construction engineering and geological mapping, also holds the same view with the Airod Aerospace Limited. The question here is why the stakeholders have created another policy about substance, whereas the companies involved can continue to implement on existing policies, such as the National Environmental Policy and the Environmental Quality Act 1974. Therefore, these companies only support the policy on the basis of compliance with the standard conditions that recognizes the company (Alam, 2012).

Table 5.7: Selected regulations (as of October 2007) under the EQA 1974, which are relevant to the climate and climate change; contributing to reduction of greenhouse emissions (Sham Sani, 2009; Solar 2011)

Policies, Laws and Regulations
Environmental Quality (Clean Air) Regulations 1978
Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations 1985
Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987
Environmental Quality (Prohibition in the use of Chlorofluoro-carbons and Others Gases as Propellants and Blowing Agents) Order 1993
Environmental Quality (Control of Emission from Diesel Engines) Regulations 1996
Environmental Quality (Control of Emission from Petrol Engines) Regulations 1996
Environmental Quality (Refrigerant Management) Regulations 1999
Environmental Quality (Halon Management) Regulations 1999
Environmental Quality (Compounding of Offences) (Open Burning) Rules 2000
Environmental Quality (Delegation of Power) (Investigation of Open Burning) Order 2000
Environmental Quality (Delegation of Powers) (Halon Management) Order 2000
Environmental Quality (Delegation of Powers) (Perbadanan Putrajaya) Order 2002
Environmental Quality (Declared Activities) (Open Burning) Order 2002
Environmental Quality (Control of Emission for Motorcycles) Regulation 2003
Environmental Quality (Control of Petrol and Diesel Properties) Regulation 2007
Sabah
Environment Protection Enactment 2002
Forest Enactment 1968
Sarawak
Natural Resources and Environment Ordinance 1993
Forest Ordinance 1958

Government 2 stated that this policy outlines strategies. He himself admitted that the strategies outlined are sometimes not understood by the officer in charge. But, if one is looking to other countries for climate change policy, what are the main considerations they take into account, and the basic strategy for climate change policy? There is no doubt that Malaysia adopts components from the climate change policies of other countries, and implemented them in the context of Malaysia itself. This is because, in his view, the comparison between the National Climate Change Policy with the policy of other countries may assist in developing processes, for more effective planning. “When comparing Malaysia's climate change policies with policies of other countries, for example Singapore, surely there is something that can be adopted. So, if there is something that you can learn,

and you put it first. And then you discuss later in further length. In terms of strategy and action plan, we have some strategy or choice, but recourses and capacity factors should be considered first", stated Government 2. However, policy makers need to take into account the cost and benefit, which is applied in the selection of projects, strategy and implementation of a subject. We could only outline our policy and direction. The method of implementation is constrained by cost, technology, capacity, and capability [Government 2].

From the private sector perspective, they act according to what is required by the government when they want to set-up a certain industry. But then, do they really follow through? "The scenario in Malaysia is a quite peculiar – earlier on they participated, when they obtained the benefits, they become relaxed and go back to normal" [University 5]. Again, it is up to the enforcement officer to enforce the law. The private sectors need to be taught on how to comply with the government regulation. There is one other problem in the private sector, especially the industry as they are given leeway to pollute at a certain level. They need to get a license, and licenses are always given when they apply. The reason for the license is to help the industry, because certain industries do not have the money to purchase expensive equipment, but even after 10-20 years, the same things still happen. Where is the integrity of the enacted law in the context of implementation and enforcement? "I still do not believe the policy might work well, especially when we are dealing with the private sector" [University 1].

KeTTHA, through green technology, will promote cleaner production. And the industry will follow this policy instead of climate change, because to the industry, Green

Technology Policy is more relevant than climate change policy. This is because, when making cleaner production, it will directly answer the issue of climate change.

Such things have also happened at one of the local universities in the southern region of Malaysia. “I do not know which to follow. But, what we do today, we take a middle path. We are not saying what we do is based on government policy, but we do this on the basis of we need to take action, our own initiative” explained University 4. Policy must be very clear; there must be a clear directive, there must be a very clear content, and there must be a continuation of what action that needs to be taken. What we are trying to do right now is create our own policy based on a single objective - Malaysia reducing carbon emissions. We take only one objective, and adjust, except if there is a formal order, and then we will act in accordance with such procedures [University 4].

The biggest problem faced in Malaysia is the implementation of the law. The situation becomes worse when people question the environmental laws. The problem is, environmental officials do not have legal power to apprehend those who violate the law. Every law that relates to the environment is applicable at the federal level, but not the state level. We cannot do anything at state level. Power to apprehend the culprit is on the legislative side, not the environment officer. As a result of these conditions, people can see the flaws in the implementation of the law. We do not have laws of climate change policy. We are using only relevant laws. We do not have actual power [University 1].

5.3.3.8. Implementation and Awareness

Although the climate change policy touched on forestry, the policy has not been realized by Yayasan Sabah Group. “I heard something about it, but the policy did not spell out properly to us (Yayasan Sabah Group) as we are from the private sector,” explained Industry 1. Sabah Foundation's core business, under the Obligation of Yayasan Sabah Enactment, is education. However, Yayasan Sabah Group not only focuses on education, it also manages the forest. Yayasan Sabah Group has been involved with managing 1 million hectare of forest and parts of their activities have involved biodiversity conservation and rehabilitation of forests for carbon sequestration. To find out more information about the development of the climate change issue, Yayasan Sabah Group have been following the international discussion about carbon sequestration, the policy related to the Kyoto Protocol, the framework of climate change convention, biodiversity convention, and the Rio convention. So, for a long time since we started our work on carbon sequestration through reforestation, we are trying to meet people from the EPU, whether there is a national policy on carbon sequestration to forestry or not, but during Sulawesi’s time from 1992 until 2000, many people were still attending the party conference IPCC, “but when the policy came, I did not realize” [Industry 1]. We need the cooperation of the general public. But do they think of climate change – is it an issue to them? I don’t think the general public are worried about climate change [University 1].

5.3.3.9. Discussion: Is This Desirable?

This issue may be seen from different perspectives. From the perspective of government officials, of course, it is desirable because the ultimate goal of achieving a

developed nation status is still the driving force; the GDP serves as an indicator of economic development.

From a perspective that emphasizes on environmental protection, priority should be given to the environment, instead of specializing in the development of green technology. It is argued that the emphasis on green technology may cause confusion in the focus of the climate change policy itself. This causes duplication in the implementation of National Climate Change Policy and Green Technology Policy. In addition, the benefit from the implemented policy is gained by the industry. So here there is an imbalance between the environment and the importance of economic development as well.

From the perspective of the policy itself, the average respondents stated that Malaysia needs a climate change policy, but the plan of action and monitoring mechanisms should be given serious attention by the responsible party. In addition, climate change policy framework should emphasize the state and local requirements. This is because each country has its own scenario. This deficiency occurs as a result of incompetence from the experts who are appointed to be the leader in the formulation of the National Climate Change Policy. The selection of experts should also be seen in terms of their background expertise and experience in addressing issues related to climate change.

Therefore, this incompetency has to be borne by the public. To make this policy successful, the awareness campaigns and education in schools should implement environmental education. The ambiguity in this policy, particularly in the action plan,

results in mutual blaming by parties between each other. As stated by NGO 2, “It is like a chicken and egg”.

Climate change can become a very convenient thing for the politicians to exploit as well; for example, making a statement about flood and blaming it on climate change. It can become an instrument of political expediency that ‘it is not our problem already’. Accordingly, this is the danger of having the climate change issue in a country like Malaysia, where evidence is secondary.

Citing from a paper by Prof Dato Dr. Zaini Ujang entitled *Dasar Alam Sekitar - Tinjauan Kritis* (2008), environmental issues can be one of the major political issues that determine the future of a politician. Therefore, it appears that many advantages can be obtained if the thoughts of politicians and scientists are in line. The development of the awareness on climate change issues is very helpful to be given due attention, when it is understood not only by the educated and professionals, even politicians, media practitioners, students and the general public, and in addition it can no longer be monopolized by activists, researchers, professors, and experts on environmental issues.

This policy has been established in Malaysia to support the conservation of the environment while stimulating the national economy. Every company and institution in Malaysia should organize and manage the available resources in accordance with this policy, so that environmental conservation can be increased from time to time (MNRE, 2009).

However, from the point of view of the private sector, the effectiveness of the objectives in reducing the negative environmental impact on the economy is far from the target. This is because a lot of agencies must be consulted in creating and realizing the policy. At the same time, it is very difficult to coordinate between the agencies. This has created difficulties for companies to implement this policy. Because these things happen, then the policy is not running smoothly.

University 2 also has the same opinion. He argues that the National Climate Change Policy is not implemented because there are overlaps in the policy with National Environmental Policy. National Environmental Policy is a policy which looks at environmental issues, including solutions to environmental problems. For the drafters y, they see that this policy includes the solution to climate change. He said that climate change policy is formulated based on the political needs of the Western countries.

