



LUND UNIVERSITY

**Dealing with change, complexity and uncertainty in  
global climate change negotiations – is adaptiveness  
the answer?**

A Thesis submitted to Lund University  
in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE  
International Master's Programme in Environmental Studies and Sustainability  
Science (LUMES)

Lund University Centre for Sustainability Studies

LUND  
May 2010

Author:  
Livia Hollins

Supervisor:  
Åsa Knaggård  
Lund University School of Political Science

May 24, 2010

## **Abstract**

At a global level, multilateral negotiations under the United Nations climate change regime to develop a response to climate change are challenging, in part because they are inherently dynamic, complex and uncertain (Haas and Haas, 1995), and surrounded by a context of dynamically changing social and ecological systems, and scientific and political complexity and uncertainty (Kinzig, 2003; Folke et al., 2007; Toth et al, 2001; Haas and Haas, 1995; Carter, 2007; UNFCCC secretariat, 2005).

Adaptive governance processes that support learning have been proposed as a way to deal with these challenges, particularly in responding to climate change (Pahl-Wostl, 2009; Michel, 2009; Foxon 2009, Folke et al., 2007; Olsson et al., 2006; Henderson, 2008; Olsson and Folke, 2004). This proposal is based the assumption that a governance process that can adapt and learn in the face of complexity, uncertainty and a continually changing context will be more successful in meeting its objectives than a rigid process. Although, in relation to the climate change negotiation process under the UN, an ‘adaptive’ approach is not well defined.

This research aims to understand how the concept of adaptiveness could be applied to the negotiation process within the United Nations climate change regime, to better understand how processes could be adaptive, and if a more adaptive process contributed to a more successful outcome. The way the negotiation process is designed and organised is used as a point of intervention.

A conceptual framework based on stability, flexibility and learning as well as process-based traits is developed using a complex adaptive systems lens to identify adaptiveness in governance processes. Two negotiating processes under the United Nations Framework Convention for Climate Change that support adaptation to the impacts of climate change are compared using conceptual framework.

I argue that negotiating processes can be influenced through the way they are organised and designed, to be more adaptive and successful in achieving their objectives, particularly where uncertainty, complexity and dynamic change are present. Stability, flexibility and capacity for learning within negotiation processes are important, and designing and organising negotiation processes around these themes could support progress. More adaptive negotiation processes may help to progress ‘stuck’ or politically contentious negotiations.

Key words: adaptiveness, adaptive governance, climate change negotiation processes, United Nations Framework Convention for Climate Change.

# Contents

1. Introduction.....	1
1.1. Problem statement and motivation.....	1
1.2. Aim and research questions .....	4
1.3. Methods, materials and case selection .....	4
1.3.1. Research design and process, case selection.....	5
1.3.2. Materials, access and analysis.....	7
1.3.3. Scope, limitations and system boundaries .....	8
1.3.4. Disposition .....	9
2. Background .....	10
2.1. The global climate change regime and negotiation process .....	10
2.1.1. Actors .....	12
2.1.2. The negotiation process .....	13
2.2. Cases .....	15
2.2.1. Decision 1/CP.10, the Buenos Aires programme .....	15
2.2.2. Decision 2/CP.11, the Nairobi work programme.....	16
3. Conceptual framework and identifying adaptiveness .....	18
3.1. Developing and applying the conceptual framework .....	18
3.2. Identifying adaptiveness .....	23
4. Results and analysis .....	25
4.1. Identifying and comparing adaptiveness in cases .....	25
4.1.1. Stability .....	27
4.1.2. Flexibility.....	28
4.1.3. Learning .....	29
4.2. Are more adaptive negotiating processes more successful? .....	30
5. Discussion .....	33
5.1. Challenges and opportunities .....	33
5.2. Enhancing the organization of the process – the roles of the Chairs and UNFCCC secretariat .....	34
5.3. Methodological reflections, further research .....	34
6. Conclusion and recommendations .....	36
References.....	37
Appendices.....	47
Appendix 1: People interviewed.....	47
Appendix 2: Interview guide .....	48

## List of figures and tables

Figure 1: Uncertainty (both political and scientific) relating to the negotiation process under the UN climate change regime.....	1
Figure 2: The basic institutional structure of the regime .....	11
Figure 3: Negotiating forums in a generic COP session.....	14
Figure 4: Types of organizations that have participated in Nairobi work programme workshops and expert meetings .....	17
Figure 5: Concept map.....	18
Table 1: Themes and traits of adaptiveness, and organizational factors that could be used to influence a more adaptive negotiation process.....	24
Table 2: Identifying adaptiveness and comparing cases, summary.....	26

## List of acronyms used

AWG-KP	Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol
AWG-LCA	Ad Hoc Working Group on Long-term Cooperative Action under the Convention
COP	Conference of the Parties
COP15	The fifteenth meeting of the Conference of the Parties
COP6	The sixth meeting of the Conference of the Parties
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse gas
IISD	International Institute for Sustainable Development
LDCs	Least developed countries
OPEC	Organisation of Petroleum Exporting Countries
SB	Subsidiary Body
SBI	Subsidiary Body on Implementation
SBSTA	Subsidiary Body on Science and Technological Advice
SIDS	Small island developing States
UNFCCC	United Nations Framework Convention for Climate Change

## Acknowledgements

The real world is dynamic, complex, and uncertain. This thesis attempts to better understand how to work with this complexity, not to oversimplify it. Some learning is explicit, and is recorded here, some learning is implicit and will remain in my heart and mind. I appreciate the people and experiences that have influenced what is written here, and what I will take away from this experience. In particular, the musicians that have provided stimulus during my research process, the yoga that has supported my mind and body and inspired a more intuitive understanding of systems, Bob Frame, who taught me to see research is a craft, the adaptation team at the UNFCCC secretariat who have contributed a lot to this work, the generous support of informants, my supervisor, my thesis group, and my friends and family.

‘Science involves not only a rigorous training of our faculties of observation and thinking, but also of other human faculties which can attune us to the spiritual dimension that underlies and interpenetrates the physical: faculties such as feeling, imagination and intuition.’ Goethe.

# 1. Introduction

## 1.1. Problem statement and motivation

The global climate change regime under the United Nations (UN) is currently the dominant forum used by states to develop a global response to climate change (Yamin and Depledge, 2004; Keohane and Victor, 2010). Under this regime, signatories to the United Nations Framework Convention on Climate Change (UNFCCC) acknowledge that ‘change in the Earth’s climate and its adverse effects are a common concern to human kind’, and that they are ‘determined to protect the climate system for present and future generations’ (UNFCCC, 1992). On this basis, parties to the UNFCCC agreed that their overall objective is ‘stabilization of greenhouse gas concentrations in the atmosphere 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, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner’ (Article 2, UNFCCC, 1992). In relation to adaptation to the impacts of climate change, Parties made several commitments, including to ‘cooperate in preparing for adaptation to the impacts of climate change’ (UNFCCC, 1992, Article 4).

It is widely recognised that multilateral negotiations to meet the objective and commitments of the UNFCCC are challenging, in part because they are inherently dynamic, complex and uncertain (Haas and Haas, 1995). The negotiation process is also surrounded by a context of dynamically changing social and ecological systems, and scientific and political complexity and uncertainty (Kinzig, 2003; Folke et al., 2007; Toth et al, 2001; Haas and Haas, 1995; Carter, 2007; UNFCCC secretariat, 2005; Allison et al, 2009; UNEP, 2010, Nickel, 2010; Pachauri and Reisinger, 2007). These layers of complexity and uncertainty are interrelated, as described in Figure 1.

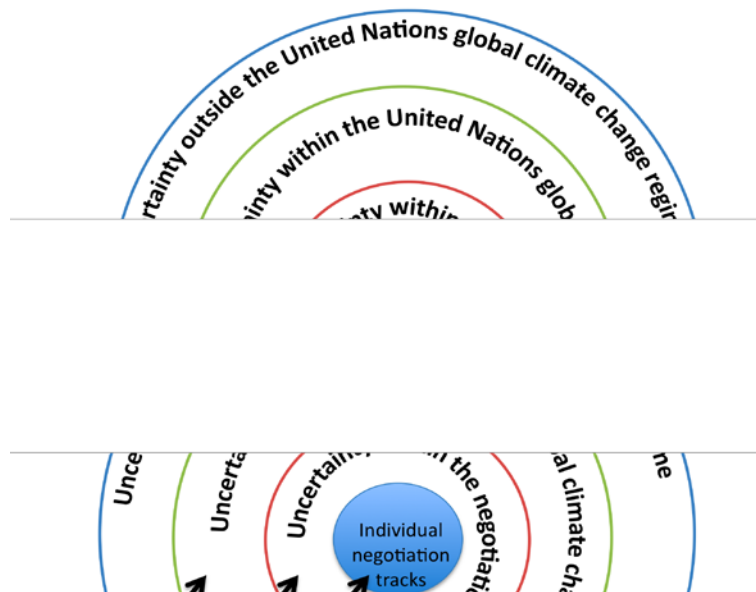


Figure 1: Uncertainty (both political and scientific) relating to the negotiation process under the UN climate change regime.

This dynamic change, complexity and uncertainty affects the negotiation process in a number of ways. The negotiation process may be drawn-out, where issues that should be addressed urgently are deferred or delayed by Parties in order to wait for progress to be made in a related subject area, or more certainty about why or how an issue should be best addressed (Interview, 2010). This complexity may also lead to ossification, where the negotiation process gets stuck in old ways of thinking and operating dragging down substantive progress and blocking out new knowledge and ideas (Depledge, 2006).

The process also becomes difficult to organise adequately to support successful negotiations (Interview, 2010). Organizing global negotiations among more than 180 heterogeneous states (in terms of their political, social, economic and geographical circumstances) on often highly contentious issues to forge a mutually acceptable outcome is a difficult and intricate task (Depledge, 2005).

Despite efforts to reduce uncertainties and deal with complexity and change within and surrounding negotiations within the UN climate change regime, it is reasonable to assume that our understanding of the climate change ‘problem’ will always be incomplete, and that the ‘problem’ will always be changing and evolving because of the impacts of human activities, including responses to the ‘problem’ (Kinzig, 2003; Michel, 2009; Lynch, 2009; Carpenter et al., 2009; Barnett, 2001; Vincent, 2006; Interview, 2010). It is also reasonable to assume that the complexity and uncertainty within the negotiating process is inevitable (that is, it is very difficult, if not impossible to reduce), because of the complexity of climate change as an issue, and coordination of progress required across negotiating tracks because of the interlinkages between the parts of the issue being discussed (Interview, 2010). Within the broader context, fully resolving the scientific and political uncertainties that surround the negotiation process before proceeding would make an adequate response (particularly for adaptation to climate change) infeasible, given the delay between taking action to respond to climate change, and results becoming visible (Toth et al, 2001; Interview, 2010).

This complexity of negotiations results in transaction costs in physical and financial resources, human effort and time incurred in working towards reaching an agreement. This tendency to high transaction costs (in other words, inefficiency) of global negotiations is well known, and is reflected in the stereotypical view that ‘modern intergovernmental conferences of the UN General Assembly... are a waste of time, energy and money’ (Depledge, 2005).

Instead of supporting the idea that it’s near impossible for a global climate change agreement to be made through the existing global climate change regime under the UN, and that another forum is required, this thesis seeks to better understand if and how the challenges relating to uncertainty and complexity in and around the negotiation process can be addressed to promote progress towards achievement of the regime’s objective, from within the existing regime. Given the limited opportunities for other means to develop a global response to climate change, this is also the most pragmatic approach to take (La Viña, 2010; Purvis and Stevenson, 2010).

Adaptive governance processes that support learning have been proposed as a way to deal with dynamic change, complexity and uncertainty, particularly in responding to climate change (Pahl-Wostl, 2009; Michel, 2009; Foxon 2009, Folke et al., 2007; Olsson et al., 2006; Henderson, 2008; Olsson and Folke, 2004). This proposal is based on the assumption that a governance process that can adapt and learn in the face of complexity, uncertainty and a continually changing context may be more successful in meeting its objectives than a rigid process. Although, in relation to the climate change negotiation process under the UN, an 'adaptive' approach is not well defined. Bierman et al. (2009) observe that the tendency of the climate change regime towards stability and predictability may compromise the ability of the regime to continuously transform in light of a context of uncertainty and dynamic change.

There is an intricate relationship between the climate change regime under the UN, and negotiations within the regime. Negotiations under the global climate change regime influence the formation and ongoing development of the regime. The regime provides structure for the negotiation process (Depledge, 2005). A feasible possibility for applying an adaptive approach to the climate change regime is to work with the way the negotiation process is organized and undertaken. This approach has the capacity to influence the regime from the inside.

According to Depledge (2005) the organization of the negotiation process is one of the less studied factors influencing multilateral negotiations, compared with more popular approaches, such as the impact of power structures, interests or knowledge. This may be due to limited access that academic researchers have to the full negotiation process including 'behind the scenes', where most decisions on organizational matters are made. Researchers may not be aware of the considerable effort that goes into organizational decision making, of why certain options are implemented and others rejected, and of the implications of these decisions. (Depledge, 2005).

Depledge (2005) and Yamin and Depledge (2004) argue that the organization of a negotiation process is an important possible point of intervention to enhance or reduce the likelihood of meeting the objectives of the process, because organizational factors can be relatively easily manipulated (although the extent of this possibility varies from case to case depending on the negotiation track). 'Organizational factors, such as the role of the Chair, the choice of negotiating arenas, the drafting of negotiating texts, are usually taken for granted and rarely attract attention until something goes wrong' (Depledge, 2005). This observation is supported by both participants in the negotiating process, as well as academic literature (Depledge, 2005). Short term organizational decisions can be taken by Parties, Chairs and/or the Secretariat that directly influence the course and outcomes of negotiations (Depledge, 2005). Other factors that influence the negotiation process (such as distribution of power, domestic interests, the salience of an issue, and broader geopolitics) are rarely able to be manipulated so directly (Depledge, 2005). I recognize that organizational factors by themselves cannot be entirely responsible for the resulting success or failure of a negotiation. 'Even the best-organized negotiation will fail if the political will to reach agreement is simply absent, but organizational factors are a pragmatic point of intervention within the current global climate change regime' (Depledge, 2005).

More adaptive processes of governance (in this research, the focus is on the negotiation process under the UN climate change regime) could be a possible way to enhance the likelihood of making progress towards adequately responding to climate change, under the existing UN climate change regime where dynamic change, complexity and uncertainty, are inevitable within and surrounding the process. The practical results of this research could be of use to the designers of the negotiation process, the UNFCCC secretariat and Chairs (as the main designers and organisers of the process), in helping them to consider how to best design and organize the process in light of dynamic change, complexity and uncertainty.

## **1.2. *Aim and research questions***

The aim of this research is twofold. First, I seek to develop a conceptual framework for understanding how adaptive governance ideas can be applied to the negotiation process, within the scope of the existing UN climate change regime, with a specific focus on the way the negotiation process is designed, organized and undertaken. Second, I seek to understand whether more adaptive negotiating processes are better at making progress towards the achievement of the objective and commitments of the UN regime, in particular relating to adaptation to the impacts of climate change where dynamic change, complexity and uncertainty in relation to the process are inevitable. To attempt to meet the aims of this research, the negotiation processes (tracks) of two decisions relating to adaptation to climate change 1/CP.10 (the Buenos Aires programme of work on adaptation and response measures); and decision 2/CP.11 (the Nairobi work programme on impacts, vulnerability and adaptation to climate change) are used as cases and analysed comparatively.

**Research question one:** How can ‘adaptiveness’ be applied to the global climate change negotiation process, within the scope of the existing regime, with a specific focus on the way the negotiation process is organized and undertaken?

