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The Integrity of the Clean Development Mechanism

- an interdisciplinary study on delegation

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Abstract

The Clean Development Mechanism (CDM) is a mechanism under the Kyoto Protocol, which allows industrialised countries that have binding emission targets to invest in emission reduction projects in non-industrialised countries. These CDM investments generate certified emission reductions (CERs), which can be used by the industrialised countries towards meeting their own targets. The dual objective of the CDM is: 1) to assist developing countries to achieve sustainable development and contribute to the UNFCCC's ultimate objective of stabilising the global concentrations of GHG emissions, and 2) to help the developed countries achieve their emission reduction targets. Ensuring that the CDM projects actually reduce emissions is fundamental for the environmental integrity of the CDM, and the task of validating and verifying/certifying the CDM project activities emission reductions has been delegated by the CDM Executive Board (EB) to the Designated Operational Entities (DOEs). Delegation of authority can create problems, therefore by using the principal-agent model and an interdisciplinary approach to delegation theory this thesis sets out to examine what problems may arise when the EB delegates authority to the private profit-driven DOE's, and whether these problems impedes the environmental integrity of the CDM. In conclusion the problems that occur, which affect the integrity of the CDM, are problems associated with the delegation design, i.e. the framework that defines the delegation relationship between the EB and the DOEs. The main problems relate to the fact that the DOEs are profit-driven, which implies their preferences differ from the EBs. The delegation problems within the CDM can be mitigated if the delegation design is amended.

Keywords: The Kyoto Protocol, Clean Development Mechanism (CDM), Agency Theory, Constrained Delegation, Veto-Based Delegation and Environmental Integrity

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Abbreviations

AEs	Applicant Entities
CDM	Clean Development Mechanism
CDM-AP	Clean Development Mechanism Accreditation Panel
CDM-AT	Clean Development Mechanism Assessment Team
CO ₂	Carbon dioxide
COP/MOP	The Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CERs	Certified Emission Reductions
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
NGOs	Non-Governmental Organisations
PDD	Project design document
RIT	Registration and Issuance Team
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

1. Introduction

The Clean Development Mechanism (CDM) is a mechanism under the Kyoto Protocol, which allows industrialised countries that have binding GHG emission targets to invest in emission reduction projects in non-industrialised countries. These investments generate certified emission reductions (CERs), which can be used by the industrialised countries towards meeting their emission targets or sold on to the global carbon market (UNFCCC 2). The CDM has two objectives; 1) to assist developing countries to achieve sustainable development and at the same time contribute to the UNFCCC's ultimate objective of stabilising the global concentrations of GHG emissions at a level that would prevent dangerous anthropogenic interference with the climate system and 2) to assist developed countries to meet their emission reduction targets set under the Kyoto Protocol (the Kyoto Protocol, Article 12 Paragraph 2).

The CDM market has become a huge global market. To date there are 4968 CDM projects in CDM pipeline and the CDM is anticipated to produce CERs amounting to over 2.7 billion tonnes of CO₂ equivalents¹ in the period 2008-2012². A total of 386 million CERs have already been issued, which have a value of several billion Euros, and the average issuance success is 96.5% (CDM UNFCCC 1 and UNEP Risø Centre). As the Kyoto Protocol's first commitment period is expiring at the end of 2012 discussions regarding a post-2012 international climate treaty are taking place, and the strengths and weaknesses of the CDM arrangement are being reviewed (Figueres et al: 2009). The CDM has received a lot of criticism and there is a growing concern about "false emission reductions", i.e. emission reductions that do not reflect the real emission reductions in a CDM project, and the concept of additionality is now one of the most debated issues of the CDM (Paulsson: 2009a). "*A CDM project activity is additional if anthropogenic emissions of Greenhouse Gases by sources are reduced below those that would have occurred in the absence of the registered CDM Project activity*" (Marrakech Accords, paragraph 43). In other words, additionality requires that the GHG emissions after the implementation of a CDM project activity are lower than those that would occur in a business-as-usual scenario or alternatively some other scenario which involves a gradual reduction of emissions (CDM Rulebook). For a CDM

¹ For simplicity carbon dioxide is usually used as a standard and the other GHG are converted to their CO₂ equivalents.

² Sweden's GHG emission in CO₂ equivalents was 64 million tonnes in 2008 (Naturvårdsverket).

activity to achieve sustainable development and contribute to the UNFCCC's ultimate objective of stabilising the global concentrations of GHG emissions additionality is essential. Ensuring additionality is therefore fundamental for the environmental integrity of the CDM. "*The environmental integrity has been called to question through the vigorous debate over the additionality of reductions*" (Figueres et al: 2009). If the CDM project developers can prove that their CDM project activities achieve additional emission reductions the integrity of the CDM may be ensured. However, concerns have arisen regarding the private parties, the Designated Operational Entities (DOEs) that are delegated authority by the CDM Executive Board to validate and verify/certify the additionality of the CDM project activities, and whether they and the EB have differing objectives that might harm the integrity of the CDM.