In addition, he added that there is no clear legislature to describe these policies. For example, if a comparison is made, the National Environmental Policy encompasses the Environmental Quality Act. Meanwhile, the National Legislature is responding to the National Forest Policy. According to his view, the National Climate Change Policy should not be done because of the technical problems in science; this policy can cause confusion to the scientists and authorities. In the context of Malaysia, the National Climate Change Policy effects cannot be seen clearly, because Malaysia is not experiencing significant climate change [University 2].

In addition, the existence of policies and acts introduced environmental strain on the industry to comply and follow these specific policies. Therefore, there are a handful of

private agencies that do not implement this policy. It has been a less effective policy since it was launched in 2009.

Moreover, since the policy was launched, not one specific body has been appointed by the government to conduct monitoring phases to ensure the private agencies comply with this policy. The number of private agencies is relatively large, causing the policy to become difficult to be implemented and agreed upon by all parties.

Before the implementation of the Climate Change Policy, Malaysia has developed its own environmental policy through the National Environmental Policy. Implementation of Environmental Policy emphasizes on economics, social and cultural factors in the context of preservation and conservation of the environment through sustainable development (MNRE, 2009). One strategy for implementing this policy is Malaysia's Green Strategy, covering education, natural resource management and environmental planning, development, pollution prevention and control, strengthening of the administrative system, careful approach to environmental issues at the national and international levels, and formulation and implementation of action plans.

Although the Malaysian National Environmental Policy was approved in 2002, an incentive to reduce GHG emission had long been established, for example with the introduction of unleaded petrol in July 1985, whereby the amount of lead in petrol was reduced from 0.84 g/L to 0.40 g/L. Through the National Green Strategies, grid connection systems connected to biomass-fired power stations have been built in Sabah to supply 14MW of electricity to the factories and the surrounding area (UNDP, 2007). This means

that Malaysia has long implemented strategies that helped to stem the negative impact of climate change using existing policies.

From the academicians' point of view, the direction of the National Climate Change Policy is not clear because, in their opinion, this policy is based on political reasoning. The implementation of this policy is faced with constraints in the context of national legislation of Malaysia. A good policy should have no more than 30% of the existing policy. This statement means that, the Climate Change Policy has more than 30% overlap with the existing policies. This causes the confusion in the implementation of the policy in terms of firmness and implementation problems; problems of authority and hierarchy of the Department of Environment; and problems in terms of personnel and management costs. In addition, the implementation of a policy requires legal mechanisms that are clear. For example, the National Forestry Act responded to the National Forest Policy (National Forestry Act, 1992), and the Environmental Quality Act 1974 answers to the National Environmental Policy (EQA, 1974). They also argued that the implementation of National Climate Change Policy does not have any legal mechanisms, which raises the question of its rationality and the effectiveness of this policy in the future.

Meanwhile, University 2 argues that the issue of climate change will require scientific understanding, such as greenhouse gas emissions that impacted not only the climate change on rainfall, but the destruction of water catchment areas and the impact of development in upland areas. There is no denying how much effort and initiative went into the formulation of climate change policy, which was launched in 2009 (Konsumerkini 2010).

However, nearly four years after its launch, the initiative of adaptation to climate change is still at its old notch - the mechanism, modus operandi, and commitment, and substantially similar to the implementation of policies that had long been enforced. According to him, the policy making process may be carried out in the state of consciousness that is not yet extensive, including the members of the parliament, as well as those who were involved in the formulation of this policy. Thus, the formulation and implementation of the actions contained in the climate change policy is sectoral in nature, taking particular expertise in the field, with just the interest of the technical side. This caused the role of this policy to seem similar to the existing policies (EPU, 2008).

Some of the action plans, for example, tree planting to enhance catchment areas that need to be implemented in climate change policy has long been established by the National Forestry through the National Forest Policy. There is no evidence of the effectiveness of National Climate Change Policy, since no data has been collected. Malaysia only implements this policy without knowing whether it works or not, and it turns out that we do not notice the changes derived from these policies to the community, making this policy seemed inappropriate to be established from the start.

It is less oriented to results, but on the domain of agencies and procedures; this is because of environmental aspects being disembodied in various agencies. In summary, in the context of Malaysia, the impact of this policy cannot be seen clearly, as Malaysia does not experience the problem of climate change directly. In conclusion, the National Climate Change Policy was approved by Tun Abdullah Ahmad Badawi just to fend off the west, and until now, its implementation remains unclear. On which side should take action, the

question is hard to answer because of the implementation of National Environmental Policy is preferred in advance by the NGOs and government departments. The industrial sector will prioritize Green Technology Policy as a measure to balance between production and environmental preservation.

5.3.4. What, If Anything, Can We Do About It?

This question may provide several solutions towards the problems highlighted from the value rational questions above. This question is not neutral. Stakeholders often agree on the goals but disagree on the means, and vice versa. Goals do not always justify the means, because our choice of instruments is rationalized with reference to social values and beliefs.

5.3.4.1. The Policy in General:

Current OPP goal is to achieve Vision 2020. To achieve these goals, each sector has its own strategy. However, it should be recognized that each of these strategies can be carried out directly by the sector, and also to be implemented along with other sectors. This is referred to as ‘cross-cutting’. In moving towards this goal, it not only involves the government, but all levels of society. As stated by Government 2, “Therefore, even if we have a climate change policy, we also need to look at the people at mass including the government; how we can change our unsustainable production and consumption, our lifestyle”. As stated by Government 1, "The issue is not about high-quality infrastructure, but our mentality." To support this statement, Government 2 stated that, since the independence in 1957, Malaysia has undergone many changes in the quality of infrastructure, but the thing that should be addressed is the mentality of Malaysians; either as before, or changed. In environmental conservation efforts to mitigate the effects of

climate change is not only affecting the command and control such as regulation or summons, but in fact it involves the awareness and cooperation of the people on the issue of climate change. As stated by Government 2, “We need volunteers; people need to understand the situation and people need to move together and identify ways on how they can contribute. These are the things – communication, education, and public awareness – which I think should be emphasized”.

For example, to reduce gas emissions from vehicles, the government can enforce the law to ban vehicles dramatically, but the question to think about is, are people ready? Do the government have to provide other modes of public transportation? That is why the government is still allowing people to use the vehicle, and in addition, the government provides public transportation such as ERL, LRT and MRT. When all infrastructures have been provided, then the government will do revaluation on the willingness of the people. In other words, the willingness of people needs to be taken into account in policy formulation [Government 2].

5.3.4.2. Awareness and Education

University 3 is of the opinion that, if policies related to climate change such as environmental policy and green technology policy is properly implemented, it will contribute to climate change; “It is not necessary that we have a so called climate change policy, but we can have various policies than contribute to climate change”, he added. He also believed that climate change policy is necessary in Malaysia, so as to integrate all policy actions in order to achieve a common goal, and the impact of climate change involves all parties. However, the main issue to think about is climate change resilience.

One way to build community resilience to climate change is to increase awareness and education. “We need to build communities that are sensitive to climate change since childhood,” he said. Unfortunately, education about climate change is not in the school curriculum. Religious education as well, he added, also does not touch on the issue of climate change. “There is no specific curriculum touching on climate change, and this is a serious problem” [University 3].

Enforcement officers in the policy are important. The law must be enforced [University 1]. Climate change should always be bottom-up. If it is top-down, and people do not accept, it will just be wasted. The people and the NGOs need to speak out about climate change, and become directly involved in an issue, such as by not buying a house on the beach. This will deter investors and developers from doing construction in the area, and will directly save the environment and ecosystems in the area. This is because the government is always full with investment interest, e.g. from the industry and so on, and these people have better access to the minister than the public. So, what we need is the public to balance this investment interest. This can happen if people and leaders have the political will, which is formed from awareness and education [University 3].

University 4 said that people are only going to move if there is a carrot and stick approach[43]. “The percentage of peoples’ movement on an initiative to save the earth is small. People will move beyond their comfort zone when there is initiative. For example, a zero tax for green cars,” said University 4. Therefore, a strategy that should be given focus

[43] Carrot and Stick Approach is an idiom that refers to a policy of offering a combination of rewards and punishment to induce behavior. It is named in reference to a cart driver dangling a carrot in front of a mule and holding a stick behind it. The mule would move towards the carrot because it wants the reward of food, while also moving away from the stick behind it, since it does not want the punishment of pain, thus drawing the cart.

is capacity building. In his opinion, the success of such a policy ultimately depends on the human factor, because it is the people who make the choice to use green technology or not. “Do I need technology? No. What I need is the people who choose green technology”, he added.

Therefore, the sustainable campus strategies employed by Universiti Tun Hossein Onn Malaysia (UTHM) are to shape individuals who can make the right decisions in the future. Therefore, in UTHM, the program emphasizes education about green technology, sustainable development, climate change and the environment.

For short-term targets, UTHM approach is done by educating the top management. At first, the strategy to develop the capacity is done in the lower levels, like a campaign, but the results are not encouraging. "We are educating the wrong people, we should educate the top management," added University 4. This is because the basis in Malaysia is top-down. People will see examples from their leaders. As long term target, UTHM also creates programs with the Ministry of Education on issues related to climate change. “We realize that we have no specific subject to embed sustainability because sustainability is not for the environment. It is on human, it is on economics [...] because, sustainability movement is trying to defy capitalism” [University 4].