**Research question two:** Based on two cases, are more adaptive negotiating processes more successful in meeting their objectives, where dynamic change, complexity and uncertainty are inevitable in relation to the process?

Question one is answered in two parts – firstly through developing a conceptual framework including a definition, as well as themes and traits of adaptiveness in relation to the negotiation process, overlaid with possible organizational factors that could be used to intervene in the process; and secondly through evaluating the adaptiveness of the two cases. Question two is answered through comparing the adaptiveness of both cases as well as progress made in achieving objectives (as defined in mandates), and identifying and discussing possible explanations for the results.

## **1.3. *Methods, materials and case selection***

This section explains the methods, materials and case selection employed to answer the research questions above. I see that the development and undertaking of this research has been an important part of my learning process and training as a researcher, and this has been emphasised over developing a flawless and definitive piece of work. Having said this, I still aim for this research to be reliable, replicable and valid (Bryman, 2004), and to make a contribution theoretically, empirically, as well as practically. I also recognise that my personal cultural, educational and



professional background as well as my research interests have influenced this research, specifically my belief the role of the state is important and influential, that understanding the world through a systems approach is important, and that change for the better can be influenced from inside a system (in this case, through the negotiation process).

### **1.3.1. Research design and process, case selection**

This research is based on a qualitative research strategy, in order to ‘enhance the comprehension of the complexity of the problem’ (Mikkelsen, 2005), and a comparative research design, seeking to understand social phenomena better through analysing to two or more meaningfully contrasting cases or situations in relation to each other (Bryman, 2004), in this research. This research draws from a mix of text analysis, interviews and non-participatory as well as participatory observations of the climate change negotiation process and operation of the UNFCCC secretariat, and compares two negotiation tracks within the negotiation process in order to understand aspects of the climate change negotiation process.

Consistent with a constructivism-based ontological position, the negotiation process and the UN climate change regime can be seen as socially constructed phenomenon, which ‘live’ through international law, descriptive texts, the various actors and institutions within the regime and the formal and informal norms that they have developed. A constructivism-based ontological position views the studied phenomena as a social narrative and process<sup>1</sup>, with an aim to show how it unfolds over time (Bryman, 2004). This ontological position stresses an understanding of the social world through examining the interpretation of the world by its participants (Bryman, 2004). These qualities of the process justify the use of a qualitative strategy to attempt to achieve my aim of better understand how the process works, the dynamic relationship between the process, the regime and the surrounding context, and how this is perceived by relevant actors.

This research employs an interpretivist epistemology, as I have attempted to understand and explain aspects of the UN climate change regime and negotiation process on the basis of the subjective views of actors involved intimately with the regime, as well as other texts which can also be seen as subjective in their view (Bryman, 2004).

To begin to better understand my problem area and how I should approach understanding adaptiveness in relation to the negotiation process under the global UN climate change regime, I undertook preliminary interviews (a full list of interviewees is provided in Appendix 1), and attended the Human Dimensions of Global Environmental Change conference<sup>2</sup>, where the Earth System Governance Project was launched. I also attended the 15<sup>th</sup> Conference of the Parties (COP) UN Climate Change Conference<sup>3</sup>, and began observing the negotiation process. I worked as an intern at the UNFCCC secretariat in the adaptation, science and technology team<sup>4</sup>. During this internship I gained insight into the role of the UNFCCC secretariat in

---

<sup>1</sup> Bryman (2004) describes a process as ‘a sequence of individual and collective events, actors and activities unfolding over time in a context’.

<sup>2</sup> 2-4 December 2009, the Netherlands.

<sup>3</sup> 7-18 December 2009, Denmark.

<sup>4</sup> During February, March and April 2010.

relation to the negotiation process and vital access to secretariat staff and presiding officers of the negotiation process. I was probably also influenced by the institutional thinking of the UNFCCC secretariat as I was working full time in the capacity of a regular member of staff.

To describe the concept of adaptiveness in relation to the negotiation process under the global UN climate change regime, I reviewed literature relating to dealing with dynamic change, complexity and uncertainty in decision making processes, including literature from policy learning and change, complex adaptive systems, resilience and adaptation, and adaptive governance, institutions, organizations and policy fields. This literature review served as a basis for developing a conceptual framework based around three obvious themes: stability, flexibility and learning<sup>5</sup>. This provides a 'concept map' (Maxwell, 2005) showing how theories and concepts as layers of reality have been overlaid and applied in the scope of my research. The conceptual framework was tested with informants outside of the UNFCCC secretariat to check that it was realistic and reliable to use as a framework for research and analysis. A definition and traits of adaptiveness was developed to identify adaptiveness in the negotiation process through analytic induction<sup>6</sup> (Ragin, 1994); it was initially informed by theory, then added to with empirical text and observations.

Transdisciplinary theories and ideas have been combined in an attempt to advance and enhance our understanding of a complex issue, rather than rely on one disciplinary view to solve it. This methodology is an attempt to see and understand the world in a more systemic, more holistic way (Max-Neef, 2005, Carpenter et al., 2009). Even if it is imperfect, I hope to contribute to what Max-Neef (2005) calls 'the unfinished project of transdisciplinarity'.

I recognise that there are practical and normative issues associated with identifying adaptiveness in the negotiation processes. Unlike in climate change mitigation, where CO<sub>2</sub> equivalence can be used as a common metric, conceptually, adaptiveness (as well as related concepts vulnerability and adaptation) lacks a common metric that can be used to measure, report and verify outputs and outcomes (UNFCCC, 2008a; Frankel-Reed et al., 2009; Levina, 2007). On this basis, identifying adaptiveness should be specific to the system in question. This has been considered throughout the development of the set of adaptiveness traits for the purposes of this research. For these reasons, systemic, process-based traits have been synthesised in an effort to develop a way of understanding adaptiveness in processes that may be transferrable to similar studies (Harley et al., 2008; Harley and van Minnen, 2009; de Franca Doria et al., 2009). However because the traits used here are specific to the negotiation process within the UN climate change regime, the results of this research may not be directly comparable with similar studies. Also in this vein, a description of the background and context relating to the focus of this research is provided in chapter 2 to emphasise

---

<sup>5</sup> Maxwell (2005) defines a conceptual framework as the system of concepts, assumptions, expectations, beliefs, and theories that supports and informs your research. Miles and Huberman (1994) define a conceptual framework as a visual or written product, one that 'explains, either graphically or in narrative form, the main things to be studied: the key factors, concepts, or variables and the presumed relationships among them'.

<sup>6</sup> A technique used by qualitative researchers to assess commonalities across cases and thereby clarify empirical categories and the concepts that are exemplified by the cases included in a category. It is a 'double fitting' of ideas and evidence that focuses on similarities across a limited number of cases studied in depth (Ragin, 1994).

‘the contextual understanding of social behaviour, meaning that the process must be understood in context’ (Bryman, 2004), as well as helping the reader to understand the problem area.

The negotiation tracks used as cases here were selected on the basis of three aspects: fit with my problem statement, in that both cases are part of negotiations about *adaptation to climate change*, which is a much more complex and uncertain area of the negotiations than those relating to mitigation<sup>7</sup>; ease of obtaining relevant information for analysis<sup>8</sup>, and representation of ‘progress extremes’<sup>9</sup> by two cases that are similar enough in time of inception and timeframe as well as other organizational and contextual aspects to be validly compared (although it is recognised that both tracks still have very different contexts (Interview, 2010)).

An interview guide (Appendix 2) was developed on the basis of the conceptual framework and tested with informants. During the final weeks of my internship I conducted nine semi-structured interviews<sup>10</sup>, and further observed the negotiation process at the 11th session of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP 11) and the 9th session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA 9), held in Germany from 9-11 April 2010.

### **1.3.2. Materials, access and analysis**

The fundamental materials for this research include text relating to cases including mandates (UNFCCC, 2010e; UNFCCC, 2010f) and chronologies of the process, including organizational factors in their processes, influences from within the UNFCCC process as well as wider influences such as the IPCC’s AR4 report (UNFCCC, 2010g; UNFCCC, 2010h), academic and grey literature relating to the conceptual framework and the negotiation process; recorded and transcribed material collected from interviews; and a research diary where thoughts relating to the conceptual framework, participatory and non-participatory observations of the climate change negotiation process and operation of the UNFCCC Secretariat were recorded regularly throughout the research process. Depledge (2005) and Yamin and Depledge (2004) provide an empirical description of the negotiation process and regime under the UN. Text relating to the cases was obtained from the UNFCCC library and website. Academic literature was sourced through Lund University’s *ELIN* search engine, the Malmö city library and Lund University libraries.

Appendix 1 presents full details of actors who were interviewed for this research. Interviewees were selected on the basis of knowledge and involvement of the two

---

<sup>7</sup> As discussed later in this thesis, this is due to the lack of agreement about the meaning, scope and timing of adaptation; limited capacity in developing countries to undertake vulnerability assessments and planning; and bottlenecks in the availability of funding, and deciding who should provide and who is eligible for funding (Yamin and Depledge, 2004).

<sup>8</sup> I was working in the adaptation, science and technology team during my internship with the UNFCCC, on tasks relating to these negotiation tracks.

<sup>9</sup> Decision 2/CP.11, the Nairobi work programme on impacts, vulnerability and adaptation to climate change is recognised by many as successful (Interviews, 2010), where as decision 1/CP.10, the Buenos Aires programme of work on adaptation and response measures is widely recognised as making very slow progress, due to the politically contentious nature of developing agreement relating to response measures.

<sup>10</sup> Interviewees will remain anonymous beyond the initial consideration of this thesis.

case studies, but also in an attempt to balance bias in perspectives given (across genders, cultures and regions of the world and developed and developing nations). All interviews were semi-structured and based on the aforementioned interview guide, were held in person or over the phone<sup>11</sup>, and were recorded and transcribed. Questions were based on the interview guide, but kept open ended, as this usually allows for a more flexible interview (Mikkelsen, 2005), but also meant that I could use the same interview guide for different actors with different knowledge relating to the case tracks. Notes were also taken during each phone interview and compiled with transcripts of recorded material into a single database (Yin, 2003), and roughly coded to fit with the traits and themes of adaptiveness. I followed Kvale's (1996) principle of 'the shorter the interview questions are, and the longer interview answers are, the better' during interviews. Interviews were undertaken until theoretical saturation was recognised (Bryman, 2004).

Materials and data were analysed deductively, drawing from theories relating to the concept of adaptiveness (described in chapter 3) to develop a way to operationalise and test the application of this concept within two negotiation tracks within the negotiation process under the UN climate change regime as cases (Bryman, 2004). Triangulation on the basis of interview material, text and observations was used to make the best attempt to fully explain research findings.

### **1.3.3. Scope, limitations and system boundaries**

Because this research area is broad and complex, it is necessary to carefully define the boundaries and limitations of this research.

This research attempts to understand how the existing negotiation process within the global climate change regime under the UN (from here the terms 'negotiation process', or 'regime' refer to the global climate change regime under the UN, unless specified otherwise), can be improved, focussing specifically on how the process is organised<sup>12</sup>. The negotiation process is referred to in its broadest sense, including complementary forums and networks of actors. Within this scope, this research focusses specifically on the roles and contribution that both the UNFCCC secretariat and the presiding officers can make in organising a more adaptive negotiation process. In part this is because I had access to these actors, and that a balanced sample of delegates from different regions would be extremely difficult and time consuming to obtain. However this is also because the contribution that the UNFCCC secretariat and the presiding officers make to the negotiation process is not well researched (Depledge, 2005).

This research does not attempt to challenge the rules of the existing regime, or suggest that alternative negotiating platforms are more appropriate for developing an adequate global response to climate change. Also outside the scope of this thesis are broader, long standing debates over global environmental governance including the potential

---

<sup>11</sup> Phone interviews were held according to the recommendations of Cook (2009).

<sup>12</sup> As stated in the problem statement of this thesis, 'organizational factors, such as the role of the Chair, the choice of negotiating arenas, the rules for the conduct of business and the approach of negotiating texts, are usually taken for granted and rarely attract attention until something goes wrong' (Depledge, 2005). This observation is supported by both participants in the negotiating process, as well as academic literature (Depledge, 2005). Short term organizational decisions can be taken by Parties, Chairs and/or the Secretariat that directly influence the course of negotiations (Depledge, 2005).

for exploiting synergies across different regimes and even the possibility of establishing a new overarching Global Environment Organization (Rosenau and Czempiel, 1992; Young, 1997; Brack and Hyvarinen, 2002 as referred to by Yamin and Depledge, 2004).

Although the role of Parties is central in organising and developing the negotiation process and the global climate change regime under the UN, the role of the parties in this research is not explicitly considered; political motives of parties in influencing the process, distribution of power, the power base of the regime, the influence of the dominant hegemon (Bulkely and Newell, 2010), domestic interests, the salience of an issue, inequalities between Parties, and broader geopolitics are also excluded, on the basis that they are rarely able to be manipulated so directly (Depledge, 2005). This research also does not directly seek to enhance cooperative negotiating behaviour where negotiators engage in joint problem solving to collaboratively explore solutions that achieve an integrative, or win-win, solution where joint gains for all are made (as opposed to competitive behaviour, where negotiators engage in individualistic or positional bargaining, seeking to defend positions and extract maximum gains from one another through a more confrontational, win-lose approach), although this may implicitly be achieved through the interventions proposed in this thesis.

I recognise that organizational factors by themselves cannot be entirely responsible for the resulting success or failure of a negotiation. Depledge (2005) acknowledges that 'even the best-organized negotiation will fail if the political will to reach agreement is simply absent'. But I also recognize that in order to make a small but pragmatic contribution to progressing the development of an adequate global response to climate change, it may be possible to influence change from inside a system. This position is supported by Yamin and Depledge (2004): 'although the negotiation process, and how it could be improved, has remained on the sidelines of these debates, its rightful place is at their centre. In whatever way the current system of global environmental governance is eventually reformed (or not), it will remain founded on negotiation as the engine of intergovernmental cooperation'.

#### **1.3.4. Disposition**

This paper is organized into the following sections: Chapter 2: presents background, a description of the climate change regime, and cases; Chapter 3: presents the conceptual/theoretical framework and development of traits to recognise adaptiveness in the negotiation process; Chapter 4: presents, analyses and discusses results in relation to research questions, including responses to interview questions, material gathered to answer research questions and observations of the negotiation process and work of the UNFCCC secretariat; Chapter 5: discusses what can be learnt from this research, reflects on the methodology and suggests ideas for further research; Chapter 6: presents conclusions and a recommendation.

## 2. Background

This section introduces the regime within the context of climate change governance<sup>13</sup>, and the negotiations within it. The structure and nature of the regime and the negotiations is described, focusing on the organizational factors<sup>14</sup> of the process, consistent with the scope of this thesis. Parts of the regime including actors and their roles, the rules that shape the negotiations, and negotiating arenas are described, specifically in relation to designing and organizing the negotiation process. This description of the negotiation process provides lens to identify adaptiveness in the negotiation process through analysing two negotiation tracks.

### 2.1. *The global climate change regime and negotiation process*

Climate change is a transboundary issue governed most actively by a global environmental regime<sup>15</sup>, the UNFCCC, which was ratified by 192 countries in 1994. The UNFCCC provides an overall framework for intergovernmental efforts to tackle the interdependent challenge posed by climate change and defines substantive commitments. It recognizes that the climate system is a shared resource whose stability can be affected by greenhouse gases (GHGs) (UNFCCC, 2010). In 1997, the regime was strengthened when 184 Parties of the UNFCCC ratified the Kyoto Protocol, which has more powerful and legally binding measures (Boyd and Corbera, 2008; UNFCCC, 2010). The Copenhagen Accord (2009) is the most recent development of the regime, serving as a political agreement of commitments.