1.1 Purpose

The main purpose of this thesis is to analyse whether delegation to private profit-driven entities impedes the integrity³ of the CDM.

More specifically the thesis will discuss what problems may arise when the CDM's EB delegates authority to DOEs, who are private profit-driven parties⁴, to validate and verify/certify the additionality of the CDM project activities and whether these problems impede the environmental integrity of the CDM.

1.2 Outline

The thesis is structured as follows. Chapter 2 will give a brief overview over the CDM explaining why it was established and how it functions. Chapter 3 presents the theoretical framework, where the principal-agent model will be introduced. Thereafter the economic and the political science aspects of delegation, that both have a principal-agent approach, will be presented. Chapter 4 will in more detail describe and analyse the delegation relationship between the EB and the DOEs. Chapter 5 is the final chapter that includes the thesis's conclusions.

³ Hereafter the expressions *the environmental integrity of the CDM* and *the integrity of the CDM* will be used interchangeably. To ensure the integrity of the CDM the CDM project activities have to achieve emission reductions that are additional.

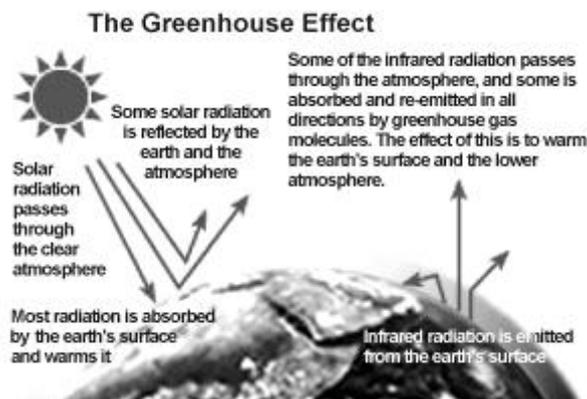
⁴ The fact that the DOEs are private entities, i.e. entities with different interest, preferences and objectives than the party that delegated the authority, is the key principle that will be analysed. The fact that they are profit-driven is not a central issue, but since it does affect the DOEs' objectives it is of importance.

2. CDM Overview

2.1 Climate Change and the Greenhouse Effect⁵

Climate change occurs naturally and refers to the variation of weather recorded over a long period of time. The greenhouse effect is a natural process that plays a major role in shaping the earth's climate (Australian Government Bureau of Meteorology). The concept of the greenhouse effect is illustrated in figure 1.

Figure 1: The Greenhouse Effect



Source: U.S. Environmental Protection Agency

Solar radiation reaches the earth's surface and turns into infrared radiation. Some of the infrared is absorbed by the atmosphere, but eventually escapes into space. GHGs such as water vapour, carbon dioxide, ozone and methane delays the escape and acts like a blanket around the earth, which traps heat and warms the planet 30 degrees warmer than it would be otherwise. Human activities, such as burning of coal, oil and natural gas, have increased the atmospheric concentrations of GHGs, and are causing an enhanced greenhouse effect where subsequently the earth and atmosphere is warming at an unprecedented speed. This causes abnormal changes in the climate, changes that are inevitable because of past and current emissions. (UNFCCC 7)

⁵ There are contradicting views regarding global warming and its effects. However, the majority of the leading scientist and experts in this area avows that global warming creates an enhanced greenhouse effect. Therefore, this phenomenon will be taken for granted and not discussed any further.

2.2 International Treaties

Climate change mitigation has been on the political agenda for several years. The blame for the greenhouse effect was primarily put on the industrialized countries since they were the main emitters of GHGs. The question of how to handle this growing problem was raised amongst world leaders, scientist and the general public in the mid-1980s. In 1988 the Intergovernmental Panel on Climate Change (IPCC) was established to scientifically assess the concerns evolving climate change and evaluate its global environmental and socioeconomic impacts. In the report that followed IPCC concluded that climate change was a global threat and that the growing accumulation of human-made GHGs in the atmosphere would increase the greenhouse effect, and thereby result in an additional warming of the earth's surface. The IPCC called for an international treaty to address the problem. (UNEP 2002)

In 1992 the United Nations Framework Convention on Climate Change (UNFCCC) was adopted and today 193 countries, also referred to as Parties, have ratified the treaty. The objective of the Convention is to stabilise the amount of greenhouse gases in the atmosphere at a level that prevents dangerous human interference with the climate system (UNFCCC 1).