Awareness and education must be highlighted in the early education stage. Put the environment in education policy. Educational policy in Malaysia constantly changes. Politicians emphasize on the competitiveness – how many A’s did you get? No

responsibility. But it can be developed if environmental awareness is put at an early education stage [NGO 4].

Environmental issues have never been made an issue in the election. In the view of NGO 2, all political parties must put environmental issues in each of their manifesto. “In fact all these years, when I was the president of EPSM in the 70’s and 80’s, in every general election, I used to issue a statement that said political parties must put on their election manifesto on what they are going to do on the environment”. Only one party ever did that, the Socialist Democratic Party, which dissolved after some time. DAP did a little bit. However, BN never did anything, and BN should put in its manifesto about the strategies to handle the climate change issues. “It’s like chicken and the egg”, said NGO 2, as the government stated that the lack of awareness of people and not wanting to work together to tackle the climate change issues; and people are blaming the government for not acting strictly on the issue of climate change. The NGOs have struggled to educate the public. CETDEM tried to set an example e.g. energy efficient housing, but not many are following. Even simple things like shopping have environmental message. Cutting down on waste or cutting down energy production, can reduce the CO_2 emission. Somehow, the mass media in the country has not really gotten in to it, and mass media should disseminate enough information consistently, “Hey you do this, and ultimately it has effect on the climate change” [NGO 2].

Dependence on science and technology, particularly in the technology exclusively in addressing climate change issues, was not agreed with by University 6. He argued that, apart from technology, traditional knowledge and values can contribute in addressing

climate change. In-depth understanding and application of traditional knowledge and values does not only cover aspects of consciousness alone, but it covers our daily lifestyle.

5.3.4.3. Negotiation

The thing in Malaysia is that we do not have ombudsmen – an independent body when two parties cannot reach an agreement and the ombudsmen will review the situation and offer avenue for settlement. This is actually quite popular in Europe. In Malaysia it is not incorporated into our social life. The ombudsmen's duty is to do arbitration in which whatever outcome must be agreed by both parties [NGO 6].

5.3.4.4. Policy Review

There is not much that can be done after a policy is approved. Then, a step that can be implemented is the policy review [University 2]. Anyone who implements this policy must do a review. This includes the evaluation of the limitations and constraints in the implementation of climate change policy. Sound policies should be formulated within the context of implementation, and in the event of discrepancies, the review should be done. Responsible parties have to monitor all plans in the policy, so that the plan is implemented. From the physical aspect, the issue to be considered is whether climate change is really happening - is it climate change, or changes in weather? "Say that the climate is changing, but in what sense? We have to talk at the global or national level when we talk about climate. For example, we cannot say that Kuala Lumpur is experiencing climate change. No! It is the weather. Climate involves long period (20 years), but weather is short period" [University 1].

Malaysia's development policy is based on a 5-year plan, and in this period, a review is carried out from time to time, to assess the achievements. From this review, the allocation to each sector is determined according to the current needs. For example, it was found that the energy sector has a high impact on climate change; therefore, a provision has been made over in this sector. Policy making process includes targets, strategies, and action plans that need to be implemented. When it is implemented, a comparison will be made between the targets and performance. Efforts to achieve policy goals do not depend on the government alone, but require cooperation between all stakeholders. “If we reach the target, it is ok; but if it is lacking behind, they need to strengthen their effort…probably their strategies are not correct; they need to do adjustments on that. This entire thing we will do from time to time, and again the participation of the stakeholders are very important. It's not the government alone, but we do together” [Government 2].

Everyone has their own views. But in the end, the existence of this policy is not to be troublesome, but rather to help facilitate a clearer focus to that. There will be overlap. Instead of we argue on duplication, it is better we collaborate on what we can do together for the common goal - it's a non-issue [Government 2].

In 2013 or 2014, the NRE will perform a review to see if performance is achieved in a period of 7 years, on whether or not the content is still relevant to this policy. This is not only dependent on the local scene, but it covers the international scene, such as 'common but differentiated responsibility', if it is no longer applicable under international negotiations, then it will become obsolete [Government 5].

The biggest challenge for Malaysia is to reduce GHG emissions, and at the same time increase GDP growth. Government 5 acknowledged that, even with the climate change policy, it is still not strong enough because there is no legal aspect. In addition, the challenges faced in this policy are in terms of monitoring and supervision. He added that the policy talks about adaptation to climate change, and in his view, the importance of adaptation alone is not strong enough to cover the climate change issues faced in Malaysia. A mechanism has been introduced under the UNFCCC to assist developing countries. This mechanism is referred to as National Adaptation Programmes of Action[44] (NAPA). Therefore, by adopting this NAPA mechanism, Government 5 is trying to introduce a National Adaptation Plan in Malaysia - to see an adaptation of a comprehensive and holistic angle. It includes a body for monitoring, financial mechanisms, and risks. "Climate change is ... what we do to domestic action, depends on the regime of international climate change body. Right now we are still based on the UNFCCC or the Kyoto Protocol, in the event of changes to the international policies, Malaysia's orientation will also change" [Government 5].

[44] The purpose of NAPA is to serve as a simplified and direct channel of communication for information relating to the urgent and immediate adaptation needs of the least developed countries (LDCs). Activities proposed through NAPAs would be those whose further delay could cause increase vulnerability, or lead to increased costs at a later stage. The approach of preparing NAPA is to be country-driven, and complementary with existing plans or programs related to development and climate change. The NAPA document specifies a list of priority project activities, based on a set of criteria. The NAPA document will not be an end itself, but rather a means for the dissemination, by an LDC Party, of its proposed program of action to address its urgent needs for adaptation. The priority activities identified through the NAPA process will be made available to the entity that will operate the LDC fund, and also other sources of funding, for the provision of financial resources to implement these activities. The NAPA guidelines suggest to:

1. Synthesize information
2. Conduct a participatory assessment of vulnerability to current variability and extreme events and of areas where risks would increase because of climate change
3. Identify key adaptation measures
4. Identify and prioritize country-driven criteria for selecting priority activities
5. Select prioritized short list of activities and projects to address urgent and immediate adaptation needs. In addition, the proposal for priority activities should be developed through a consultative process.

Source: http://www.napanepal.gov

5.3.4.5. Climate Change as a Component in Sustainable Development Negotiation

Malaysia has many policies and so many councils, and many of them are overlapped with each other especially within the objectives. “We got so many, and some of them we don’t even need”, explained NGO 3. For that reason, EPSM in the Sustainable Living in Malaysia (SLiM) campaign, are trying to mainstream the implementation of sustainable development in Malaysia. EPSM feels that Malaysia should have only one council, which is National Council of Sustainable Development (NCSD). Within the NCSD, it will include the climate change, biodiversity, water, forestry, and any others that are related to environmental issues; but sustainable development should be the overarching goal. “When you have that as the overarching goal, then everything falls into place. So, if you want to implement something, does it meet the goal of sustainable development? Then you look at – does it reduce greenhouse gas emission, then does it protect biodiversity, does it conserve water? Instead of at present, when you have certain issues; you go to water council, or green tech council, etc.” [NGO 3].

Under the NCSD, it will consist of national cabinet committee on sustainable development, which brings all the ministers together under the Prime Minister. The difference between NCSD and the other councils is that, inside each ministry will have a sustainable development officer. And that sustainable development officer must go for council meeting or committee meeting; and all the sustainable development officers come together to see and act on sustainable development issues, without having to wait for the Prime Minister to call for the next meeting and things to happen [NGO 3]. It is very much like the implementation of Agenda 21, of which the government of Malaysia is a signatory.

This is the model for various countries such as Korea, the UK, and some of Scandinavian countries, including Denmark.

5.4: Conclusion

From the results of this study, it was found that the process of climate change policy in Malaysia has entered the phase of post-positivist, in which it has invited various key players to get involved. Key players have the opportunity to give their views and rationale arguments for policy formulation. This indicates that there is an element of phronesis in this process. However, it appears that, natural scientists are still a dominant force in the discussion. Not only that, the belief that science is the ultimate knowledge also became the centrepiece of this discussion. The emphasis on information instrumental rationality dominates the whole discussion.

There is a difference between natural science and social science, where the ultimate goal of natural science activities are the production of theory. Meanwhile, phronetic refers to an analytical research project, and is not bound by theoretical or methodological issues. Therefore, in the analysis, the obtained data will try to answer the four value-rational questions, which have been analysed in the Chapter 5. Briefly, Table 5 shows the findings from the phronetic approach (to reflect back on phronesis): “National Climate Change Policy serves as a framework to mobilize and provide guidance to government agencies, industry, and community stakeholders to meet the challenges of climate change in a comprehensive and integrated manner” (MNRE, 2009). With this policy, the national goal of ensuring sustainable development to climate change in the practice of sustainable development can be achieved.