The UNFCCC established the basic institutional structure of the climate change regime: a supreme decision making body, the Conference of the Parties (COP); two subsidiary bodies (SBs) that provide advice to the COP - the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI); and a secretariat, serving both the COP and the subsidiary bodies. This basic institutional structure, as shown in Figure 2 has provided the structure and setting for negotiations within the climate change regime and continues today.

The COP meets every year to review the implementation of the UNFCCC, adopt decisions to further develop rules, and negotiate new commitments. The SBs meet at least twice a year to steer preparatory work for the COP. The SBSTA provides advice to the COP on matters of science, technology and methodology. The SBI helps to

---

13 Governance occurs on a global scale through both the coordination of states and the activities of a vast array of rule systems that exercise authority in the pursuit of goals and that function outside normal national jurisdictions. Some of the systems are formalised, many consist of informal structures, and some are still largely inchoate, but taken together, they cumulate to governance on a global scale (Bulkeley and Newell, 2010). Keohane and Victor (2010) describe the wider climate regime as a regime complex, a loosely coupled set of specific regimes relating to climate governance. The climate change regime is part of this governance system.

14 'organizational factors, such as the role of the Chair, the choice of negotiating arenas, the rules for the conduct of business and the approach of negotiating texts, are usually taken for granted and rarely attract attention until something goes wrong' (Depledge, 2005).

15 International regimes are usually defined as 'sets of both formal and informal rules, institutions, implicitly or explicitly agreed upon principles, norms, and decision making procedures around which actors' expectations converge in a specific issue areas (Biermann et al. 2010, Bulkeley and Newell, 2010). An important function performed by regimes is to provide an efficient framework for negotiations so that agreements are possible (Depledge, 2005).

assess and review the UNFCCC's implementation, as well as financial and administrative matters (UNFCCC, 2010).

Also introduced in Figure 2 are the two negotiation tracks that are used as cases for this research. These tracks will be discussed in more detail later in this section. It should be noted that there are many negotiation tracks that exist under the SBSTA and the SB, that is, more than just the two cases that are shown in Figure 2.

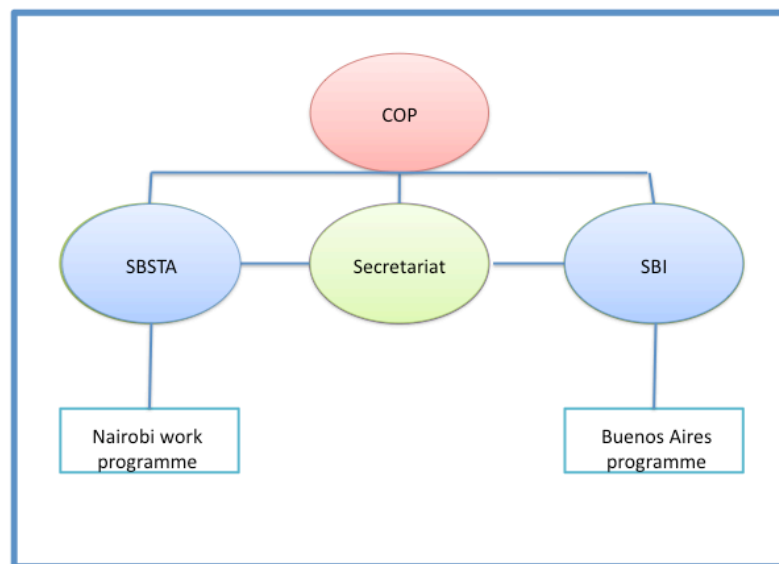


Figure 2: The basic institutional structure of the regime, including case negotiation tracks, decisions 1/CP.10, the Buenos Aires programme under the SBI, and decision 2/CP.11, the Nairobi work programme under the SBSTA. Note that these are not the only negotiation tracks under the subsidiary bodies (adapted from Depledge, 2005).

The negotiations are centered around actors (the actors that are central to this thesis are described below) and the process, including rules and informal norms. As well as the formal negotiation sessions that take place when the COP and SBs meet, the negotiation process is supported by a wider process including other complementary forums (workshops, expert meetings and pre-sessional consultations) and networks of actors. The Global Environment Facility<sup>16</sup> (GEF) and the Intergovernmental Panel on Climate Change<sup>17</sup> (IPCC) work with the Convention, but are not attached to it.

The negotiation process has become increasingly complex over the past decade as the numbers of Parties has risen, the issues on the table have multiplied and the political profile of climate change has grown.

<sup>16</sup> The GEF operates the UNFCCC's financial mechanism, channelling funds to developing countries on a grant or loan basis, and reports on its climate change work to the COP every year (UNFCCC, 2005).

<sup>17</sup> The IPCC publishes comprehensive progress reports on the state of climate change science every five years (the most recent was the AR4, published in 2007). It also prepares Special Reports or Technical Papers on specific issues in response to requests from the COP or SBSTA (UNFCCC, 2005).

### **2.1.1. Actors**

Although there are many actors that are involved with the regime including observers, this research is focused mostly on the role of the UNFCCC secretariat and the presiding officers of the negotiations, as they have influential roles within the process. The GEF and the IPCC are also included here as they are relevant to the case studies as introduced in 1.2, and described in detail in 2.2.1 and 2.2.2.

#### **Parties**

The Parties are central to the regime and negotiations as the main decision makers within a ‘party driven process’. There are currently 194 Parties signatory to the UNFCCC (UNFCCC, 2010a). Because parties have a diversity of specific national circumstances relative to climate change, overlaying unique contexts of inequalities of wealth, power and stage of development, the potential for a large range of preferences and proposals is large. Differing degrees of vulnerability to climate change impacts, economic dependence on the sale of fossil fuels, and emissions per capita or per unit of gross domestic product (GDP), are major variables that split both the developed and the developing countries (Depledge, 2005). Depledge (2005) summarises the perceived interests that shape a party’s position as: the importance attached to environmental protection; attitudes to multilateral cooperation in general, including levels of trust and geopolitical relations with other nations; and broad perceptions of the merits of different policy instruments (notably attitudes to market mechanisms, for example, emissions trading versus government regulation).

#### **The UNFCCC secretariat**

The UNFCCC and the Kyoto Protocol are serviced by the UNFCCC secretariat, as mandated in Article 8 of the UNFCCC. The secretariat supports all institutions involved in the climate change process, particularly the COP, and the SBs. It makes arrangements for the sessions of the UNFCCC bodies to help Parties fulfil their commitments, compiles and disseminates data and information according to mandates from the Parties (which may be specific or open, where open mandates give the secretariat more flexibility in implementation), and to confers with other relevant international agencies and conventions (UNFCCCb, 2010).

#### **Presiding officers (chairs)**

COP chairs, SB chairs and informal group chairs play an important role in any global negotiation. Along with the secretariat, presiding officers have overall responsibility for the smooth conduct of the negotiations, and their actions can influence every part of the organization of the negotiation process. There are three main layers of presiding officers in the climate change regime, corresponding to the three layers of negotiating. The President of the COP, the Chairs of the SBSTA and the SBI, with Chairs of informal groups established by the COP or subsidiary bodies to negotiate specific issues for one session only. The formal mandate and functions of the COP President and SB officers, are set out in the rules of procedure of the regime, and generally pertain to chairs of informal groups as well. Chairs of the COP and SBs are formally elected by the parties to the regime, with their basic terms of reference governed by the rules of procedure (Yamin and Depledge, 2004).

The political functions of presiding officers are not completely set out in writing, but are expected to include leadership in seeking consensus (Depledge, 2005). This informal role opens up a wide potential space for influencing the process and



procedural innovation at the discretion of the presiding officer, although this is not well defined. Depledge (2005) offers some clarity: ‘the extent to which a presiding officer may use most of their informal powers depends on the permissive consensus and trust of the participants the powers of a presiding officer are extensive and fragile at the same time’. Presiding officers should be impartial (Depledge, 2007).

Leadership by the COP President and SB Chairs, in partnership with the UNFCCC secretariat provides the overall strategic organization of the negotiations (relating to the conduct of business and decision making, use of different negotiating forums, choice of negotiating texts, management of time, and involvement of NGOs and ministers).

### **2.1.2. The negotiation process<sup>18</sup>**

#### **COP and SB sessions**

The meetings of the COP and subsidiary bodies are ‘attended by thousands of delegates, and structured around a crowded agenda, dozens of documents, a plethora of negotiating forums, late nights, and an array of activities on the side’ (Yamin and Depledge, 2004). The general structure of forums is shown in Figure 3. The negotiation process is increasingly spilling beyond the formal sessions, with more workshops, meetings and complimentary forums being held (Yamin and Depledge, 2004).

The organization of the negotiation process is a conscious act based on formal and informal sets of institutional arrangements, procedural rules and informal practices. Negotiations may be held in formal or informal as well as closed and open forums. The basic roles, functions and scope of authority of actors is established in the founding texts and rules of procedure of the regime, and sometimes elaborated on in supplementary decisions, and acted upon through improvisation, interpretation and informal practices (Yamin and Depledge, 2004). The development and application of informal practices is also subject to the consent of the parties. The main actors involved in the organization of the negotiating process are the chairs and the secretariat, to whom the negotiating Parties delegate organizational decision making. The organizers can assume important roles in supplying process oriented leadership<sup>19</sup>, or organizational energy, to the process, depending on their skills and attributes, and the needs of the negotiations.

Organizing the negotiation process involves managing a range of organizational elements including, but not limited to: rules for the conduct of business and decision making as set out in the UNFCCC (1996); the use of different arenas for negotiation and discussion (e.g. big/small, open/closed, inclusive/limited participation); the timing of the negotiations; the use of negotiating texts; and rules for high-level participation; and rules for the participation of stakeholders (e.g. environmental NGOs, businesses)

---

18 A negotiation can be understood as ‘a process of mutual persuasion and adjustment which aims at combining non-identical actor preferences into a single joint decision’ (Depledge, 2005).

19 Process-oriented leadership (Wettestad, 1999, cited in Depledge, 2005) refers to leadership that seeks to promote the broad success of a negotiation. It is therefore distinct from substantive leadership aimed at furthering a particular outcome desired by the leader, which would more likely be exercised by a negotiating government (Depledge, 2005). Process oriented leadership is aims at advancing and improving the success of the process (Depledge, 2005).

(Yamin and Depledge, 2004). Although, the organizational elements of the negotiation process are not specifically defined, and other organizational elements could also come into play, such as the geographical venue of a negotiation, the financing of the regime, the way parties organize themselves into coalitions and the composition of delegations.

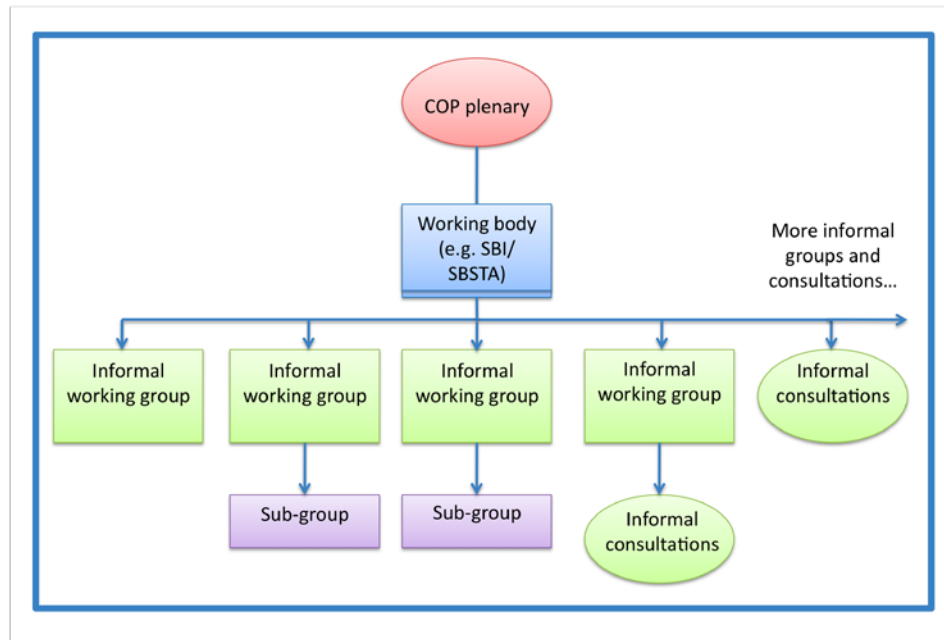


Figure 3: Negotiating forums in a generic COP session (adapted from Depledge, 2005).

### Complimentary forums and reviews

Negotiations undertaken at COP or SB sessions are complemented by forums such as workshops and roundtables, which are aimed at gathering information and exchanging views, rather than political bargaining. These forums are explicitly highly informal, with no set rules governing their structure or conduct of business. Complimentary forums lack the mandate to engage in bargaining, and presiding officers and the secretariat have even more ability to influence their organization. Complimentary forums can be an important opportunity to ‘grease the wheels’ of the negotiations proper, focusing on workshops and roundtables (Depledge, 2005).

High level round tables, workshops, expert meetings and pre-session consultations performing a variety of roles can help to increase the efficiency of the negotiations, including promoting of more candid and honest debate among delegates outside the formality of negotiating arenas (Interview, 2010). Depledge (2005) observed that in many cases, complimentary forums have become arenas not only for more in-depth discussion, but also for broaching topics that would be vetoed in the negotiating arenas, helping to pave the way for more effective bargaining by facilitating the flow of information and ideas. Negotiating Parties may schedule reviews into the process to reassess a decision. Parties may also from time to time review how the regime’s rules are working and being implemented (Depledge, 2005).

## **2.2. Cases**

To answer the research questions outlined in section 1.2, the processes of two decisions under the UNFCCC relating to adaptation to climate change (as described below) are analyzed using the traits developed in chapter 3.

The UNFCCC commits countries to prepare for and facilitate adequate adaptation to climate change (Article 4.1, UNFCCC, 1992). All Parties are required to take the actions necessary related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing countries arising from the adverse effects of climate change (Article 4.8, UNFCCC, 1992) and to take full account of the specific needs and situations of the least developed countries (LDCs) in their actions with regard to funding and transfer of technology (Article 4.9). In addition, developed countries are required to assist developing countries in meeting costs of adaptation to the adverse effects of climate change (Article 4.4, UNFCCC, 1992) (UNFCCC, 2010d).

Decisions 1/CP.10 and 2/CP.11 progress the implementation of Article 4 of the UNFCCC. According to Yamin and Depledge, (2004) implementation of the Convention's adaptation provisions has been slow because of three interlocking factors: lack of agreement about the meaning, scope and timing of adaptation; limited capacity in developing countries to undertake vulnerability assessments and planning; and bottlenecks in the availability of funding, and deciding who should provide and who is eligible for funding. Decision making has also been constrained by procedural and political factors, in particular, the fragmentation of policy caused by the lack of a single COP agenda item to address adaptation issues and political complications in separating adaptation from the conceptually distinct potential problems facing energy exporting countries arising from the implementation of response measures (Yamin and Depledge, 2004).

### **2.2.1. Decision 1/CP.10, the Buenos Aires programme**

Decision 1/CP.10, the Buenos Aires programme of work on adaptation and response measures<sup>20</sup> (Buenos Aires programme) (UNFCCC 2010e) began in 2004, and progresses negotiations and describes ways to respond to the adverse effects of climate change as described to below and referred to in Article 4 of the Convention (UNFCCC, 2010d). Negotiations are ongoing. Responding to the adverse effects of climate change is referred to in conjunction with addressing the impact of the implementation of response measures (UNFCCC, 1992, Article 4.8. UNFCCC, 2010d).

To progress this decision, three regional workshops, two pre-session expert meetings and one expert meeting for small island developing States (SIDS), have been held to facilitate information exchange and integrated assessments and thus assist in identifying specific adaptation needs and concerns. Negotiations have also been undertaken under the SBI, submissions from parties and other organizations provided to the process, a round table meeting held during negotiation sessions, and

---

<sup>20</sup> The term 'response measures' is not defined in the UNFCCC, or the Kyoto Protocol, but refers generally to the negative economic aspects resulting from the implementation of climate mitigation policies. These economic impacts arise from efforts to prevent climate change, and thus have nothing to do with adapting to the adverse effects of climate change (Yamin and Depledge, 2004).

informal pre-sessional meeting held, and one expert meeting held. Scheduled reviews and reporting of progress were undertaken at COP12 and 13 where the secretariat reported on the outcome of workshops, progress through national communications of Annex II Parties, as well as the GEF and other bilateral and multilateral sources providing feedback about their related activities. (UNFCCC, 2004).

The Buenos Aires programme is recognized as much more contentious than Nairobi work programme, with the positions of the parties (in particular the Organisation of Petroleum Exporting Countries (OPEC) countries and SIDS) much farther apart in relation to response measures (Interview, 2010), and a lack of willingness of parties to understand opposing perspectives (Interview, 2010). It seems that decision making on response measures is delaying further progress on the other part of the decision, adaptation to climate change to the adverse effects of climate change, creating a tension between the two parts of this negotiation track (Interview, 2010). In relation to complexity and uncertainty within the negotiation process, recognising that one of the functions of decision the Buenos Aires programme is to agree on what needs to be done to further implementation, it has links to bigger processes, which creates uncertainty (Interview, 2010).

### **2.2.2. Decision 2/CP.11, the Nairobi work programme**

Decision 2/CP.11, the Nairobi work programme on impacts, vulnerability and adaptation to climate change (the Nairobi work programme), began its conception in 2003 at COP9, but was not adopted until 2005, at COP 11.

The Nairobi work programme is a five-year programme (2005-2010) mandated through open and direct SBSTA/COP mandates. It is implemented by Parties, intergovernmental and non-governmental organizations, the private sector, communities and other stakeholders, and undertaken under the SBSTA. Its objective is to assist all Parties, in particular developing countries, including the least developed countries and SIDS to: improve their understanding and assessment of impacts, vulnerability and adaptation to climate change; make informed decisions on practical adaptation actions and measures to respond to climate change on a sound scientific, technical and socio-economic basis, taking into account current and future climate change and variability.

The approach taken to achieve this objective includes: activities mandated by the SBSTA - sharing information and experience through facilitating submissions from Parties and relevant organizations, technical and synthesis reports and web-based information resources, workshops and expert meetings, where the current status and lessons learned in the various areas of work were discussed, and recommendations were made on how to address identified gaps, needs, opportunities and constraints; catalysing innovative adaptation action through engaging a wide range of organizations through the nomination of special focal points, dedicated meetings with involved organizations and small technical preparatory meetings for each area of work; disseminating deliverables to relevant stakeholders through brochures, electronic newsletters, and online databases and interfaces (UNFCCC secretariat, 2008; UNFCCC secretariat, 2005a).

The programme is recognised by many people as successful. A big part of this success relates to the innovative way the programme has catalysed new adaptation action

through identifying gaps and needs and calling for action on this basis (calls for action), actively engaging stakeholders as partners to the programme (including organizations, institutions and businesses at all levels and in a large range of sectors), and stimulating pledges of action and the identification of adaptation experts, (Interview, 2010; UNFCCC, 2008). The Nairobi work programme was recognised by one interviewee as *'the least controversial and most straight forward negotiation track under the convention, because everyone agrees that adaptation is important... it has provided an interface between non parties, NGOs etc and the negotiation process'* (Interview, 2010). The only uncertainty relating to 2/CP.11, is that because it's time bound, parties don't know if it will continue with a second commitment period (Interview, 2010).

Twenty-five organizations and institutions shared their knowledge and views through submissions, and representatives from 87 organizations participated in workshops and expert meetings (Figure 4 shows the types of organizations represented).

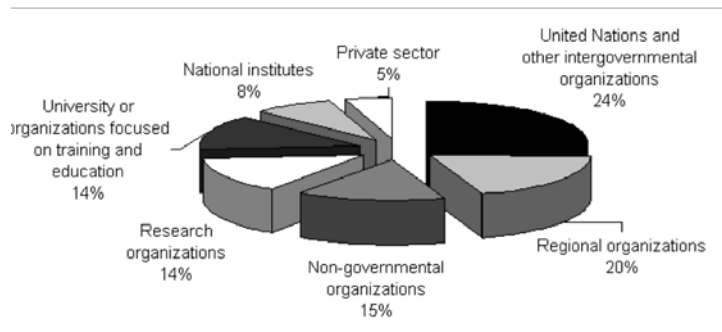


Figure 4: Types and percentages of organizations that have participated in Nairobi work programme workshops and expert meetings (UNFCCC, 2008).

### 3. Conceptual framework and identifying adaptiveness

#### 3.1. *Developing and applying the conceptual framework*

This section presents a conceptual framework to apply to and identify adaptiveness in the negotiating process in order to answer the first research question. The concept map in Figure 5 provides an overview of the conceptual framework used here.

‘Adapt’ and its derivatives have been popularized in many fields (Levina and Tirpak, 2006). There are many definitions relating to ‘adapting’, including adaptation, and adaptive capacity, depending on the subject, the context and the discipline applying the concept. To increase adaptiveness in a process, the IISD (2006) propose designing formal review as well as inherent self-correcting features and mechanisms that are capable of responding to unanticipated change into a process so that it can adapt (here based on complex adaptive systems theory). Here both formal review and inherent self-correcting features and mechanisms apply. On this basis, stability, flexibility and supporting capacity for ongoing learning became obvious as a useful thematic framework to use to identify adaptiveness in relation to the negotiation process, where learning supports both stability and flexibility. These ideas were checked and added to through reviewing approaches from different fields relating to governance where change, complexity and uncertainty are present, including literature from policy learning and change, resilience and adaptation, and adaptive governance, and organizations and policy. Specific traits of adaptiveness were synthesised on this basis to further fit adaptiveness to the negotiation process. To further fit the concept of adaptiveness to the negotiation process, possible organizational traits (as discussed in chapter 2 are overlaid the themes and traits. Table 1 shows these themes, traits and organisational factors in relation to each other, and is used to identify adaptiveness in the cases. Relevant parts of this literature review are described below.

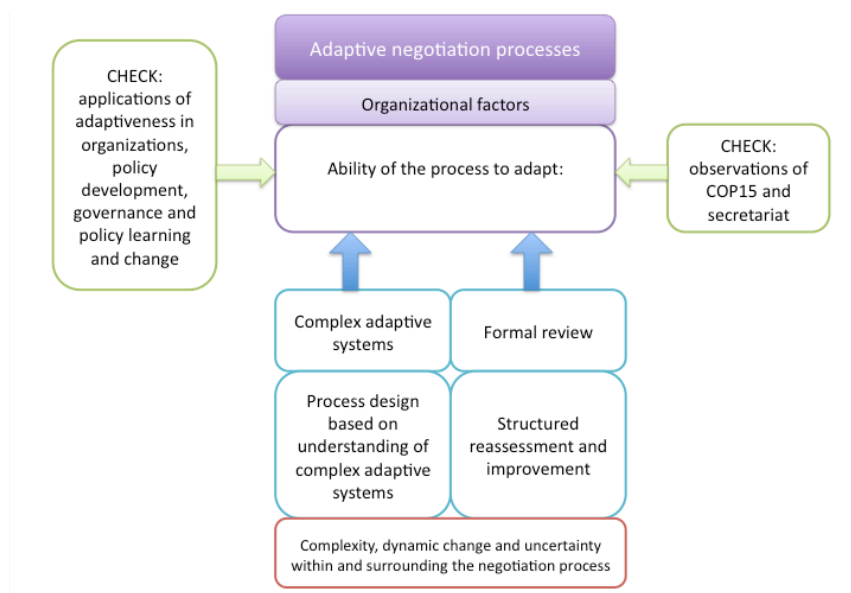


Figure 5: Concept map showing how concepts are connected and overlaid to contribute to developing a definition and traits of adaptiveness in negotiation processes under the UN climate change regime. Modified from IISD (2006).

#### **The regime as a complex adaptive system**

Complex adaptive systems theory provides a useful insight into understanding the context that the negotiation process takes place in as well as the process itself, where multilayered uncertainty and complexity exists. Considering the regime as a complex adaptive system<sup>21</sup> also serves as a useful basis for understanding the importance of stability, flexibility and learning in the negotiation process, and designing inherent self-correcting features and mechanisms that are capable of responding to unanticipated change into a process so that it can adapt.

A complex adaptive system is a conceptual articulation of the real world and has been described as being ‘...made up of many individual, self-organizing elements capable of responding to others and to their environment. Complex adaptive systems are complex, unpredictable and constantly adapting to their environments and defined by nonlinear feedbacks. The entire system can be seen as a network of relationships and interactions, in which the whole is very much more than the sum of the parts. A change in any part of the system, even in a single element, produces reactions and changes in associated elements and the context surrounding the system. Therefore, the effects of any one intervention in the system cannot be predicted with complete accuracy, because the ‘system is always responding and adapting to changes and the actions of individuals’ (Nelson et al., 2007). Examples of complex adaptive systems include the weather, our immune systems, the economy, ecosystems, single cells and brains (Nelson et al., 2007; Folke et al., 2007; Norberg and Cumming, 2008). Based on my understanding of complex adaptive systems, the climate change regime can be conceptualised as a complex adaptive system, because it is dynamic, constantly under development and responding to internal and external change.

Because complex adaptive system processes are not easy to understand or predict, system characteristics such as stability, flexibility, self-organization and learning have been recognised as critical to understanding change within a system as the surrounding context changes, and changes within the context surrounding a system as the system changes (Nelson et al., 2007; Folke et al., 2007, Liu et al., 2007). The study of complex adaptive systems has increased with a growing need to better understand the structures underlying complex situations to identify the best leverage points for change. The IISD (2006) observed the application of complex adaptive systems in many fields. The findings from research focused on complex adaptive systems provide an insightful set of principles for effective policy intervention in real world complex adaptive systems (IISD, 2006). The complex adaptive systems approach shifts the perspective on governance from aiming at controlling change in resource and ecosystems that are assumed to be stable, to enhancing the capacity of social-ecological systems to learn and live with and shape change and even find ways to transform into more desirable directions following change (Folke et al., 2007).

The complex adaptive systems approach sets the scene for understanding adaptiveness. Biermann et al (2009) refer to adaptiveness as an umbrella term for a set of related concepts—vulnerability, resilience, adaptation, robustness, adaptive capacity, social learning etc, to describe changes made by social groups in response to, or in anticipation of, challenges created through change. Adaptiveness supports a collective or social actor, or a social-ecological system, to maintain those functions

---

<sup>21</sup> The regime within the climate system could also be termed a ‘complex social ecological system’, which fits within the broader complex adaptive system context (Folke et al., 2007).

essential for the survival of that actor or system. Lacking adaptiveness thus jeopardizes the existence of the system (Biermann et al 2009, Adgar 2006, Folke 2006).

According to Nelson et al (2007), the concept of adaptation has developed through two general disciplinary fields: environmental change, which developed through mostly social science disciplines, particularly early work on hazards and disasters; and ecological resilience, which developed through the population and landscape ecology field, with a systems and mathematical foundation and focus on modelling. The environmental change approach to adaptation is based on actors and includes processes of negotiation, decision making ability, and the power to implement those decisions. It is a process in which knowledge, experience, and institutional structures combine together to characterize options and determine action. The process is negotiated and mediated through social groups, and decisions are reached through networks of actors that struggle to achieve their particular goals. The ecological resilience approach complements the environmental change approach by examining the implications of these processes on the broader social ecological system (Nelson et al., 2007).

According to Nelson et al, (2007), on the basis of both environmental change and ecological resilience fields, adaptation is ‘a process of deliberate change in anticipation of, or in reaction to external stimuli or stress (including the decision making process and the set of actions undertaken to maintain the capacity to deal with future change or perturbations to a social ecological system)’.

Nelson et al (2007) define adaptive capacity as ‘the necessary preconditions for a system to be able to adapt to disturbances’. The capacity to design and implement effective adaptation strategies to cope with current or future events may include resources such as economic capital, technology and infrastructure, information, knowledge, institutions, the capacity to learn, and social capital (Nelson et al., 2009). In relation to resource-governance systems, Pahl-Wostl (2009) defines adaptive capacity as ‘the ability of a resource governance system to first alter processes and if required, convert structural elements as response to experienced or expected changes in the societal or natural environment’. In social systems, the Resilience Alliance, (2007), and Berkes et al. (2003) see that the existence of institutions and networks that learn, store knowledge and experience, and create flexibility in problem solving plays an important role in adaptive capacity.

Nelson et al (2007) term the outcome of the adaptation process as system adaptedness, ‘the level of effectiveness in the way a system relates with the environment and meets the normative goals of system managers and stakeholders’. Adaptedness is never permanent, and the level of adaptedness will change on basis of the types, frequencies, and magnitudes of system disturbances. System disturbances affect the relationships and the feedbacks within a system, and may be social, biological, or physical in nature. Adaptedness and resilience of a system can be seen as part of a path-dependent trajectory of change Nelson et al. (2007), as past decisions influence the range of possible options today, and today’s decisions have implications for the future flexibility. Because the climate change regime has evolved over time with technological infrastructure and other artefacts, this co-evolutionary development and path dependence has generated an interdependence of regime elements, which are



important in maintaining the function of the regime, and the convergence of the expectations of actors involved. The downside of this interdependence is that it can prevent change (or adaptiveness in the process), and that it may generate lock-in situations (Pahl-Wostl, 2009).

The concept of resilience is also useful here as a conceptual lens (Boyd et al., 2008). As defined by Nelson et al (2007) resilience is ‘the amount of change a system can undergo and still retain the same function and structure while maintaining options to develop’. Developed on the basis of complex adaptive systems theory, the resilience approach focuses on understanding change through looking at whole systems, including the relationships between the system components, the context the system operates in, feedbacks, and connectedness of system components, not just on the functioning of individual components in isolation (Berkes et al., 2003). According to Nelson et al. (2007), as sources of resilience increase, so does the capacity to adapt. Resilience theory has been applied to social systems, where the concept is extended to consider the social system’s capability to self-organize and build capacity for learning and adaptation (Nelson et al., 2007).

### **Applying and identifying adaptiveness**

On the basis of resilience theory, Nelson et al. (2007) identify sources of adaptiveness as inherent system characteristics that absorb perturbations without losing function to maintain stability, such as networks and social capital that allow autonomous action, and resources that promote institutional learning. Carpenter et al. (2001); Thomas et al. (2005) as cited in Nelson et al (2007) see one approach for measuring adaptiveness is to look at the constituent parts of a system: stability, self-organization, and learning. Attempts of this nature have been made to measure adaptation and resilience. Carpenter et al. (2001) as cited in Nelson et al (2007) measured the resilience of two social-ecological systems by looking at the stability of the systems, in other words, the capacity of the systems to absorb disturbances before moving into another regime. Reed (2008) shows that the participation of multiple stakeholders in environmental decision making can enhance the quality and durability of decisions and potentially lead to better informed policy options, by drawing on a more diverse knowledge base.