Table 5.8: Findings on climate change policy

National Policy on Climate Change in Malaysia: Phronetic dimension			
Where are we going? • Economic development – developed nation by 2020 • Mainstream environmental issues in development among government agencies • International political arena • Integration between climate change and green technology	**Who gain and who loses?** • Career development for experts • Increased research funding • Tax incentives and industrial development • Green technology • Public • Environment **By which mechanism of power?** • Economic • Governance (GTCCC)	**Is this desirable?** **Yes** • Mainstreaming environmental concerns in policy making **Not** • Flawed policy framework • Priority to green technology • Climate change issues taken-for-granted • Unclear research area • Lack of awareness and implementation • Overlapping with other policies	**What, if anything, should we do about it?** • Policy review • Education and awareness • Values and local knowledge

The Table 5.8 summarizes the findings from this chapter. The main aim of the government to establish the National Climate Change Policy is to mainstream climate change through wise resource management, integrating responses to strengthen the resilience of the development of climate change on the current and projected, into national policies, plans and programs and strengthen the institutional and implementation capacity into seeking new opportunities to reduce the negative impact of climate change.

Adaptation and mitigation are two approaches that have been featured in national policies to address climate change. Adaptation includes an action plan to help communities and ecosystems to cope with climatic change and is expected to occur in the future. The various steps involved in reducing greenhouse gas emissions and ensuring that carbon accumulation allows mitigation to reduce the impacts of climate change. Despite adaptation

and mitigation strategy, this strategy is geared to economic development, for Malaysia to become a developed country by 2020.

As discussed in Chapter 3, climate change is an issue that has a lot of uncertainties, whereby many scientists still do not fully understand this issue, and this also includes the scientists in Malaysia. Therefore, the involvement of these scientists in the climate change policy enables them to establish their careers. In addition, the government will also provide a lot of research grants to scientists and research institutions engaged in research on climate change.

Due to climate change and green technology under the jurisdiction of GTCCC, green technology has become a more overarching issue than climate change. This has resulted in industry sectors gaining the advantage of tax incentives. And this scenario is not desirable, according to the response from the interview conducted.

National Climate Change Policy is a government initiative to support the issue of global climate change. Although the ministry has been vigorously developing the policy for quite some time, there are still a number of shortcomings in the process of implementation of this policy. Overlapping with other existing policies, for instance, Green Technology Policy and National Environmental Policy, makes it difficult for private sectors to complement this policy. They also feel that this policy does not give any importance to their side. This view is shared by academics, who also believe that this policy is less desirable because of the existence of other policies that deal with environmental issues.

Nevertheless, this policy has been seen to have good effects on the economy and for industrial sectors that focuses on the development of green technology; as well as on the international politics. There is truth that National Climate Change Policy formulation in Malaysia is influenced by factors of the international community, which put pressure on developing countries to implement climate change policies in their respective countries. A cause of the problem is the flawed policy framework, and thus Malaysia is unable to identify a real need to address climate change in Malaysia, causing the policy to seem ineffective in terms of implementation. However, this policy can only be said to be new, and the long term effects are not yet visible. Other than that, the government also has not been reviewing this policy.

CHAPTER 6

CONCLUSION

Natural and human systems have always developed strategies to cope with and make the best use of their surrounding climatic conditions. Anthropogenic GHG emissions are projected to cause an increase in average global temperature of between 2.6 and 5.9 ° C in the following century. The Fourth Assessment Report (IPCC, 2007d) showed that an increase in temperature leads to a serious risk to water supply, health, ecosystems, and food supplies. To reduce these risks, relevant policies should be implemented to reduce GHG emissions (mitigation) and prepare for climate change (adaptation). Nevertheless, climate change has significant implications for issues related to political, economic, socio-cultural, psychological, and ethical standards, all of which must be understood if policy makers and the wider community are to respond effectively regarding these issues.

Climate change policy formulation poses many challenges. These challenges stem from the uncertainty about climate change and its potential effects; infrastructure and economic development of the community; how people understand the interaction between climate changes and how they make sense of adaptation; technological resources and the existing economy, and how the climate change policy can be developed and implemented by both the public and private stakeholders.

Nowadays, people are anticipating the consequences of rapid climate change; adaptation, and mitigation challenges have attracted increasing attention not only among

researchers, but also among decision-makers and planners in the public and private spheres in both developed and developing countries.

In Malaysia, the policy and decision making for environmental management has a long history, beginning in the early 20th century, until the implementation of the National Climate Change Policy in 2009. Generally and historically, environmental management developed from technical approaches, such as laws and legislation, or forest reserves; into integrated and participatory management, where different aspects such as stakeholder participation are extensively taken into account. Therefore, planning for human intervention in the management of the environment is not just a technical issue, but has become more of societal issue as well.

Policy makers involved in this form of intervention should be made to balance multiple interests be they social, economic and cost benefits, physical effects and ecological effects. At the same time, they act in a complex web of interactions between policies, regulation and social and political processes. Management of climate change at the national level is embedded in the natural and social system that has the characteristics of complexity, uncertainty and disagreement among the stakeholders. Therefore, the issues of climate change are often examples of unstructured problems for which the knowledge base is uncertain and there is no consensus on the values and norms that exist.

Bent Flyvbjerg has challenged us to rethink the concept and the method of planning research in his entitled book - Making Social Science Matter, based on Aristotle's virtues, namely episteme, techne and phronesis.

Policy from the episteme perspective concerns with the production of universal knowledge. Discussion of positivist policy analysis shows that the policy is the process of scientific or empirical approach and technocratic, and that scientific evidence is true knowledge. The knowledge that can be proven (evidence based knowledge) is the scientific knowledge; and only an expert opinion that may be applicable. The main criteria in this approach are objectivism, fact-value distinction, emphasizing the empirical approach, which is something such that the data can be measured in a quantitative form. In other words, the mainstream policy analysis can be characterized as follows: 1) emphasis on quantitative analysis; 2) an underlying commitment in maintaining objectivity with separation of facts and values; and 3) the search of generalization of findings which validity and applicability is considered independent from specific social context.

However, the concept of positivist policy analysis has been criticized because it produces a universal policy and does not reflect reality in any particular context. Interpretation of the value and condition of a community cannot be measured in a purely scientific way. Positivism has been criticised because it is simply out of touch with societal needs because of the difference (gap) between theory and practice (reality).

The fundamental of post-positivist is that it accepts the part of knowledge that is broader than purely scientific knowledge. Post-positivists believe that reality is constructed by the social. Post-positivists reconstruct the scientific process by taking into account the coherence theory of reality – something is true when it fits into a well-integrated set of beliefs. Unlike knowledge is being understood as evidence, post-positivists understand knowledge to be consensually ‘accepted beliefs’.

Meanwhile, techne is aimed at better politics by means of instrumental rationality—a type of social engineering—where 'better' is defined in terms of the values and goals. This perspective is typically associated with the rational actor model that attempts to understand the constraints and demands faced by the policy-makers at all levels of decision-making; which have led to the establishment of specific solutions to achieve the desired goals.

A good policy analysis should include phronesis, which is a virtue that this instrumental rationality must be balanced with the value-rationality. As discussed in Chapter 2, phronesis is guidance for the action of making a decision whether it is good or bad. Phronesis is an ancient idea and a very old concept, it has had the time and space to be interpreted in different ways. While there is no modern term for phronesis, it can be interpreted as practical wisdom, virtue ethics, or situational ethics (these terms are used interchangeably). It is value-rational. Phronesis depends on action in relation to a general principle or precept, which is translated into practice by a process of deliberation. Phronesis introduces the element of judgment, thereby acknowledging that the social-scientific knowledge is not objective or neutral, and in fact they are normative and context dependent – have potential to play an active role in the on-going process of planning.

This study therefore aims to operationalize the phronetic perspective in climate change policy planning in Malaysia. It is also indirectly aimed in helping policy researchers to utilize the Aristotle's insights in policy practice. This is the departure of this PhD research, and it is based on the four value questions organized by Flyvbjerg.

By maintaining the importance of the particular, the account of phronesis research developed here aims towards developing accounts of practice and not at generalizability, but at verisimilitude[45], relying upon interested local practitioners to choose relevant details and make sense of the represented practice as a vital aspect of the research practice.

Through the discussion, to answer the four value questions that relate to the context of climate change policy in Malaysia, it was found that each stakeholder has their own rationale. These various stakeholders hold, produce and value knowledge that differs in both content and orientation; this contributes to their perception of a problematic situation. Their rational answer is based on background and experience and their knowledge in this case study. For contemporary studies of phronesis, power element should also be considered.

Phronesis in planning research is of fundamental importance, because it highlights the normative and ethical elements to the practice of science and technology (stemming from episteme and techne respectively). It can be performed by asking four value-rational questions as a frame for the phronetic planning research (Chapter 4): (1) Where are we going with planning? (2) Is this development desirable? (3) What, if anything, should we do about it? and (4) who gains and who loses, and by which mechanisms of power?