Carpenter and Folke (2006) and the Resilience Alliance (2007) from an ecological resilience approach define adaptive governance as institutional and political frameworks that are designed to adapt to changing relationships between society and ecosystems in ways that sustain ecosystem services. Adaptive governance is a process of creating adaptability and transformability in social ecological systems (Walker et al., 2004). Within a governance approach, Pahl-Wostl (2009) considers that regimes are resilient where the basic functions of a regime are sustained despite short-term disturbance or long-term societal or environmental changes. Nelson et al. (2007) also see that resilience can be retained by maintaining diversity, be it biological diversity or multi-stakeholder involvement in a process.

The application of adaptive management and governance approaches to social systems has increased recently (Foxon et al., 2009; Moran and Elvin, 2009), including identifying the boundaries and nature of stakeholder involvement, as well as the ways in which participatory processes and information flows can enhance social learning and build adaptive capacity (Stringer et al., 2006). Hoffman (2005) applied a complex systems theory perspective to climate change governance ‘the study of complex

systems or complexity theory provides a set of ideas and insights about the mechanisms through which agents interact with their environment, changing both in the process.... the evolution of social norms'. At the micro-level, Hoffman (2005) uses complexity theory to illuminate the ways in which individual agents act, and, in particular, adapt through changing norms in a dynamic context.

### **Learning in an adaptive process**

A brief review of policy learning and policy change theories and literature suggests that learning is fundamentally important in supporting adaptive negotiating processes. Depledge (2005) considers 'continuous gradual learning is very important for the sustained success of a continuous negotiation process'. In relation to national policy development, Bennett and Howlett (1992) assert 'states can learn from their experiences and that they can modify their present actions on the basis of their implementation of how previous actions have fared in the past'. Finus and Pintassilgo (2009) found that learning has a positive effect under uncertainty.

In this instance, learning is not necessarily about reducing uncertainty relating to the negotiating process, but about learning how to adapt the process with the changing context that the process operates within. Although individual actors, parties, and supporting governmental and non-governmental organizations all learn in relation to the process, Depledge (2005) identifies the main actor related this research as the secretariat, as the secretariat serves as the institutional memory of the regime. In this respect, the secretariat should be able to monitor and assess experiences in the organization of negotiations, applying these experiences to new negotiation rounds, and communicating the lessons learned to new staff so that they are not forgotten.

Pahl-Wostl (2009) emphasizes the value of informal networks to support innovation and learning. She refers to empirical evidence suggesting that adaptive or shadow networks can prepare a system for change by exploring alternative system configurations and developing new strategies (Pahl-Wostl, 2009). In their review of policy learning and change literature, the IISD (2006) observed widespread agreement on the importance of networks, coalitions, or communities of interest and the ways in which they interact in the process of policy learning (including policy makers, researchers, business or professional interests, and advocates etc.), but see the use and role of new knowledge in is less clear.

The IISD (2006) assert that an adaptive policy system must facilitate policy learning or change. 'This process is unlikely to be smooth and simple, and it will often be time-consuming, but to facilitate adaptive policies, we should want to ensure that policy learning and change eventually generate the desired outcome: effective adaptation to dynamic conditions' (IISD, 2006). As well as this, the literature suggests that the formal and informal networks of actors involved in learning are also crucial for supporting learning processes in this context (Bodin and Crona, 2009).

Considering who learns, what is learned, and what the outcome of the learning can be a useful way to frame learning within a specific process (Bennett and Howlett, 1992). In their review of policy learning and change theories, Bennett and Howlett (1992) deduce that learning is a complex, multi-tiered phenomenon. Pahl-Wostl (2009) considers learning to be an exploratory, stepwise search process where actors experiment with innovation until they meet constraints and new boundaries. Learning

may be conditioned by the nature of the structures and processes involved, and by the ways in which knowledge permeates these structures through interaction of individuals and groups (IISD, 2006).

The policy learning and change literature suggests that new knowledge is filtered by actors' value and belief systems, prior experience, association, relative power, professional training, and norms, and is normally a shallow process, limited to insights about choice of means and power strategies (IISD, 2006).

Pahl-Wostl (2009) refers to triple-loop learning processes, where single-loop learning refers to an incremental improvement of action strategies without questioning the underlying assumptions; double-loop learning refers to a revisiting of assumptions (e.g. about cause and effect relationships); and triple-loop learning refers to learning where underlying values, world views and beliefs are reconsidered. Pahl-Wostl (2009) sees the triple-loop concept for learning compelling since it takes into account the different levels that provide guidance and stability in a system at increasing time scales for change. The direction of change might become haphazard if individuals or organizations were to revisit basic values constantly, however there would be no innovation or evolution to a higher adaptive capacity if individuals or organizations never revisited basic values (Pahl-Wostl, 2009). Pahl-Wostl (2009) suggests developing operational indicators on the basis of the triple-loop learning model, which could be applied to better understand the degree of learning in governance processes.

Depledge (2006) presents observations of the consequences of loss of learning in relation to the UNFCCC negotiation process, including stagnation, political entrenchment, and a tendency for the process to become 'stuck'. Pahl-Wostl (2009) considers that learning is central to developing adaptive capacity in resource governance regimes.

### **3.2. Identifying adaptiveness**

For the purposes of this research, adaptive negotiating processes *use scheduled reviews as well as inherent self-correcting features based on ability to continually learn, ability to be flexible where necessary, and stability to continue to develop to adapt* to unanticipated change. This definition is supported by process-based<sup>22</sup> traits, organized according to the themes of stability, flexibility and learning as described in the literature, and in relation to the organizational factors of the process discussed in chapter 2, so that the process can be influenced (Table 1 below). Some traits contribute to more than one theme. Combining the themes and traits developed in this chapter with the process based organizational factors described in chapter 2 illuminates a possible way to apply adaptive governance ideas to the negotiation process within the existing global climate change regime. These themes and traits were used to analyse the two cases described in chapter 2 to answer research question one.

---

<sup>22</sup> Process based traits are more applicable here than outcome based traits (which can also be used to measure adaptation) because the focus of this research is on the influence of organizational traits and designing the process to be adaptive. As well as this, the objectives of the negotiation processes are diverse.

<b>Trait</b>	<b>Stability</b>	<b>Flexibility</b>	<b>Learning</b>	<b>Reference</b>	<b>Possible organizational factors</b>
Review of progress scheduled in process		x	x	IISD (2006)	Review of progress scheduled in process
Informal and formal networks that support the process	x	x	x	IISD (2006); Michel (2009); Pahl-Wostl (2009); Olsson et al. (2006); the Resilience Alliance (2007); Nelson et al. (2007)	Open mandates
Diversity of ideas provided, considered and/or supported drawing from a broad knowledge base	x	x	x	Reed (2008); Pahl-Wostl (2009)	Ability of presiding officers
Funding stability to support the process	x			Nelson et al. (2007)	
Knowledge and awareness of the process by stakeholders	x			Michel (2009)	Open mandates, ability of presiding officers
Opportunities for self-organization		x		Nelson et al. (2007)	Ability of presiding officers
Deliberate experimentation and continuous learning-by-doing to test and adjust ongoing policy responses,		x	x	Michel (2009)	Ability of presiding officers and secretariat, open mandates
Space for emergence of new norms		x		Folke (2007)	Ability of presiding officers
Opportunities for and evidence of learning through the process, and storing knowledge, specifically substantive and process-based learning in the secretariat			x	IISD (2006); Pahl-Wostl, (2009); Nelson et al. (2007); Resilience Alliance (2007); Reed (2008)	Ability of presiding officers and secretariat as the institutional memory of the regime
Social capital	x	x	x	Nelson et al. (2007)	Ability of presiding officers; ability of secretariat; informal arenas and forums

Table 1: Themes and traits of adaptiveness, and organizational factors that could be used to influence a more adaptive negotiation process as described in chapter 2 (Yamin and Depledge, 2004; Depledge, 2005) that could be used to influence a more adaptive negotiation process.

## 4. Results and analysis

This section initially presents results, comparing and analysing the cases, then discusses results and answers research questions. This section uses the traits in Table 1 to identify adaptiveness in each case study through analysing material gathered from interviews, and on official documentation of the process (UNFCCC, 2010e; UNFCCC, 2010f; UNFCCC, 2010g; UNFCCC, 2010h) and secondarily on observations of activity at negotiation sessions and within the UNFCCC secretariat. Research question two is answered through comparing the adaptiveness of both cases, as well as progress made in achieving objectives (in mandates), and identifying and discussing possible explanations for the results. Results are generally consistent with the observations and descriptions of the process in Depledge (2007); Depledge (2006); and Yamin and Depledge (2004).

### 4.1. Identifying and comparing adaptiveness in cases

All interviewees agreed that adaptiveness in the process, including both stability and flexibility, as well as the capacity for learning in a process, were fundamentally important in making progress towards the objectives of the negotiations within the dynamic, complex and uncertain context that surrounds and infuses the process. *'Flexibility and stability in the process are both important, at either extreme, the process will probably stall or be too general too general to be helpful'* (Interview, 2010). The results of evaluating both cases against the themes and traits are presented initially in Table 2, with general results relating to both cases are discussed in relation to stability, flexibility and learning. Where traits are present in both cases, they are compared relatively to each other (more or less).

Trait	Buenos Aires	Nairobi	Stability	Flexibility	Learning	Organizational factors used
Review of progress scheduled in process	□ L	□ M		×	×	Review of progress scheduled in process
Informal and formal networks that support the process	□ L	□ M	×	×	×	Open and <i>specific</i> mandates; <i>informal forums</i>
Diversity of ideas provided, considered and/or supported drawing from a broad knowledge base	?	□	×	×	×	Ability of presiding officers; <i>informal forums</i>
Funding stability to support the process	□	□	×			
Knowledge and awareness of the process by stakeholders	□ L	□ M	×			Open mandates, ability of presiding officers
Opportunities for self-organization	?	□		×		Ability of presiding officers; <i>ability of secretariat; open mandates</i>

Deliberate experimentation and continuous learning-by-doing to test and adjust ongoing policy responses,	?	□		×	×	Ability of presiding officers; ability of secretariat, open mandates; <i>submissions; information made available through publications and website ongoing</i>
Space for emergence of new norms	?	□		×		Ability of presiding officers; <i>ability of secretariat; open mandates; informal arenas; informal forums</i>
Opportunities for and evidence of learning through the process, and storing knowledge, specifically substantive and process-based learning in the secretariat	□ L	□ M			×	Ability of presiding officers; ability of secretariat as the institutional memory of the regime; <i>IPCC reports; open mandates</i>
Social capital	□ L	□ M	×	×	×	Ability of presiding officers; ability of secretariat; informal arenas and forums

Table 2: Identifying adaptiveness and comparing cases, summary. Key: italics: additional factors identified through analysis added to possible organisational factors identified in Table 1; □: trait present; ?: trait not seen; where traits are present in both cases: L: less, M: more, except in relation to funding, where it is not known how much more or less each process has or requires.

Of the two cases that were evaluated, the Nairobi work programme is, by the definition developed in this thesis, relatively more adaptive than the Buenos Aires programme. The Nairobi work programme dealt with uncertainty, complexity and dynamic change through actively facilitating the development and wide sharing of relevant new knowledge and ongoing learning. *‘The Nairobi work programme could be used by a range of organizations including international organizations to implement adaptation... this was indirect implementation, a second level of innovation that is unique in this kind of process at least... the process wasn’t about implementing adaptation, but this has happened indirectly... this symbiotic give and take between the Nairobi work programme and the network that supports it adds stability’* (Interview, 2010). As well as being well designed and organized, it is likely there are other reasons for this. The traits of flexibility, stability and learning that can be seen through evaluating the adaptiveness of Nairobi work programme provide insight into how a mandate and negotiation process can be designed and organised to be adaptive.

The objective of Nairobi work programme mandate seems very conducive to being implemented through an adaptive process. But it is also clear that the Chairs and secretariat officials involved contributed to the more adaptive design of the decision, including timely reviews to enable reflection and adjustment. It is also clear that the secretariat were able to enhance adaptiveness (even though they may not have realised it) through using innovative mechanisms (such as facilitating partners and action pledges) that support flexibility, stability with a strong focus on learning. The outcome of whether this process was able to meet its objectives will be considered

later this year at a scheduled review session, the last under the current mandate. All interviewees involved with the Nairobi work programme considered that it has made so much progress, that it would be a shame to discontinue it.

The Buenos Aires work programme is by the definition developed in this thesis less adaptive than the Nairobi work programme. In this case it seems that although there is capacity for the process to be adaptive, this opportunity has not been fully taken up. This is in part due to the politically contentious nature of addressing response measures. However, compared with the Nairobi work programme, the Buenos Aires programme is less stable and less flexible, and has less capacity for supporting learning substantively and on the basis of the process.

The cases are compared and discussed further thematically below, drawing from empirical material collected through interviews.

#### **4.1.1. Stability**

When asked about stability in relation to the Buenos Aires programme, interviewees were inclined to identify various factors that have contributed to the instability in the process, mostly relating to the positions of parties in relation to response measures. Interviewees did identify factors that contribute to stability in the process, including the willingness of parties to support the issue through funding and resources (Interviews, 2010); the goodwill, trust and faith of the parties (Interviews, 2010); continuity of actors in varying capacities in the process (Interview, 2010); institutions (Interview, 2010); the *'implicit fundamental agreement, a collective unwritten law with multi-lateral negotiation processes that all parties are present to achieve something for the common good, because they all believe collectively that we can achieve something for the common good of all...no parties are here to de stabilize the process'* (Interview, 2010), the commitment to inclusiveness and transparency in the process *'when this is challenged even subtly, there is a break down of the system, it's self-correcting...if everyone is on board and knows what's going on, the process remains stable'* (Interview, 2010). The downside of this stability is that *'the process is slower when it's inclusive and transparent, but if this was missing, you wouldn't have such agreement for implementation... the principle of consensus based on two articles in the rules of procedure that have never been endorsed, but the principle of consensus stands because no one wants to be out voted by anyone else'* (Interview, 2010). The importance of transparency in the process is also confirmed by Kjellen (2010).

In contrast to the Buenos Aires programme, the Nairobi work programme was described by one interviewee as *'probably the most stable track in the process'* (Interview, 2010). Interviewees identified many factors that contributed to stability in the Nairobi work programme, including: willingness of Parties to give funding and resources to support the process on the basis of a strong perception of the importance of the issue (Interviews, 2010); the continuity of people in Parties and secretariat, providing core understanding and knowledge of issues and how to move forward (Interview, 2010); wide universal appeal and benefit of the track to all parties from the beginning, which engendered an *'enthusiastic and cooperative spirit'* (Interviews, 2010); the use of informal arenas to support dialogue, build friendships, trust between Parties, develop understanding and a sense of belonging, as well as building consensus for decisions to be taken transparently at the SB or COP level (Interviews,

2010); the innovative engagement of wider networks, NGOs and the private sector through calling for partners and action pledges (Interviews, 2010) as well as fortunate timing (Interview, 2010).

In particular, the inclusion of expert meetings and workshops in the structure of the process was an effective (and efficient) way to tease through issues and find out what countries think about issues, but also provided a way to engage with and influence academics and other organizations, and for them to provide input (Interview, 2010). Two interviewees (2010) considered a major contribution to the stability and success of the Nairobi work programme was moving the decision making process from the political arena to a more scientific and technical arena/frame. *'Because of this, it was difficult to establish the initial work programme, but this was agreed for two years including a review, and following this a second stage was agreed... this logic helped parties feel comfortable to with the approach... both stability and flexibility was built into the approach from the beginning'* (Interviews, 2010).

An important aspect of the Nairobi work programme's stability was the innovative use of mechanisms (developing partners and pledges and actively sharing information through databases and publications), where by implementation could be undertaken by Parties as well as other sectors.

Instability in the process was also observed, including resistance of Parties to pre-empt the outcomes of future decisions in other parts of the process that affect the Nairobi work programme. *'There's a wait and see element, parties don't want to make a decision when they haven't decided about another element, but on the other hand, some parties want to push the process forward and make decisions where there are opportunities for them to be helped, for example, developing countries'* (Interview, 2010).

#### **4.1.2. Flexibility**

Interviewees saw capacity for flexibility in relation to the Buenos Aires programme in the process, through the role of the presiding officers involved (Interview, 2010), the ability of parties to adjust decisions and mandates given to the secretariat (Interview, 2010), and the use of informal and complimentary forums (workshops and expert meetings) to discuss issues (Interviews, 2010). *'The Chair has a central role... the nature of the process allows for lots of faith to be placed in the chair on behalf of parties, there is a lot of flexibility in exercising her/his authority and initiative... using goodwill, creating space for dialogue and informal consultation, frank discussions, working as a mediator to move forward and make progress even with difficult issues... but this needs to be based on trust of the parties, so can step on their toes too much'* (Interviews, 2010). *'The chair can organize the process so that negotiations are done informally, so that during the formal sessions there are no surprises for the chair...and as soon as the process is stalling, I would suspend the meeting immediately and get the two parties together to develop a resolution, not prolong it... to achieve this active listening is required to separate the noise from the real signal, sometimes the signals are not direct.'* (Interview, 2010). As well as the capacity of the presiding officer to provide for flexibility, continuity of actors involved in the process was seen to provide flexibility (Interview, 2010).



Many aspects of the Nairobi work programme process contributed to flexibility in the process. Compared to the Buenos Aires programme, *'the initial mandate was very flexible, it included open mandates (where what should happen is decided by Parties without the usual detail of how to do it) and room for creativity and innovation, but the subject itself is also very broad and flexible'* (Interview, 2010). *'If you look at the initial mandate, you will see that we recognised that 'horses for courses' was appropriate depending on the maturity of the particular area/issue... this flexibility was built into the process, we all recognized it was a productive way to work'* (Interview, 2010).

Open mandates allowed the secretariat to explore all possible modalities to be innovative (Interview, 2010), but also to better coordinate the process with other similar adaptation efforts (Interview, 2010). *'The partners and action pledges mechanism developed results that were more far reaching results than something more specific and less flexible...'* (Interview, 2010). *'The endorsement of Parties to engage external actors in the Nairobi work programme (173 partners) was really helpful for injecting flexibility into the process – all of a sudden the secretariat had the mandate to discuss with organizations, where traditionally the secretariat couldn't talk to anyone'* (Interview, 2010). Flexibility of the role of the SBSTA chair was exercised effectively in the Nairobi work programme process as well. *'It's easier to develop consensus informally, but the basis must come from somewhere, so requesting submissions from parties or a public forum was required to gauge the positions of the Parties. It's much easier to work that way than putting every issue on a formal agenda and putting parties on the spot. Parties can be more frank and trust can be built between parties and chairs and the secretariat... in the formal setting, everything that is said must be agreed my state governments'* (Interview, 2010).

Reviewing and evaluating progress of the Nairobi work programme at an informal meeting of representatives to discuss issues also provided for flexibility. This happened mid-way in Bangkok, and another similar meeting is planned for in September 2010 (Interviews, 2010).

#### **4.1.3. Learning**

In relation to both cases, interviewees saw that learning could take place on the basis of substance, or on the basis of how the process is organised. Interviewees saw various opportunities for new information to enter the process, but generally considered that there is capacity for learning in the process (on the basis of substance or process), but that this is underutilised. *'There are two main channels for new information affecting the process: through the parties and their perception of the need for change resulting in alternative mandates through the SB (including through the IPCC) or COP, etched in stone until countries want to change them (the secretariat can't change these on their own); or where the secretariat already has a mandate, but where it's open, and the secretariat can be more creative'* (Interviews, 2010).

In relation to the Buenos Aires programme, one interviewee reflected, *'We need to find more innovative ways of sharing information'* (Interview, 2010). Others were more pessimistic: *'the process can learn from itself, its mistakes, from exploring opportunities... but in spite of this, the traditional positions of the parties remain, so the new information does not influence the party's positions... there have been many opportunities within the process to have the dialogue, but it hasn't happened'*

(Interview, 2010). *‘No, somehow the process doesn’t learn, I don’t understand why. Even through traumatic events, e.g. failure of COP6 and COP15, there is recognition that things should be done differently, but this doesn’t happen. There’s a certain level of inertia, a comfort zone and hesitance try out new things that becomes built into the process... there may be a fear that if things are changed, they could lead to something worse or a precedent being created. There may be learning at the substantive level, but not at the process level in terms of reviewing ways of working etc. There is capacity for the process to learn and change from inside, but this is not reflected on really...there is room for flexibility, but the parties stick to their comfort zone’* (Interview, 2010).

In contrast, evidence of learning can be clearly seen in the Nairobi work programme: *‘the process learned from itself, from exploring opportunities, its mistakes... the main lesson learned was how the process can create opportunities and stimulating creativity in the process, and how to catalyse the use of information from the Nairobi work programme without breaking the rules of the process’* (Interview, 2010). *‘There is space for learning and self-organization within the Nairobi work programme for parties to see what they need and to influence the process to deliver what they need in a more effective way’* (Interview, 2010). Part of the mandate of the decision was to include new information and knowledge from internal and external influences, specifically from the IPCC, but also from other related processes and discussions about adaptation within the convention (Interview, 2010). Opportunities for learning were well designed into the process from the beginning with time for reviews agreed upon (Interview, 2010). *‘Consideration of the IPCC AR4 was built into the process, which was good, but we could have done more to take on board this new information... we will be able to do more with the next IPCC report. The midpoint review being programmed in was also good’* (Interview, 2010). *‘Outsiders see the Nairobi work programme as an entry point for them to influence the formal process, and for parties/delegates they also see benefit, because they need fresh ideas... it’s a successful match making exercise’* (Interview, 2010).

#### **4.2. Are more adaptive negotiating processes more successful?**

Of the two cases that were evaluated, over the same time frame, the Nairobi work programme has made more progress towards meeting its objectives, and is more adaptive (by the definition developed here) than the Buenos Aires programme. The success of the Nairobi work programme, and flexibility, stability and learning that can be seen through evaluating the adaptiveness of Nairobi work programme provide insight into how a mandate and negotiation process can be designed and organised to be adaptive and more successful in meeting its objectives.

However, because only one aspect (organisational factors) of adaptiveness in negotiation processes was considered here, it cannot be entirely concluded that the slow progress made by the Buenos Aires programme is entirely due to the process not being adaptive enough. However the lack of adaptiveness (as identified here) in the process is likely a contributor to its stagnation. This process seems to confirm the view of Depledge (2007) where a process can ossify and stagnate when an issue becomes overly political and suffers from a lack of fresh knowledge and learning. This process can also be seen as being ‘locked-in’, where the decision to join adaptation with response measures under the same decision has caused a path-

dependent trajectory of change described by Nelson et al. (2007) and Pahl-Wostl (2009), as past decisions influence the range of possible options today. This co-evolutionary development and path dependence may have generated an interdependence of regime elements, preventing prevent change or adaptiveness in the process. One interviewee (2010) emphasised that the main issue with the Buenos Aires programme was how the elements of the decision were treated. The Buenos Aires programme decision tried to separate these issues clearly, but it failed, the issues got mixed, and were not treated separately in a comprehensive manner. This has led to misunderstanding (Interview, 2010). Because of this, this process seems less able to deal with the change, complexity and uncertainty that it faces. This implies that considering stability, flexibility and capacity for learning from the beginning when designing a process is important.

The objectives of the two tracks are different, the Nairobi work programme objective is possibly more conducive to engaging a wide network of stakeholders. Although the Nairobi Work Programme is obviously a much more successful process when compared with the Buenos Aires programme, and seems more adaptive according to the definition of adaptiveness developed in relation to the negotiation process in this thesis, success or lack of success can be explained by a number of reasons. 'The Nairobi work programme is not sensitive in terms of commitments by parties' (Interview, 2010). Whereas, *'the process relating to the Buenos Aires programme is political in relation to response measures, and politics causes weakness and delays in the process'* (Interview, 2010). The stakes are higher for the Buenos Aires programme, so there is less trust of the secretariat by the Parties to give them open mandates (Interview, 2010).

However, responses from interviewees point to scope for more adaptive processes to support progress even in processes that have become sluggish. *'Uncertainties are inevitable, and a flexible approach is required to understand and adapt to these uncertainties. The Nairobi work programme so far in the process has been the most effective way of allowing people to better appreciate uncertainty and complexity of adaptation, because the negotiations have been removed from political paranoia of funding required. What it does is say given the situation of country A and information B, what does decision maker C have at their disposal to deal with the situation. The Nairobi work programme is a good model for trying to overcome the barriers that develop in negotiations, because it's decoupling negotiations from the main negotiation process, within a long time horizon. So because parties do things and discuss things in informal forums, they can't say, 'oh we'd like to stop this conversation now, because I can see where this might be heading, and I don't want that'. It's focussed on practical things, not so much on the uncertainty as a barrier'* (Interview, 2010). *'The process does play a role in making progress with 'sticky political' issues, or issues associated with these issues. Making progress on the issues that surround stuck issues can help stuck issues make progress'* (Interview, 2010). The process can be used to diffuse this politics: *'more knowledge and information sharing can help manage the politics, and presiding officers and the secretariat working together to frame issues and world views as complimentary can help'* (Interview, 2010). According to the UNFCCC secretariat, the successful implementation and achievement of the objective of the Nairobi work programme so far is the result of engaging with organizations and stakeholders active in adaptation at all levels and in all sectors (UNFCCC 2008c; UNFCCC, 2008b).



## 5. Discussion

This section discusses challenges and opportunities identified through this research, and ways to enhance the design and organization of the negotiation process. Methodological reflections and further research opportunities are also discussed.

### 5.1. *Challenges and opportunities*

Looking more generally, it is a large challenge to consider redesigning and reorganising governance processes so that they are more adaptive, however, it is a challenge that is becoming increasingly recognised as our understanding of change, complexity and uncertainty in systems develops. Kinzig, (2003) asserts ‘we must develop processes for dealing with environmental challenges that maintain flexibility, continually reassess and potentially change direction if needed in the presence of possible surprises and irreversibilities. Our understanding of complex problems must be ever changing as systems evolve and knowledge advances’. The results of this research support this statement, and contribute to considering how governance process can be more adaptive. Designing and organising adaptive processes seems to be only part of the challenge. The larger task seems to be activating this adaptive capacity so that it can be utilised for a more sustainable outcome, in this case, meeting the objectives of the UNFCCC. Taking stability and flexibility into account when designing and organising governance processes, as well as providing for and actively stimulating learning can contribute to achieving these objectives. I think that responding to this challenge from inside systems is a good place to start to experiment with this idea.

Stability and flexibility can seem to be at opposite ends of the spectrum, however, this research shows that certain aspects of a process can support both stability and flexibility in a process simultaneously. This research also shows that extremes of either stability or flexibility may be harmful to the functioning of a process. The climate change regime under the UN has been recognised by many as too inflexible (La Viña, 2010), trading off flexibility in favour of stability (Interview, 2010). *‘Uncertainty results in over-stability. This is not by design, but by the nature of how it works, this can be seen whenever a sticky issue arrives, there is a tendency to stick with what you know, even if it’s not working optimally, because of the risk of losing something. This stability makes flexibility very difficult. The most relevant question becomes, within this paranoid stability where can learning enter the process?’* (Interview, 2010). At the same time, the regime can be seen to be suffering from too much flexibility, *‘this could lead to a loss of identity, every issue wants to attach itself to the momentum and popularity of the climate change regime’* (Interview, 2010). Maybe the recognition of extreme ‘paranoid’ stability in the process has been responded to with an almost equally extreme dose of flexibility, which counter-intuitively, has not improved the situation.

Depledge (2006) observes that ‘ossification’ a lack of learning in the process in occurring within the regime, where actors fail to consider new information, even if it’s available. The consequences of ossification are a failure is that the regime will remain ‘in the grip of old paradigms’ failing to develop new concepts and ideas, or even substantively debate and discuss new proposals (Depledge, 2006), resulting in political entrenchment, stuck issues and lack of innovation in the process. Depledge (2006) sees the main drivers of ossification to be complexity, obstructionism,

sometimes on the basis of uncertainty. This research highlights the crucial contribution that enabling learning in a process can make, and illuminates the consequences of lack of learning in a process. Maybe processes that support both stability and flexibility are required, as well as enabling capacity for learning, from inside the process. Perhaps the conceptual framework developed by Pahl-Wostl (2009) based on triple-loop learning processes, could be used to take a deeper look into learning within the UN climate change regime to provide insight into learning on the basis of incremental improvement of action strategies without questioning the underlying assumptions; whether or not assumptions are revisited (e.g. about cause and effect relationships); or whether underlying values, world views and beliefs are reconsidered through the process.

Reframing how uncertainty, complexity and change are viewed in the process could be a way to enable scientific and political uncertainty, complexity and dynamic change within and surrounding the process to be more clearly acknowledged in the process (Interview, 2010). In general, the focus is on decision making on the basis of uncertainty (Interview, 2010). *'Even formal meetings don't really address genuine scientific uncertainty. This subject can be pushed in side events, but doesn't have much traction. There doesn't seem to be a good mechanism to let this uncertainty into the collective consciousness of the delegations, negotiation process. The IPCC tries, but in general, it doesn't get further than the summary for policy makers. And because the IPCC reports focus on what is known, not what is unknown, it's certainty that makes it into the process, not the uncertainties. A list of key uncertainties was provided in the AR4, but this hasn't really filtered into the negotiation processes'* (Interview, 2010). Reframing how uncertainty, complexity and change are seen in relation to the process could also stimulate learning in the process.

## **5.2. Enhancing the organization of the process – the roles of the Chairs and UNFCCC secretariat**

An adaptive process should be able to respond to unexpected and unpredictable changes, through formal review, and in between reviews, through self-correcting features. Designers of the process should be aware of the complexity, uncertainty and dynamic change that they are working with, so that processes may be designed that are adaptive when unanticipated conditions arise, and take dynamic change, complexity and uncertainty into account in considering how to design, organise and run the negotiation process (Interview, 2010). Depledge, 2007 sees that the ability of the secretariat and the chair working together in this vain could make a big difference as collectively they serve as the institutional memory of the process. This is supported by the results of this research. Chairs can exert leadership, but they rely on the secretariat for intellectual resources, for example, when Parties ask the chair to provide draft, text, it's usually the secretariat who drafts it (Depledge, 2007).

## **5.3. Methodological reflections, further research**

This research contributes a conceptual framework including themes and process-based traits, developed using a complex adaptive systems lens as a way to identify adaptiveness in governance processes. The conceptual framework and themes and process-based traits are specific to the negotiation process under the UN climate change regime, however it may be useful for other process-based approaches in exploring adaptive governance.

Through undertaking this research, I really felt that I was undertaking transdisciplinary research because I felt stretched across different paradigms of looking at the world, and found it challenging to credibly reconcile the use of these different views. I appreciate the views of Max-Neef (2005), and hope that this research contributes to a small advance in the unfinished project of transdisciplinary research. Looking more in-depth at the UN climate regime as a complex adaptive system, and as a complex social-ecological system within the climate system as suggested by Ostrom (2009), Folke, (2009), Liu et al., (2007a) could provide insight into how governance can be most effective in achieving a sustainable outcome.