Such answers should then be fed into the discourse or dialogue on problems faced in practice and possible alternative ways of doing things. As such, phronetic research can

[45] Verisimilitude is a philosophical concept that distinguishes between the truth and the falsity of assertions and hypotheses.

never purport to tell a 'final truth' (Chapter 4), but rather participates in a discussion aimed at improving the practice.

It should be noted here that there is a strong relationship between how one defines planning as a practice and how does one make a scientific study of planning practices. Appropriate research methods are needed to reflect that planning as a value-rational process in which actors exercise power in many different ways.

With the understanding that the issue of climate change is beyond the scientific aspect, it is certain that post positivist policy analysis is an appropriate approach to the study of climate change. There is no doubt that the approach to climate change policy planning in Malaysia is a post-positivist approach, but what I am trying to explain here is the infusion of phronesis as a means of study enables to uphold the value judgment and the element of power in any policy making process.

As discussed earlier, the exercise of power is often beyond the actual, observable conflict. It includes a more subtle form and often hidden in the conflict that existed between the subjective interests and that the interests of real people may, or may not, be exempted from or by the political process.

Along with the technical and values dimension of policy formulation, comes political implications arising from hegemonic discourse that is dominated by the government and the institutions established by the political and technological elites. While the former attain their power from the political structure, the latter are privileged by their

technical knowledge and practices of technocracy. Both groups are difficult to distinguish from one another. For most of the technological elites, they also hold the status of political elites; thus obscuring the boundary between these groups.

Political influence, position and other structural constraints are generally consistent with the relations of power, as discussed earlier. Control agenda that complicate the discussion, and potentially forces the exercise of decision making authority, as it then prevents the scales and often contributes to maintaining the status quo. For example, in the process of climate change policy, there is a view that holds that there is no difference between the existing policies, relevant to climate change. He attributed this, in part, to political posturing that further complicated the decision making and implementation process.

However, some respondents commented that they were optimistic about reaching a resolution to the issues of climate change in the traditional manner through existing political institutions. But, they suggested the need to structure the negotiation process which is usually successful through providing 'carrot and stick' incentives to persuade the competing interests and for stakeholders to work together and move beyond what appears to be an old status quo.

When looking at the complex power web with its different and sometimes-conflicting power relations, it is obvious that these relations have to be associated with conflict, resistance and struggles. It was, however, the specific relationships (or clashes) between certain types of conflicting powers, e.g. the professional and political powers that

created the most conflict and problems. This study, through the phronetic methodology and case study presenting the practice stories of real life experiences, has been able to expose many of the struggles, conflict and battles typically found in policy process – in other words, the : the phronetics problem.

It is less accurate when stating that the implementation of phronesis is something new in policy analysis, as Aristotle himself has stated that phronesis and policy are inextricably linked. And phronetic social science, as described by Schram (2003: 849) "already exists; it is just not organized or recognized as such". What can be stated here is the element of phronesis or value-rationality has been 'forgotten' or 'deliberately forgotten', due to the turning point in Western epistemology which began from the time of the Enlightenment, in which instrumental rationality has become the main driving force of modern society, and over-shadowed value rationality. Policy making and policy analysis must take a broader concept of knowledge; not only to the scientific knowledge alone. Policy making should look at and take into account the norms and context of each community. In addition, it can also be deduced that phronesis element already exists in policy analysis, although it may be in different forms and approaches.

Phronesis is not about science, but more about praxis and practical reasoning applied in a specific context situation; to be aware of and realize the impossibility of reducing human life to abstract rules. It is a matter of understanding and not explanation.

Epistemic social science is based on the idea of natural science role model, where scientists are understood as platonic experts who should know the truth and to have the

know-how to predict the policy process. Policy processes are predictable because they act with instrumentally standard rationality, and are motivated to 'know-how'. On the other hand, phronetic social sciences have the ability to understand key players' activities, as different actors are trying to give the best arguments in the most persuasive way in a deliberative public sphere.

In terms of methodology, social science is different than natural science. Social science is problem-driven rather than driven by methodology; for instance, social science is not a matter of generating a model to get the desired results that were previously 'known'. A problem-driven position implies determining social dilemmas, situations, and the winners and losers of different alternative actions - all have power as the important factor.

In phronetic science, these values may not be determined in advanced in the epistemic sense. Values are defined in specific situational context with consideration of power-relations and analysis of and deliberation on the most desirable results. Social and historical context of the people concerned is the basis of phronesis, and not universal ground.

This study has been concerned with representing phronesis in developing an alternative conception of how to conduct social research. The statement of Aristotle on phronesis provides a justifiable or legitimate method for social research to investigate human practices aimed neither at epistemic (i.e. scientific) knowledge, nor decrease the complex human practice to various techne. Phronesis is a unique perspective that allows

social research to stand on its own as a viable alternative to the episteme and techne driven scientific research efforts.

BIBLIOGRAPHY

Adam, D. (2005). Climate change impact disputed. http://www.guardian.co.uk (accessed on 1 May 2013).

Agarwal, A. and S. Narain. (2003). *Global warming in an unequal world: A Case of Environmental Colonialism*. New Delhi: Centre for Science and Environment.

Ahmad Hezri Adnan, and Mohd Nordin Hasan. (2006). Towards sustainable development? The evolution of environmental policy in Malaysia. *Natural Resources Forum* 30: 37-50.

Ahmad Hezri Adnan. (2011). Rio+20 National stocktaking for Malaysia, presented at CGSS Conference 7-11 October 2011, Hotel Aveleon, Malacca

Ahmad Hezri Adnan. (2011). Sustainable shift: institutional challenges for the environment in Malaysia. *Akademika* 81(2) 2011: 59-69.

Aiken, R. S., and Leigh, C. H. (1992). *Vanishing rain forests: the ecological transitions in Malaysia*. Oxford: Clarendon Press.

Aiken, R. S., Leigh, C. H., Leinbach, T.R., and Moss, M.R., (1982). *Development and environment in Malaysia*. Singapore: McGraw Hill International.

Alam, M. M. at al. (2012). Climate change adaptation policy in Malaysia: issues for agricultural sector. *African Journal of Agricultural Research* 7 (9):1368-1373

Allmendinger, Philip. (2001). *Planning in postmodern times*. Routledge. London and New York.

Ambali, A.R. (2011). Policy of sustainable environment: Malaysian Experience, *European Journal of Scientific Research* 48 (3): 466-492

Apuuli, B., J. Wright, C. Elias, I. Burton. (2000). Reconciling national and global priorities in adaptation to climate change: with an illustration from Uganda. *Environmental Monitoring and Assessment*, 61 (1): 145-159.

Aristotle. (2009). *Nicomachean Ethics* (abbreviated as N.E), translated by D. Ross, Revised with an Introduction and Notes by L. Brown. Oxford: Oxford University Press.

Ayers, J. and Dodman, D. (2010). Climate change adaptation and development: The state of the debate. *Progress in Development Studies,* 10 (2): 161-168.

Bacchi, C.L. (1999). *Women, policy and politics: the construction of policy problems*. London, Thousand Oaks, New Delhi: Sage.

Banuri, T, and J. Weyant. (2001). Chapter 1: Setting the stage: climate change and sustainable development. http://www.grida.no (accessed 1 May 2013).

Barkham, P. (2004). Jurassic Park author pours cold water on global warming. http://www.guardian.co.uk (accessed on 1 May 2013).

Biesbroek, G.R., Swart, R.J., Carter, T.R., Cowan, C., Henrichs, T., Mela, H., Morecroft, M.D. & Rey, D. (2010). Europe adapts to climate change: comparing national adaptation strategies. *Global Environmental Change*, 20 (3):440-450.

Birmingham, C. (2004). Phronesis: a model for pedagogical reflection. *Journal of Teacher Education,* 55 (4): 313-324.

Bodansky, D. (1993). The United Nations Framework Convention on climate change: a commentary. *Yale Journal of International Law,* 18 (2): 451-558.

Boehmer-Christiansen, S. (1994b). Global climate protection policy: the limits of scientific advice: Part 2. *Global Environmental Change*, 4 (3): 185-200.

Bollin, B. (2007). *A history of the science and politics of climate change: The role of the intergovernmental panel on climate change*. Cambridge: Cambridge University Press.

Brewer, T.L. (2003). The trade regime and the climate regime: institutional evolution and adaptation. *Climate Policy*, 3 (4): 329–341.

Broadie, Sarah. (1991). *Ethics with Aristotle*. Oxford: Oxford University Press.

Brohan, P., Kennedy, J.J., Harris, I., Tett S.F.B. and Jones, P.D. (2006). Uncertainty estimates in regional and global observed temperature changes: A new dataset from 1850. *Journal of Geophysical Research D: Atmospheres* 111 (12), art. no. D12106.

Bryant, Raymond L. & Bailey Sinead. (1997). *Third world political ecology*. London: Routledge.

Bulkeley, H. & Newell, P. (2010). *Governing climate change*. London: Routledge

Coetzee, P.J. (2005). A reading of power relations in the transformation of urban planning in the municipalities of the Greater Pretoria region (now Tshwane): 1992-2002. *Unpublished PhD Thesis*. University of Pretoria.

Cohen, S., D. Demeritt, J. Robinson, D. Rothman. (1998). Climate change and sustainable development: towards dialogue. *Global Environmental Change*, 8 (2): 341-371.

Colebatch, H.K. (2006). What work makes policy?. *Policy Sciences,* 39 (4): 309-321.

Collins, H.M., and Evans, R. (2006). The third wave of science studies. In: Selinger, E., Crease, R.P. (Eds.), *The Philosophy of Expertise*. New York: Columbia University Press: 39–110.

Crichton, M. (2004). *State of fear.* New York: HarperCollins Publishers.

Dawson, B. and Spannagle, M. (2009). *The complete guide to climate change*. New York: Routledge

Day, E. (2004). Charities 'spread scare stories on climate change to boost public donations'. http://www.telegraph.co.uk (accessed on 1 May 2013).

Debat Alam Sekitar. (2009). *Protokol Kyoto: negara membangun mesti ada kepakaran*. http://debatalamsekitar2009.blogspot.com (accessed date: 26 June 2012).

Dryzek, J.S. (1993). Policy Analysis and Planning: From Science to Argument. In Fischer, F. and Forester, J. (Eds.) *The Argumentative Turn in Policy Analysis and Planning*. London: UCL Press: 213-232.

Economic Planning Unit (EPU). (2008). *Ninth Malaysia Plan (RMK9): Policy study on climate change***.** http://www.epu.gov.my. (Accessed date: 26 April 2011).

Environmental Quality Act (EQA). (1992)**.** http://www.agc.gov.my (Accessed date: 18 August 2013)

Fankhauser, S., J.B. Smith, R.S.J. Tol. (1999). Weathering climate change: some simple rules to guide adaptation decisions. *Ecological Economics*, 30 (1): 67-78.

Fischer, F. 1998. Beyond empiricism: policy inquiry in postpositivist perspective. *Policy Studies Journal,* 26(1): 129-146.

Fischer, F. (2000). *Citizens, experts and the environment: the politics of local knowledge*. Durham and London: Duke University Press.

Fischer, F. (2003). *Reframing public policy: discursive politics and deliberative practices*. Oxford: Oxford University Press.

Fischer, F. (2003a). Beyond empiricism: policy analysis as deliberative practice. In Maarten, H. and Wagener, H. (Eds.) *Deliberative Policy Analysis: Understanding*

Governance in the Network Society. Cambridge: Cambridge University Press: 209-227.

Fischer, F. (2009). *Democracy and expertise: reorienting policy inquiry*. Oxford: Oxford University Press.

Flyvbjerg, B. and Richardson, T. (2002). Planning and Foucault in search of the dark side of planning theory. In Allmendinger, P. and Tewdwr-Jones, M. (Eds.) *Planning Futures: New Directions for Planning Theory.* London and New York: Routledge: 44-62.

Flyvbjerg, B., Landman, T. and Schram, S. (Eds.). (2012). *Real social science: applied phronesis*. Cambridge: Cambridge University Press.

Flyvbjerg, Bent. (1993). Aristotle, Foucault, and progressive phronesis: outline of an applied ethics for sustainable development, in Earl Winkler and Jerrold Coombs (eds.) *Applied Ethics: A Reader.* New York: Basil Blackwell.

Flyvbjerg, Bent. (1998a). "Habermas and Foucault: thinkers for civil society." *Journal of British Sociology,* 49 (2): 210-233.

Flyvbjerg, Bent. (1998b). Empowering Civil Society: Habermas, Foucault and the question of conflict. In M. Douglass and J. Friedman (Eds.). *Cities for Citizens.* England: John Wiley and Sons Ltd.

Flyvbjerg, Bent. (1998b). *Rationality and power: democracy in practices*. Chicago: Chicago University Press.

Flyvbjerg, Bent. (2001). *Making social science matter: Why inquiry fails and how it can succeed again.* Cambridge: Cambridge University Press.

Flyvbjerg, Bent. (2004). Phronetic planning research: theoretical and methodological reflections. *Planning Theory & Practice,* 5 (3): 283-306.

Flyvbjerg, Bent. (2004a). A perestroikan straw man answer back: David Laitin and phronetic political science. *Politics Society,* 32: 389-416.

Flyvbjerg, Bent. (2006). A Perestroikan Straw Man Answers Back: David Laitin and Phronetic Political Science. In S. F. Schram and B. Caterino (Eds.) *Making Political Science Matter: Debating Knowledge, Research, and Method*. New York: New York University Press.

Forester, J. (1982). Planning in the face of power. *Journal of the American Planning Associatio*n, 48 (1): 67-80.

Foucault, Michel. (1977). *Discipline and punish*. Allen Lane.

Foucault, Michel. (1980a). *History of sexuality: Vol. I*. New York: Vintage.

Foucault, Michel. (1980b). *Power/knowledge: selected interviews and other writings 1972 1977*. London: Sage.

Foucault, Michel. (1994). *Michel Foucault: power. essential works of Foucault 1954 - 1984.* (Vol. 3). Edited by James Faubion. Penguin Books.

Foucault, Michel. (2004). *The archeology of knowledge*. London: Routledge.

Frank, A.W. (2012). The feel for power games: everyday phronesis and social theory. In Flyvbjerg, B., Landman, T. and Schram, S. (Eds.) *Real Social Science: Applied* Phronesis. Cambridge: Cambridge University Press.

Friedmann, J. (1998). Planning theory revisited. *European Planning Studies,* 6: 245–254.

Garland, Angela Marie. (2007). *Power relationships within a corporate finance department: a Foucauldian approach to corporate hierarchies and resistance. Unpublished PhD Thesis. Auckland University of Technology.*

Gaventa, J. and Cornwall, A. (2001). Power and knowledge. In Reason, P. and Bradbury, H. (Eds.) *Handbook of Action Research*. London: Sage Publication LTD.

Giddens, A. (1984). *The constitution of society: outline of the theory of structuration*. Cambridge: Policy Press.

Giddens, A. (2009). *The politics of climate change*. USA: Polity Press.

Gillham, B. (2000). *Case study research methods*. London: Continuum.

Glover, L. (2006). *Postmodern climate change*. New York: Routledge.

Government of Malaysia. (1973). *The midterm review of second Malaysia plan, 1971-1975*. Kuala Lumpur: Government Printer.

Government of Malaysia. (1996). *The seventh Malaysia plan, 1996-2000*. Kuala Lumpur: Government Printer.

Government of Malaysia. (2001). *The eighth Malaysia Plan, 2001-2005*. Kuala Lumpur: Government Printer.

Government of Malaysia. (2006). *The ninth Malaysia plan, 2006-2010*. Putrajaya: Government Printer.

Government of Malaysia. (1991). *The second outline perspective, 1991-2000*. Kuala Lumpur: Government Printer.

Government of Malaysia. (2010). *Tenth Malaysia plan 2011-2015*. Economic Planning Unit: Putrajaya, Malaysia.

Grothmann, T. & Patt, A. (2005). Adaptive capacity and human cognition: The process of individual adaptation to climate change. *Global Environmental Change*, 15 (3):199-213.

Gupta, J. (1997). The *climate change convention and developing countries: from conflict to consensus?* Kluwer Academic Publishers: Dordrecht.

Gupta, J. (2000a). "*On behalf of my delegation…" a survival guide for developing country climate negotiators*. http://www.iisd.org (Accessed 1 January 2013).

Gutierrez, M., D. Lohan, R. Sherman, L. Schipper, H. Wilkins. (2003). *Summary of the ninth conference of the parties to the UN Framework Convention on Climate Change: 1-12 December 2003* http://www.iisd.ca (accessed 1 May 2013).

Haas, P.M. (2004). When does power listen to truth? A constructivist approach to the policy process. *Journal of European Public Policy,* 11 (4): 569–592.

Habermas, J. (1984). *The theory of communicative action (vol. 1): Reason and the rationalization of society. (Translated by Thomas McCarthy). Boston: Beacon Press.*

Habermas, J. (1985). *The theory of communicative action (vol. 2): Lifeword and System: A Critique of Functionalist Reason.* (Translated by Thomas McCarthy). Boston: Beacon Press.

Hajer, M., and Wagenaar, M. (2003). Introduction. In: Hajer , M., and Wagenaar, H. (Eds.). *Deliberative policy analysis: understanding governance in the network society*. Cambridge: Cambridge University Press.

Hajer, M.A. (1995). *The politics of environmental discourse: ecological modernization and the policy process*. Oxford: Oxford University Press.

Halverson, R. R. (2002). Representing phronesis: supporting instructional leadership practice in schools. *Unpublished PhD Thesis*. Northwestern University.

Hansen, J. E., Sato, M., Lacis, A., et al. (1998). Climate forcings in the industrial era. *Proceedings of the National Academy of Sciences,* 95 (22): 12753-12758

Hansen, J., M. Sato, R. Ruedy, K. Lo, D.W. Lea and M. Medina-Elizade, (2006). Global temperature change. *Proceedings of the national academy of sciences of the United States of America* 103 (39): 14288-14293.