It would also be interesting to look in more depth at the relationship between the process and the regime, and how the process can contribute to a more adaptive regime, and what time scales are involved in this type of transformation.

Up-scaling a complex adaptive systems based approach to understanding adaptiveness to look at the regime scale instead of the process scale would be interesting, and may provide some insight into how the global climate change regime under the UN is being affected by new developments within the broader governance regime. For example, initiatives being developed by the US such as the Asia Pacific initiative. Questions such as *'how was this attempt to go outside the UN process and have more flexible discussions affect the rest of the regime? What is the role of alternative processes? Can they support the UNFCCC process, or are they in competition to it? Especially now that climate change is being 'mainstreamed' across sectors, climate change is now being discussed alongside trade and other issues'* (Interview, 2010).

## 6. Conclusion and recommendations

In this thesis, I aimed to understand how the concept of adaptiveness could be applied to the negotiation process within the UN climate change regime, with a specific focus on the way the negotiation process is designed, organized and undertaken, to better understand how processes could be adaptive, and if a more adaptive process contributed to a more successful outcome.

The themes and process based traits developed to understand and identify adaptiveness worked well to guide operationalisation of adaptiveness in the process through organizational factors, and comparing the case studies.

It is clear that an adaptive process, including both stability and flexibility, as well as the capacity for learning in a process, is important in making progress towards the objectives of the negotiations within the dynamic, complex and uncertain context that surrounds and infuses the process.

It is also clear that the way that the negotiation process is designed, organized and undertaken can contribute to a more or less adaptive process. Here the roles of the UNFCCC secretariat and the chairs of the process are particularly important, as the main designers and organisers of the process. Designing a process considering stability, flexibility and capacity for learning from the beginning could help a process to avoid falling into stagnation.

This framework and results are however limited in that they are based only on the influence of organizational factors on adaptiveness within a negotiation process. Because of this, it cannot be entirely concluded that slow progress towards meeting objectives is entirely due to the process not being adaptive enough, and uncertainty, change and complexity not being well addressed. It would be interesting to broaden the conceptual framework to include other factors that could influence the adaptiveness of the negotiation process.

The traits of flexibility, stability and learning that can be seen through evaluating the adaptiveness of Nairobi work programme provide insight into how a mandate and negotiation process can be designed and organised to be adaptive.

On the basis of this research, I recommend that the UNFCCC secretariat and the Chairs, as designers and organisers of the process, consider the complexity, uncertainty and dynamic change that influences the process. I also recommend that they consider the ability they have to contribute to successful outcomes, as well as the importance of stability, flexibility and learning in the process, in contributing to more adaptive negotiation processes.



## References

- Adger, N. 2003. Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography*. 79, 387-404.
- Adger, N. 2006. Vulnerability. *Global Environmental Change*. 16, 268–281.
- Adger, N., Agrawala, S., Mirza, M., Conde, C., O'Brien, K., Pulhin, J., Pulwarty, R., Smit, B., and Takahashi, K. 2007. Assessment of adaptation practices, options, constraints and capacity. *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds. Cambridge University Press, Cambridge, UK.
- Allison, I., Bindoff, N., Bindschadler, R., Cox, P., de Noblet, N., England, M., Francis, J., Gruber, N., Haywood, A., Karoly, D., Kaser, G., Le Quéré, C., Lenton, T., Mann, M., McNeil, B., Pitman, A., Rahmstorf, S., Rignot, E., Schellnhuber, H., Schneider, S., Sherwood, S., Somerville, R., Steffen, K., Steig, E., Visbeck, M., and Weaver, A. 2009. The Copenhagen Diagnosis, 2009: Updating the World on the Latest Climate Science. The University of New South Wales Climate Change Research Centre (CCRC), Sydney, Australia. <http://www.copenhagendiagnosis.org/> accessed 27 April 2010.
- Averchenkova, A. 2010. The outcomes of Copenhagen: the negotiations and the accord. UNDP Environment & Energy group climate Policy series.
- Barnett, J. 2001. Adapting to Climate Change in Pacific Island Countries: The Problem of Uncertainty. *World Development*. 29, 977-993.
- Bebbington, J., Higgins, C., and Frame, B. 2008. Initiating sustainable development reporting: evidence from New Zealand. *Accounting, Auditing and Accountability Journal*. 22, 588-625.
- Bennett, C. and Howlett, M. 1992. The lessons of learning: Reconciling theories of policy learning and policy change. *Political Sciences*. 25, 275-294.
- Berkes, F., Colding, J. and Folke, C. Eds. 2003. *Navigating social-ecological systems: building resilience for complexity and change*. Cambridge University Press. Cambridge, UK.
- Biermann, F. Pattberg, P and Zelli, F. eds. 2010. *Global climate governance beyond 2010. Architecture, agency and adaptation*. Cambridge University Press. UK.
- Biermann, F., Betsill, M., Gupta, J., Kanie, N., Lebel, L., Liverman, D., Schroeder, H. and Siebenhüner, B, with contributions from Conca, K., da Costa Ferreira, L., Desai, B., Tay, S., and Zondervan, R. 2009. *Earth System Governance: People, Places and the Planet*. Science and Implementation Plan of the Earth System Governance Project. Earth System Governance Report 1, IHDP Report 20. Bonn, IHDP: The Earth System Governance Project, 2009.
- Biggs, R., Carpenter, S., Brock, W. 2009. Turning back from the brink: Detecting an

- impending regime shift in time to avert it. *Proceedings of the National Academy of Sciences of the United States of America*. 106, 826 – 831.
- Bodin, O, Crona, B. 2009. The role of social networks in natural resource governance: What relational patterns make a difference? *Global Environmental Change*. 19, 366–374.
- Boyd, E., Corbera, E., Estrada, M. 2008. UNFCCC negotiations (pre-Kyoto to COP-9): what the process says about the politics of CDM-sinks. *International Environmental Agreements*. 8, 95–112.
- Boyd, E., Osbahr, H, Ericksen, P., Tompkins, E., Carmen Lemos, M., and Miller, F. 2008a. Resilience and ‘Climatizing’ Development: Examples and policy implications. *Society for International Development*. 51, 390–396.
- Bryman, A. 2004. *Social Research Methods*. Second Edition. Oxford University Press. Oxford.
- Bulkeley, H. and Newell, P. 2010. *Governing climate change*. Routledge. London.
- Carpenter, S., Folke, C., Scheffer, M., and Westley, F. 2009. Resilience: accounting for the noncomputable. *Ecology and Society* 14(1): 13.
- Carter, N. 2007. *Politics of the Environment: Ideas, Activism, Policy*. Cambridge University Press, Cambridge.
- Cook, N. 2009. It’s good to talk: performing and recording the telephone interview. *Royal Geographical Society (with The Institute of British Geographers)* 41, 176–185.
- de Franca Doria, M., Boyd, E., Tompkins, E., and Adger, N. 2009. Using expert elicitation to define successful adaptation to climate change. *Environmental Science and Policy*. 12, 810– 819.
- Depledge, J. 2005. *The organization of global negotiations. Constructing the climate regime*. Earthscan Canada. Canada.
- Depledge, J. 2006. The Opposite of Learning: Ossification in the Climate Change Regime *Global Environmental Politics*. 6, 1-22.
- Depledge, J. 2007. A Special Relationship: Chairpersons and the Secretariat in the Climate Change Negotiations. *Global Environmental Politics*. 7, 45-68.
- Finus, M. and Pintassilgo, P. 2009. The Role of Uncertainty and Learning for the success of international climate agreements. *Stirling Economics Discussion Paper*. August 2009. University of Stirling, Scotland. <http://www.economics.stir.ac.uk>. accessed 27 April 2010.
- Folke, C. 2007. Social–ecological systems and adaptive governance of the commons. *Ecology and Economics*. 22, 14–15.
- Folke, C. 2009. Turbulent times. Editorial. *Global Environmental Change*. 19, 1–3.

- Folke, C., Colding, J., Olsson, P. and Hahn, T. 2007. Interdependent social-ecological systems and adaptive governance of ecosystem services In: Pretty, J., A. Ball, T. Benton, J. Guivant, D. Lee, D. Orr, M. Pfeffer and H. Ward (editors). Sage Handbook on Environment and Society, Chapter 37: 536-552. Sage Publications, London.
- Folke, C., Hahn, T., Olsson, P. and Norberg, J. 2005. Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources*. 30, 1-8.
- Foundation for International Environmental Law and Development (FIELD). 2010. Workshop on international decision making following Copenhagen 24 - 25 March 2010, London. Summary Report. <http://www.field.org.uk/news/field-workshop-international-decision-making>. Accessed 27 April 2010.
- Foxon, T., Reed, M. and Stringer, L. 2009. Governing long-term social-ecological change: what can the adaptive management and transition management approaches learn from each other? *Environmental Policy and Governance*. 19, 3-20.
- Foxon, T., Reed, M. and Stringer, L. 2009. Governing Long-Term Social–Ecological Change: What Can the Adaptive Management and Transition Management Approaches Learn from Each Other? *Environmental Policy and Governance*. 19, 3–20.
- Frankel-Reed, J., Brooks, N., Kurukulasuriya, P. and Lim, B. 2009. A Framework for Evaluating Adaptation to Climate Change: In R. Van Den Berg and O N. Feinstein (eds.) *Evaluating climate change and development*. Transaction Publishers, New Brunswick, New Jersey.
- Global Environment Facility Evaluation Office. 2010. OPS4 Full Report. <http://www.thegef.org/gef/node/2079> accessed 27 April, 2010.
- Haas, P. and Haas, E. 1995. Learning to learn: Improving international governance. *Global Governance*. 1, 255-285.
- Harley, M. and van Minnen, J. 2009. Development of Adaptation Indicators. ETC/ACC Technical Paper 2009/6. European Topic Centre on Air and Climate Change.
- Harley, M., Horrocks, L., Hodgson, N. and van Minnen, J. 2008. Climate change vulnerability and adaptation indicators ETC/ACC Technical Paper 2008/9. European Topic Centre on Air and Climate Change.
- Henderson, H. 2008. Book review: *Adaptive Governance: Integrating Science Policy, and Decision Making* (2005); Columbia University Press, Authors Brunner, R Steelman, T., Coe-Juell, L., Croniley, C., Edwards, C., and Donna W. Tucker. American Planning Association.
- Hoffman, M. 2005. *Ozone Depletion and Climate Change: Constructing a Global Response*. SUNY press, US.
- International Institute for Sustainable Development, The Energy and Resources

Institute and International Development Research Centre, (IISD) 2006. Designing policies in a world of uncertainty, change, and surprise: Adaptive policy-making for agriculture and water resources in the face of climate change. International Institute for Sustainable Development.

<http://www.iisd.org/PUBLICATIONS/pub.aspx?id=840> accessed 28 April 2010.

Interview(s). 2010. Personal communications undertaken as detailed in Appendix 1.

Janssen, M., Anderies, J. and Ostrom, E. 2007. Robustness of social-ecological systems to spatial and temporal variability. *Society and Natural Resources*. 20, 307–22.

Kelly, P. and Adger, N. 2000. Theory and practice in assessing vulnerability to climate change and facilitating adaptation. *Climatic change*. 47, 325–352.

Keohane, R. and Victor, G. 2010. The Regime Complex for Climate Change. The Harvard project on international climate agreements. Discussion Paper 2010-33. Cambridge.

Kinzig, A. 2003. Uncertainty and the Scientist. *Ambio*. 32, 329.

Kinzig, A. and Starrett, D. 2003. Coping with Uncertainty: A Call for a New Science-Policy Forum. *Ambio*. 32, 330-335.

Kjellén, B. 2010. Friends of the Chair, or the Chair's (true) friends? The Art of Negotiation in the Rio process and climate negotiations. European capacity building initiative. <http://www.eurocapacity.org/homepage.shtml> accessed 27 April, 2010.

Klein R. 2009. Identifying countries that are particularly vulnerable to the adverse effects of climate change: an academic or a political challenge? *Carbon and Climate Law Review*. 3, 284-291.

Kvale, S. 1996. *Interviews: Introduction to Qualitative Research Interviewing*. London: Sage.

La Viña, A. 2010. Ways Forward after Copenhagen: Reflections on the Climate Change Negotiating Processes by the REDD-plus Facilitator. Foundation for International Law and Development (FIELD). <http://www.field.org.uk/news/redd-plus-facilitator-tony-la-vi%C3%B1a-suggests-ways-forward-after-copenhagen> accessed 27 April, 2010.

Lenton, T., Held, H., Kriegler, E., Hall, J., Lucht, W., Rahmstorf, S., Schellnhuber, H. 2008. Tipping points in the Earth's climate system. *Proceedings of the National Academy of Sciences of the USA* 105, 1786-1793.

Levina, E. 2007. *Adaptation to climate change: International agreements for local needs* Organisation for Economic Co-operation and Development, International Energy Agency. Paris.

Levina, E. 2007. *Adaptation to climate change: International Agreements for local needs*. Paris: OECD/IEA. [www.oecd.org/dataoecd/15/11/39725521.pdf](http://www.oecd.org/dataoecd/15/11/39725521.pdf). Accessed 10

May, 2010.

Levina, E. and Tirpak, D. 2006. Adaptation to climate change: key terms. Organisation for Economic Co-operation and Development. Paris.

Liu, J., Dietz, T., Carpenter, S., Alberti, M., Folke, C., Moran, E., Pell, A., Deadman, P., Kratz, T., Lubchenco, J., Ostrom, E., Ouyang, Z., Provencher, W., Redman, C., Schneider, S. and Taylor, W. 2007a. Complexity of Coupled Human and Natural Systems. *Science*. Volume 317.

Liu, J., Dietz, T., Carpenter, S., Folke, C., Alberti, M., Redman, C., Schneider, S., Ostrom, E., Pell, A., Lubchenco, J., Taylor, W., Ouyang, Z., Deadman, P., Kratz, T. and Provencher, W. 2007. Coupled Human and Natural Systems. *Ambio* Vol. 36, 639-649.

Lynch, A. 2009. Adaptive governance: how and why does government policy change? *Ecos Magazine*. December-January, 146.

Max-Neef, M. 2005. Foundations of transdisciplinarity. *Ecological Economics*. 53, 5-16.

Maxwell, J. Editor. 2005. *Qualitative research design: an interactive approach*. Second Edition. Thousand Oaks, CA. Sage.

Michel, D. 2009. Foxes, hedgehogs, and greenhouse governance: Knowledge, uncertainty, and international policy-making in a warming world. *Applied Energy*. 86, 258–264.

Mikkelsen B. 2005. *Methods for Development Work and Research. A New Guide for Practitioners*. Second Edition. London: Sage Publications.

Moran, M. and Elvin, R. 2009. Coping with Complexity: Adaptive Governance in Desert Australia. *GeoJournal*. 74, 415–428.

Moses, J. and Knutsen, T. 2007. *Ways of knowing*. Palgrave Macmillan. Hampshire, UK.

Müller, B. 2010. Copenhagen 2009: Failure or final wake-up call for our leaders? Oxford Institute for Energy Studies. EV 49.

Müller, B. 2010. No trust without respect, adaptation quick start funding at the cross roads. Oxford Energy and Environment Comment. University of Oxford.

Na, S. and Shinf, H. 1998. International environmental agreements under uncertainty. *Oxford Economic Papers* 50, 173-185.

Nelson, D., Adger, N. and Brown, K. 2007. Adaptation to Environmental Change: Contributions of a Resilience Framework. *Annual Reviews Environmental Resources*. 32, 395-419.