Hawkesworth, M. and Kogan, M. (1992). *Encyclopedia of government and politics, vol. 1.* London: Routledge.

Healey, Pats. (1997). *Collaborative planning. Shaping places in fragmented societies.* London: MacMillan Press LTD.

Hernandez, Moses. (2012). The politics of knowledge in policy analysis. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health* 20 (2): 153-160.

Hertin, J., Turnpenny, J., Jordan, A., Nilsson, M., Russel, D., Nykvist, B. (2009). Rationalising the policy mess? Ex ante assessment and the utilisation of knowledge in the policy process. *Environment & Planning A*, in press.

Hill, M. (2005). *The public policy process*, 4th edition. England: Pearson Education Limited.

Hillier, J. (2002). *Shadows of power: an allegory of prudence in land-use planning*: London: Routledge.

Hillman, M. (2004). *How we can save the planet.* London: Penguin Books.

Hof, A. F. (2010). International mitigation and adaptation strategies for climate change policy: An integrated assessment approach. *Unpublished PhD Thesis*. Vrije Universiteit.

Hoppe, R. (1999). Policy analysis, science and politics: from 'speaking truth to power' to 'making sense together'. *Science and Public Policy*, 26 (3): 201–210.

Houghton, J. (2004). *Global warming: the complete briefing.* Cambridge: Cambridge University Press.

Houghton, J.T., L.G. Mayra Filho, B.A. Callender, N. Harris, A. Kattenberg, K. Maskell (eds.). (1995). *Climate change 1995: the science of climate change,* IPCC WG I contribution to the SAR. Cambridge: Cambridge University Press.

Houghton, J.T., Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, X. Dai, K. Maskell, C.A. Johnson (Eds.). (2001). *Climate change 2001: the scientific basis*, IPCC WG I contribution to the TAR. Cambridge: Cambridge University Press.

HSBC. (2009). *Climate confidence monitor 2009*. https://www.hsbc.com.hk/1/2/cr/sustainability_at_hsbc/climate-confidence-monitor-2009. (accessed date: 3 June 2011).

Huq, S. and M. Grubb. (2003). *Scientific assessment of the inter-relationships of mitigation and adaptation*. http://citeseerx.ist.psu.edu (accessed 1 May 2013).

IPCC. (2001). *Third assessment report of the ipcc*. Cambridge: Cambridge University Press.

IPCC. (2001b). *Climate Change 2001: Impacts, adaptation, and vulnerability. Summary for policymakers.* Intergovernmental Panel on Climate Change.

IPCC. (2007). *Climate change 2007: The physical science basis*. Cambridge and New York: Cambridge University Press.

IPCC. (2007). Climate change 2007: working group II: impacts, adaptation and vulnerability. http://www.ipcc.ch/ (Accessed 8 July 2013).

IPCC. (2007d). *Climate change 2007: Impacts, adaptation and vulnerability*. Cambridge and New York: Cambridge University Press.

Jasanoff, S. & Wynne, B. (1998). Science and decision making. In S. Rayner & E.L. Malone (Eds.) *Human Choice and Climate Change*. Columbus, Ohio: Battelle Press.

Juntti, M., Russel, D., and Turnpenny, J. (2009). Evidence, politics and power in public policy for the environment. *Environmental Science & Policy,* 1 (2): 207–215.

Kandlikar, M., A. Sagar. (1999). Climate change research and analysis in india: an integrated assessment of a south-north divide. *Global Environmental Change*, 9 (2): 119-138.

Kara, W. Y. (2009). Fortifying virtue ethics: Recognizing the essential roles of eudaimonia and phronesis. *Unpublished PhD Thesis*. University of Kansas.

Kates, R.W. (1997). Climate Change 1995: Impacts, Adaptations, and Mitigation. *Environment*, 39 (9): 29-33.

Kelly, M. and Maynard-Moody, S. (1993). Policy analysis in the post-positivist era: engaging stakeholders in evaluating the economic development districts program. *Public Administration Review,* 1993 53 (2): 135-142.

Kelly, P.M., and Agder, W.M. (2000). Theory and practice in assessing vulnerability to climate change and facilitating adaptation. *Climatic Change,* 47 (4): 325-352.

KeTTHA. (2012). *National green technology and climate change council*. http://www.kettha.gov.my (accessed 18 Dec 2012)

Kinsella, E. A. (2012). Phronesis *as professional knowledge: practical wisdom in the professions*. Rotterdam: Sense Publishers

Klein, R. J. T., Eriksen, S. E. H., Næss, L. O., Hammill, A., Tanner, T. M., Robledo, C., O'Brien, K. L. (2007) *Portfolio screening to support the mainstreaming of adaptation to climate change into development assistance*. Tyndall Centre for Climate Change Research, Working Paper 102

Klein, R.J.T., Schipper, E.L.S., and Dessai, S. (2005). Integrating mitigation and adaptation into climate and development policy: three research questions. *Environmental Science & Policy,* 8: 579–588.

Klein, R.T.J. (2008). Financing climate change policies in developing countries: Compilation of briefing papers. http://www.sei-international.org (accessed 1 May 2013).

Knoepfel, P., Larrue, C., Varone, F. and Hill, M. (2007). *Public policy analysis*. Bristol: The Policy Press.

Konsumerkini. (2010). "*Bandar baru karbon sifar" – meninjau hala tuju pembangunan lestari dan strategi mitigasi dan penyesuaian perubahan iklim di Malaysia***.** http://www.konsumerkini.net.my (accessed date: 15 May 2013)

Kuschel, P.G.B. (2012)**.** Rationality and phronesis in economics: **a** rhetorical moment. *Unpublished PhD Thesis*. Erasmus Universiteit Rotterdam.

Latour, B. (1987). *Science in action: how to follow scientists and engineers through society.* USA: Harvard University Press

Lenton, T.M., H. Held, E. Kriegler, J.W. Hall, W. Lucht, S. Rahmstorf and H.J. Schellnhuber, (2008). Tipping elements in the Earth's climate system. *Proceedings of the National Academy of Sciences of the United States of America,* 105 (6): 1786-1793.

Levina, E. (2007). Adaptation to Climate Change: International Agreements for Local Needs. OECD. http://www.oecd.org (accessed 1 May 2013).

Lorenzoni, I., Jones, M. & Turnpenny, J.R. (2007). Climate change, human genetics, and post-normality in the UK. *Futures*, 39(1):65-82.

Luhmann, Niklas. (1995). *Social systems*. Translated by: Dirk Baecker, and John Bednarz. Introduction of Eva Knodt. Stanford: Stanford University Press.

Lukes, Steven. (2005). *Power: A radical view* (2nd edition). New York: Palgrave Macmillan.

MacIntyre, A. (2007). *After virtue: a study in moral theory* (3rd edition). Notre Dame: University of Notre Dame Press.

May, B. (2005). *Under-informed, over here*. http://www.guardian.co.uk (accessed on 1 May 2013).

McGinn, Robert E. (1991). *Science, technology, and society*. USA: Prentice Hall.

McGrath, N. (2007). Dialoguing in the desert for sustainable development: ambivalence, hybridity and representations of indigenous people. *Unpublished Thesis*. Murdoch University.

Meehl, G. A., Washington, W. M., Collins, W. D., et al. (2005). How much more global warming and sea level rise? *Science,* 307: 1769-1772.

MNRE. (2009). *National policy on climate change*. Malaysia: MNRE

MNRE. (2011). *Malaysia 2nd national communication to climate change*. Malaysia: Putrajaya

MTC. (2012). *Malaysia sets up panel on climate change. 27 July 2008*. http://www.mtc.com.my (accessed 8 December 2012).

Munasinghe, M. and R. Swart. (2005). *Primer on climate change and sustainable development*. Cambridge: Cambridge University Press.

Najam, A., S. Huq, and Y. Sokona. (2003). Climate negotiations beyond Kyoto: developing countries concerns and interests. *Climate Policy*, 3 (3): 221-231.

National Forestry Act. (1992). http://www.agc.gov.my (Accessed date: 18 August 2013)

Nietzsche, Friederich. (1974). *The gay science*. Translated by Walter Kaufmann. New York: Vintage.

O'Riordan, T. (Ed.). (2000). *Environmental science for environmental management*. Harlow: Prentice Hall.

Oppenheimer, M. and A. Petsonk, (2005): Article 2 of the UNFCCC: historical origins, recent interpretations. *Climatic Change,* 73: 195-226.

O'Riordan, T. & Rayner, S. (1991). Risk management for global environmental change. *Global Environmental Change,* 1 (2): 91-108.

Pal, Leslie A. (2001). *Beyond policy analysis: public issue management in turbulent times.* 2nd edition. Scarborough, Ontario: Nelson Thompson Learning.

Pearce, F. (2005). *Climate change: menace or myth*? http://www.mng.org.uk (accessed on 1 May 2013)

Pereira, Joy Jacqueline. (2009). *Mainstreaming climate change: development of the national policy on climate change*. http://www.ukm.my/lestari/en/ (accessed date: 3 August 2012)

Phillips, M. (2004). *The global warming fraud*. http://www.melaniephillips.com (accessed on 1 May 2013).