Nickel, R. 2010. Arctic climate changing faster than expected. Press release. 8 February 2010. Retrieved 10 February from

<http://www.reuters.com/article/idUSTRE6145KP20100206>

Norberg, J. and Cumming, G. (Editors). 2008. Complexity theory for a sustainable future. Columbia University press, New York.

Olsson, P. and Folke, C. 2004. Adaptive Comanagement for Building Resilience in Social–Ecological Systems. *Environmental Management*. 34, 75–90.

Olsson, P., Gunderson, L., Carpenter, S., Ryan, P., Lebel, L., Folke, C. and Holling, C. Shooting the Rapids: Navigating Transitions to Adaptive Governance of Social-Ecological Systems. *Ecology and Society* 11, 1-18.

Ostrom, E. 2009. A General Framework for Analyzing Sustainability of Social-Ecological Systems. *Science*. 325. 419-422.

Pachauri, R. and Reisinger, A. Eds. 2007. Climate change 2007: synthesis report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva, Switzerland.

Pahl-Wostl, C. 2009. A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Global Environmental Change* 19, 354–365.

Purvis, N. and Stevenson, A. 2010. Rethinking Climate diplomacy. New ideas for transatlantic cooperation post-Copenhagen. Brussels Forum paper series. German Marshall Fund of the United States.

Ragin, C. 1994. Constructing social research. Pine Forge Press, US.

Reinstein, R. 2004. A possible way forward on climate change. *Mitigation and Adaptation Strategies for Global Change*. 9, 295–309.

Resilience Alliance. 2007. Assessing and managing resilience in social-ecological systems: A practitioners workbook. Version 1.0 June 2007. <http://www.resalliance.org/3871.php> accessed 8 May 2010.

Richardson, K., Steffen, W., Schellnhuber, H., Alcamo, J., Barker, T., Kammen D., Leemans, R., Liverman, D., Munasinghe, M., Osman-Elasha, B., Stern, N. and Wæver, O. 2009. Synthesis report climate change. *Global Risks, Challenges & Decisions*. Copenhagen 2009, 10-12 March. [www.climatecongress.ku.dk](http://www.climatecongress.ku.dk) accessed 27 April 2009.

Schneider, S., and Kuntz-Duriseti, K. Uncertainty in Climate Change Policy, in Schneider, S., Rosencranz, A., and Niles, J. Eds. 2002. *Climate change policy: a survey*. Island Press, Washington D.C. <http://stephenschneider.stanford.edu/Publications/PubFrameset.html?http://stephenschneider.stanford.edu/Publications/Publications.html> accessed 20 May 2010.

Smith, J., Schneider, S., Oppenheimer, M., Yohee, G., Haref, W., Mastrandrea, M., Patwardhan, A., Burton, I., Corfee-Morlot, J., Magadzaj, C., Fussler, H., Pittock, A., Rahman, A., Suarez, A., and van Ypersele, J. 2009. Assessing dangerous climate change through an update of the Intergovernmental Panel on Climate Change

(IPCC) “reasons for concern”. Proceedings of the National Academy of Sciences of the United States of America. 106. 11 4133– 4137.

Toth, F., Mwandosya, M., Carraro, C., Christensen, J., Edmonds, J., Flannery, B., Gay-Garcia, C., Lee, H., Meyer-Abich, K., Nikitina, E., Rahman, A., Richels, R., Ruqiu, Y., Villavicencio, A., Wake, Y., Weyant, J., Byrne, J., Lempert, R., Meyer, I., and Underdal, A. 2001. Decision-making frameworks. Climate Change 2001: Mitigation. Contribution of Working Group III to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK. 601–88.

United Nations Environment Programme. 2009. Auditing MEAs. A primer/manual for auditors in auditing the implementation of multilateral environmental agreements. Outline for approval by the 8th INTOSAI WGEA Standing Committee Meeting, 3 – 7 August 2009, Bali, Indonesia <http://www.environmental-auditing.org/LinkClick.aspx?fileticket=4nzCiG7qt9Q%3d&tabid=224> accessed 27 April, 2010.

United Nations Environment Programme (UNEP). 2010. How Close Are We to the Two Degree Limit? UNEP Governing Council Meeting & Global Ministerial Environment Forum. 24-26 February, 2010 Bali, Indonesia. [www.unep.org/PDF/.../temperature-briefing-21-02-10-final-e.pdf](http://www.unep.org/PDF/.../temperature-briefing-21-02-10-final-e.pdf) accessed May 10, 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 1996. Organizational matters adoption of the rules of procedure. Note by the secretariat. FCCC/CP/1996/2. <http://unfccc.int/documentation/documents/items/3595.php#beg>

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2005a. Report of the Conference of the Parties on its eleventh session, held at Montreal from 28 November to 10 December 2005. Addendum Part Two: Action taken by the Conference of the Parties at its eleventh session. FCCP/CP/2005/Add.1. <http://unfccc.int/documentation/documents/items/3595.php#beg> accessed 10 May, 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2007. Report of the Subsidiary Body for Scientific and Technological Advice on its twenty-fifth session, held at Nairobi from 6 to 14 November 2006. FCCC/SBSTA/2006/11. <http://unfccc.int/documentation/documents/items/3595.php#beg> accessed 10 May, 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2008. Summary of the results of the implementation of the Nairobi work programme on impacts, vulnerability and adaptation to climate change for the period up to the twenty-eighth session of the Subsidiary Body for Scientific and Technological Advice. Note by the secretariat. [http://unfccc.int/documentation/documents/advanced\\_search/items/3594.php?rec=j&prireref=600004877#beg](http://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&prireref=600004877#beg) accessed 14 May 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2008a. Investment and financial flows to address climate change: an update. Technical paper. FCCC/TP/2008/7. [http://unfccc.int/documentation/documents/advanced\\_search/items/3594.php](http://unfccc.int/documentation/documents/advanced_search/items/3594.php) - beg accessed 14 May 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2008b. Lessons learned in involving experts in the implementation of the Nairobi work programme on impacts, vulnerability and adaptation to climate change. Note by the secretariat. UNFCCC secretariat. Bonn, Germany.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2008c. Report on the meeting of representatives from Parties on the outcomes of the activities completed under the Nairobi work programme on impacts, vulnerability and adaptation to climate change. Note by the secretariat. UNFCCC secretariat. Bonn, Germany.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2010. Essential background. [http://unfccc.int/essential\\_background/items/2877.php](http://unfccc.int/essential_background/items/2877.php) accessed 30 April 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2010a. Status of Ratification of the Convention. [http://unfccc.int/essential\\_background/convention/status\\_of\\_ratification/items/2631.php](http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php). accessed 10 May 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2010b. History of the Secretariat. [http://unfccc.int/secretariat/history\\_of\\_the\\_secretariat/items/1218.php](http://unfccc.int/secretariat/history_of_the_secretariat/items/1218.php) accessed 10 May 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2010c. Synthesis report on efforts undertaken to monitor and evaluate the implementation of adaptation projects, policies and programmes and the costs and effectiveness of completed projects, policies and programmes, and views on lessons learned, good practices, gaps and needs. Note by the secretariat. [http://unfccc.int/documentation/documents/advanced\\_search/items/3594.php#beg](http://unfccc.int/documentation/documents/advanced_search/items/3594.php#beg) accessed 10 May 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2010d. Implementing adaptation. [http://unfccc.int/adaptation/implementing\\_adaptation/items/2535.php](http://unfccc.int/adaptation/implementing_adaptation/items/2535.php) accessed 10 May 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2010e. Decision 1/CP.10 the Buenos Aires programme of work on adaptation and response measures. FCCC/CP/2004/10/Add.1 <http://unfccc.int/documentation/documents/items/3595.php#beg> accessed 10 May, 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat.



2010f. Decision 2/CP.11 the five-year programme of work of the Subsidiary Body for Scientific and Technological Advice on impacts, vulnerability and adaptation to climate change (the Nairobi work programme on impacts, vulnerability and adaptation to climate change). FCCC/CP/2005/5/Add.1.  
<http://unfccc.int/documentation/decisions/items/3597.php#beg> accessed 10 May 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2010g. Nairobi work programme negotiations, decisions, workshops and meetings.  
[http://unfccc.int/adaptation/nairobi\\_work\\_programme/negotiations\\_and\\_decisions/items/3916.php](http://unfccc.int/adaptation/nairobi_work_programme/negotiations_and_decisions/items/3916.php);  
[http://unfccc.int/adaptation/nairobi\\_work\\_programme/workshops\\_and\\_meetings/items/4300.php](http://unfccc.int/adaptation/nairobi_work_programme/workshops_and_meetings/items/4300.php) accessed 10 May, 2010.

United Nations Framework Convention for Climate Change (UNFCCC) secretariat. 2010h. Buenos Aires programme negotiations, decisions, workshops and meetings.  
[http://unfccc.int/adaptation/implementing\\_adaptation/items/4293.php](http://unfccc.int/adaptation/implementing_adaptation/items/4293.php);  
[http://unfccc.int/adaptation/implementing\\_adaptation/items/3582.php](http://unfccc.int/adaptation/implementing_adaptation/items/3582.php) accessed 10 May, 2010.

United Nations Framework Convention on Climate Change (UNFCCC) secretariat. 2004. Report on the Conference of the Parties on its tenth session, held in Buenos Aires from 6 to 18 December 2004. Addendum. Part two: Action taken by the Conference of the Parties at its tenth session. FCCC/CP/2004/10/Add.1.  
<http://unfccc.int/documentation/documents/items/3595.php#beg> accessed 14 April 2010.

United Nations Framework Convention on Climate Change (UNFCCC) Secretariat. 2005. Caring for Climate: A guide to the Climate Change Convention and the Kyoto Protocol (revised 2005 edition). Climate Change Secretariat (UNFCCC) Bonn, Germany.

United Nations Framework Convention on Climate Change (UNFCCC) secretariat. 2006. United Nations Framework Convention on Climate Change Handbook. UNFCCC Secretariat. Bonn, Germany.

United Nations Framework Convention on Climate Change (UNFCCC) secretariat. 2009. 10 frequently asked questions about the Copenhagen deal. Climate Change Secretariat (UNFCCC) Bonn, Germany.

United Nations. 1992. United Nations Framework Convention for Climate Change. Climate Change Secretariat with support from UNEP's Information Unit for Conventions (IUC). Bonn, Germany.

Urwin, K. and Jordan, A. 2008. Does public policy support or undermine climate change adaptation? Exploring policy interplay across different scales of governance. *Global Environmental Change*. 18, 180–191.

Vincent, K. 2007. Uncertainty in adaptive capacity and the importance of scale. *Global Environmental Change*. 17, 12–24.

Walker, B., Holling, C., Carpenter, S. and Kinzig, A. 2004. Resilience, adaptability and transformability in social–ecological systems. *Ecology and Society*. 9, 2-5.

Willows, R. and Connell, R. (Editors). 2003. *Climate Adaptation: Risk, Uncertainty*

and Decision-making. UKCIP Technical report.  
[www.ukcip.org.uk/images/stories/Pub\\_pdfs/Risk.pdf](http://www.ukcip.org.uk/images/stories/Pub_pdfs/Risk.pdf) accessed 27 April 2010.

Yamin, F. and Depledge, J. 2004. The international climate change regime. A guide to rules, institutions and procedures. Cambridge University Press. UK.

Young, O., Berkhout F, Gallopin, G., Janssen, M, Ostrom, E. and van der Leeuw, S. 2006. The globalization of socio-ecological systems: an agenda for scientific research. *Global Environmental Change*. 16, 304–16.

## Appendices

### Appendix 1: People interviewed

Interviewee	Title	Role	Date and place of interview
Kishan Kumarsingh	Head, Multilateral Environmental Agreements Unit, Ministry of Planning, Housing and Environment, Trinidad and Tobago	Has been involved with 1/CP.10 and 2/CP.11 as a chair with the SBSTA and SBI, and for consultations	Maritim Hotel, Germany, 11 April 2010
Annett Möhner	Programme officer, UNFCCC secretariat, Bonn, Germany	Involved with 1/CP.10 and 2/CP.11, informant for this research	UNFCCC secretariat, Bonn, 16 March, 6 April 2010
Dr. Youssef Nassef,	Manager, Adaptation, UNFCCC secretariat, Bonn, Germany	Has been involved with 1/CP.10 and 2/CP.11, and negotiations under the UN climate change regime since they began	Phone interview, 6 May 2010
Dr Andy Reisinger,	Senior Research Fellow, School of Government, Climate Change Research Institute School of Government, Victoria University of Wellington, New Zealand	Worked for and with the IPCC as a lead and co-author of reports.	Phone interview, 9 May 2010
Dr Michelle Slaney	Adviser to the Danish Delegation on adaptation, COP15	Was involved with 1/CP.10 and 2/CP.11	Pronto café, Malmö, 29 April 2010
Dr Xianfu Lu	Technical adviser, UNFCCC secretariat, Bonn, Germany	Involved with 2/CP.11	UNFCCC secretariat, Bonn, 7 April 2010
Festus Luboyera	Programme Officer, UNFCCC secretariat, Bonn, Germany	Involved with 1/CP.10	UNFCCC secretariat, Bonn, 21 April 2010
Helen Plume	Senior Operator, Ministry for the Environment, New Zealand	Has been involved with 2/CP.11 as a chair with the SBSTA	Bella Center, Copenhagen, 14 December 2009, Maritim Hotel, Bonn, 11 April 2010
Judy Lawrence	Senior Associate, Climate Change Research Institute, School of Government, Victoria University of Wellington, New Zealand	Currently undertaking a PhD looking at adaptiveness in institutions in response to uncertainty and dynamic change	Phone interview, 9 May 2010
Dr Richard Klein	Stockholm Environment Institute	Informant for this research	Hotel Volendam, Amsterdam, 3 December, 2009

## **Appendix 2: Interview guide**

### **Dealing with change, complexity and uncertainty in global climate change negotiations. Is adaptiveness helpful?**

#### **Introduction**

I am conducting research for the purposes of a masters thesis, the Lund University Masters in Environmental and Sustainability Science (LUMES), Sweden.

#### **My focus**

At a global level, negotiations under the UN climate change regime must occur within a continually changing, complex and uncertain context. The negotiation process itself is also inherently dynamic, complex and uncertain.

This research focuses on understanding adaptiveness within the negotiation process, on the basis stability, flexibility and learning are useful system traits where decisions need to be made within a context of change, complexity and uncertainty. This research focuses specifically on two negotiating tracks under the UNFCCC, decisions 1/CP.10, and 2/CP.11. These decision-making tracks are considered within the wider negotiating system, including the efforts and actions of the UNFCCC Secretariat, Parties, NGOs, the private sector and other stakeholders at multiple levels and forums.

#### **The Interview**

The interview will be based around the seven questions below, will be recorded if possible, and will probably take about 45 minutes. The use of interview material will be discussed during the interview.

#### **Questions**

1. How do you **describe/define the decision-making process/track** (1/CP.10, and/or 2/CP.11)?
2. What has **influenced** the process/ will influence the process (in terms of uncertainty, risk, urgency, conflicting values etc)?
  - How is **new knowledge** fed into the process? Could this be improved?
  - How are these influences dealt with in the process?
3. How do these processes deal with deal with **surprises and uncertainty** (by way of organizational factors and operational modalities)?
4. How is the process **supported**? What keeps the process **stable**? Could it be more stable?
5. How is the process **flexible**? Could/should the process be more flexible?
6. Does the process **'learn'** over time in light of external influences?
7. Can the organization of the process be influenced to better deal with 'stuck' issues?