Pielke, Jr., R.A. (1998). Rethinking the role of adaptation in climate policy. *Global Environmental Change*, 8 (2): 159-170.

Pielke, R. A. (2004). When scientists politicize science: making sense of controversy over The Skeptical Environmentalist. *Environmental Science and Policy,* 7: 405-417.

Pinkse, J. and Kolk, A. (2012). Addressing the Climate change−−sustainable development nexus: the role of multistakeholder partnerships. *Business Society,* 51: 176-210.

Pittock, A.B. (2009). *Change climate: the science, impacts and solutions* 2nd Edition. USA: CSIRO Publishing.

Pocock, James G. A. (2003). *The Machiavellian moment: florentine political thought and the Atlantic republican tradition*. Princeton: Princeton University Press.

Ramakrishna, K. (2000). *The UNFCCC – history and evolution of the climate change negotiations* http://environment.research.yale.edu (accessed 1 May 2013)

Redclift, M. (2005). Sustainable development (1987–2005) an oxymoron comes of age. *Sustainable Development,* 13: 212–227.

Richardson, Henry S. (1994a). *Practical reasoning about final ends.* Cambridge: Cambridge University Press.

Richardson, Henry S. (1994b). Rescuing ethical theory. *Philosophy and Phenomenological Research,* 54 (3): 703-708.

Sabatier, Paul A. (2007). *Theories of the policy process.* 2nd ed. Colorado: Westview Press

Sachs, W. (2001). *Rio+10 and the North-South divide*. http://www.worldsummit2002.org (accessed 1 May 2013).

Sandercock, Leoni. (1998). *The death of modernist planning.* In M. Douglass and J. Friedman (Eds.) *Cities for Citizens.* England: John Wiley and Sons Ltd.

Sanderson, I. (2002). Making sense of 'what works': evidence based policy making as instrumental rationality. *Public Policy and Administration,* 17 (3): 61-75.

Sarewitz, D., R.A. Pielke, Jr. (2000). *Breaking the global warming gridlock*. http://www.theatlantic.com (accessed 1 May 2013).

Sayer, Andrew. (2011). *Why things matter to people: social science, values and ethical life*. Cambridge: Cambridge University Press.

Schipper, E.L.F. (2004). Exploring adaptation to climate change: a development perspective. *Unpublished PhD Thesis.* University of East Anglia.

Schram, S. (2012). Phronetic social science: an idea whose time has come. In Flyvbjerg, B., Landman, T. and Schram, S. (Eds.) *Real Social Science: Applied* Phronesis. Cambridge: Cambridge University Press.

Schram, S. Flyvbjerg, B. and Landman T. (2013). Political political science: A phronetic approach. *New Political Science*, 35 (3): 359-372.

Schwandt, T. A. (2007). Praxis. In: *The SAGE Dictionary of Qualitative Inquiry*. (Schwandt, T. A., Ed.). Thousand Oaks: Sage Publications.

Schwandt, T.A. (1997). Evaluation as practical hermeneutics. *Evaluation,* 3 (1): 69-83.

Sham Sani. (1993). *Environment and development in Malaysia: changing concerns and approaches*. Kuala Lumpur: ISIS.

Sham Sani. (2009). *The politics of climate change: International response and Malaysia*. Malaysia: UKM

Sim, S. (2001). *The routledge companion to postmodernism*. New York: Routledge.

Sinha, U.K. (2010). Climate change: process and politics. *Strategic Analysis,* 34 (6): 858–871.

Smit, B. and Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change,* 16: 282-292.

Smith, T.M., R.W. Reynolds, T.C. Peterson and J. Lawrimore, (2008). Improvements to NOAA's historical merged land-ocean surface temperature analysis (1880-2006). *Journal of Climate,* 21 (10): 2283-2293.

Solar, R.W. (2011). *Scoping assessment on climate change adaptation in Malaysia*. Bangkok: UNEP

Spicker, P. (2011). Generalisation and phronesis: rethinking the methodology of social policy. *Journal of Social Policy*, 40 (1): 1-19.

SPREP and UNDP (2013), *Mainstreaming climate change adaptation in the pacific: a practical guide*, Secretariat of the Pacific Regional Environment Programme (SPREP) and United Nations Development Programme (UNDP), Apia, Samoa.

Stonham, P. (1995). For and against the case method. *European Management Journal*, 13 (2): 230-232.

Sumiani Yusof. (2010). Development of a national policy on climate change: Malaysia's experience. http://www.en.mahidol.ac. (accessed 17 September 2011)

Teoh, C.H. (2002). *The palm oil industry in Malaysia*. WWF Malaysia: Petaling Jaya, Selangor, Malaysia.

Tompkins, E.L., Adger, W.N., Boyd, E., Nicholson-Cole, S., Weatherhead, K. & Arnell, N. (2010). Observed adaptation to climate change: UK evidence of transition to a well-adapting society. *Global Environmental Change*, 20(4):627-635.

Torgerson, D. (2007). Promoting the policy orientation: Lasswell in context in *Handbook of Public Policy Analysis: Theory, Politics and Methods*. Fischer, F., Miller, G. J. and Sidney, M. S. (Eds.) Boca Raton: CRC Press, 15-28

UNFCCC (1992) Report of the intergovernmental negotiating committee for a framework convention on Climate Change on the work of the second part of its fifth session,

held at New York from 30 April to 9 May 1992. Addendum', Document No. A/AC.237/18 (Part II) /Add.1, Annex I. http://unfccc.int (accessed 1 May 2013).

UNFCCC (1994) 'Mechanism and for technical and financial support to developing country parties, synthesis report on adaptation', Document No. A/AC.237/68. http://unfccc.int (accessed 1 May 2013).

UNFCCC. (2001). *The Marrakesh Accords*, in 'Report of the conference of the parties on its seventh session, held at Marrakesh from 29 October to 10 November 2001. Addendum. Part Two: Action Taken by the Conference of the Parties', decisions 1/CP.7-39/CP.7 Document Nos. FCCC/CP/2001/13/Add.1-4, UNFCCC: Bonn.

UNFCCC. (2013). *UNFCCC Article 4*. http://unfccc.int (accessed date: 2 Jun 2013)

UNGA (1987) 'Note by the secretary general: report of the world commission on environment and development', 'Brundtland Report' Document No. A/42/427, UN: New York. http://www.un-documents.net (accessed 1 May 2013).

UNGA (1990) 'Protection of global climate for present and future generations of mankind', Resolution No. A/RES/45/212, UN: New York. http://www.un.org/documents/ga/res/45/a45r212.htm (accessed 1 May 2013).

United Nation. (1997). *Kyoto protocol to the United Nations framework convention on climate change*. https://www.unfccc.int*. (27 August 2011)*

United Nations Development Programme (UNDP). (2007). *Malaysia generating renewable energy from palm oil wastes*. http://www.my.undp.org**.** (accessed date: 1Jun 2013).

van Vuuren, D.P., J.P. Weyant and F.C. De la Chesnaye, (2006c). Multigas scenarios to stabilise radiative forcing. *Energy Economics,* 28 (1): 102-120.

van Vuuren, D.P., M. Maynshausen, G.K. Plattner, F. Joos, K.M. Strassmann, S.J. Smith, T.M.L. Wigley, S.C.B. Raper, K. Riahi, F.de l. Chesnaye, M.G.J. den Elzen, J. Fujino, K. Jiang, N. Nakicenovic, S. Paltsev and J.M. Reilly, (2008). Temperature increase of 21st century mitigation scenarios. *Proceedings of the National Academy of Sciences of the United States of America,* 105 (40): 15258-15262.

WCED. (1987). *Our common future*. UN WCED: Geneva.

Whitmarsh, L. E. (2005). A study of public understanding of and response to climate change in the South of England. *Unpublished PhD Thesis*. University of Bath.

Wigley, T. M. L. (2005). The climate change commitment. *Science,* 307: 1766-1769.

Wilbanks, T.J., S.M. Kane, P.N. Leiby, R.D. Perlack, C. Settle, J.F. Shogren, J.B. Smith. (2003). Possible responses to global climate change: integrating mitigation and adaptation. *Environment*, 45 (5): 28-38.

WMO (1979) 'Proceedings, world climate conference: a conference of experts on climate and mankind' Geneva, 12-32 February 1979. http://www.dgvn.de (accessed 12 January 2012).

Yanow, D. (2003). Accessing local knowledge. In Maarten, H. and Wagener, H. (Eds.) *Deliberative policy analysis: understanding governance in the network society*. Cambridge: Cambridge University Press: 209-227.

Yiftachel, O. and Huxley, M. (2000). Debating dominance and relevance: notes on the 'communicative turn' in planning theory. *International Journal of Urban and Regional Research*, 24 (4): 907-913.

Yin, R.K. (1994). *Case study research: Design and methods* (2nd Ed.). California, USA.

Zaini Ujang (2008). *Dasar alam sekitar Malaysia-tinjauan kritis*. http://www.kesturi.net/ (Accessed date: 17 November 2013)