2.3 The Kyoto Protocol

The Kyoto Protocol is an international agreement linked to the UNFCCC. It was adopted in 1997 and entered into force in 2005. The main difference between the Convention and the Kyoto Protocol is that the former encourages industrialized countries to stabilize GHG emissions, whilst the later commits them to do so (UNFCCC 2). The Kyoto Protocol sets binding targets for 38 industrialised countries, for reducing GHG emissions as a whole. This amounts to an average of 5.2 % reductions in relation to 1990⁶ levels over a five-year period 2008-2012. The GHGs emissions that are of main concern in the Kyoto Protocol are:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)

⁶ Some countries have another baseline than 1990.

- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF₆)

To date 184 Convention Parties have ratified the Kyoto Protocol, this includes both industrialised and developing countries. In the Kyoto Protocol, Annex I Parties refers to industrialised countries that have accepted emission targets. Annex II Parties include the industrialised countries that have a special obligation to “*provide financial resources and facilitate technology transfer*” to developing countries. Developing countries are referred to as non-Annex I Parties and they are not required by the Kyoto Protocol to reduce emissions. Since the Annex I Parties are primarily responsible for the current high levels of GHG emissions in the atmosphere, the Kyoto Protocol places a heavier burden on them under the principle of “*common but differentiated responsibility*”. The individual emission targets for Annex I Parties are listed in the Kyoto Protocol’s Annex B (see Appendix 1). (UNFCCC 2, 3 & 6)

Table 1: Annex I Parties’ Emission Reduction Targets

Annex I Parties	Emission reduction targets
EU-15, Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland	-8%
United States of America ⁷	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
New Zealand, Russian Federation, Ukraine	0
Norway	+1%
Australia	+8%
Iceland	+10%

Source: UNFCCC (2008), the Kyoto Protocol

⁷ The United States of America has not signed the Kyoto Protocol.

Table 1 shows that the targets range from -8% to +10%, which implies that the majority of Annex I Parties should reduce their emissions, while Australia, Iceland and Norway actually have emission units to spare. The maximum amount of GHG emissions that a Party may emit is referred to as the assigned amount (UNFCCC 4).

2.3.1 The Kyoto Mechanisms

To assist the Annex I Parties to stay within their assigned amounts at a cost-effective way, the Kyoto Protocol has established three market-based mechanisms:

1. Emission Trading – Also known as the *carbon market*. Provides a framework for trading emission units; CERs, ERUs, AAUs and RMUs between Annex I Parties⁸. One of either unit equals one tone of CO₂.
2. Joint Implementation – Allows the Annex I Parties listed in Annex B to invest in emission reduction or emission removal projects in another Annex I Party (industrialised country), and thereby generating ERUs that can be used towards meeting their emission targets.
3. Clean Development Mechanism – Allows Annex I Parties listed in Annex B to invest in emission reduction or emission removal projects in non-Annex I Parties (developing countries), and thereby generating CERs that can be used towards meeting their emission targets.

According to the Kyoto Protocol these mechanisms should be supplementary, and the Annex I Parties should primarily take domestic action in reducing GHG emissions. (UNFCCC 2 & CDM Rulebook).

⁸ A certified emission reduction (CER) is generated from a clean development mechanism project activity, an emission reduction unit (ERU) is generated by a joint implementation project and a removal unit (RMU) is on the basis of land use, land-use change and forestry (LULUCF) activities such as reforestation.

2.4 The Clean Development Mechanism⁹

The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3. (the Kyoto Protocol, Article 12 Paragraph 2)

The market-based CDM makes it possible for non-Annex I Parties to host projects that help them achieve sustainable development whilst assisting Annex I Parties to meet their emission targets at a lower cost. If the marginal abatement cost¹⁰ is lower in a developing country than in a developed country it is more cost effective to reduce emissions in the former. The CDM enables this to be done through the investment in CDM projects from Annex I countries' governments or private entities¹¹ (TFS Green). The CDM projects generate CERs, where each CER is the equivalent of the abatement of one tonne of CO₂. These CERs can be used by the Annex I Parties to meet their targets under the Kyoto Protocol or traded and sold on the global carbon market (CDM UNFCCC 1).

The types of projects that are eligible CDM projects are:

- End-use energy efficiency improvements,
- Supply-side energy efficiency improvements,
- Renewable energy projects such as wind power, hydropower, and biomass,
- Fuel switching projects,
- Methane capture and re-use from coal mines, landfills and industrial wastewater;
- Reduction of industrial emissions (CO₂ from Cement, HFCs, PFCs, SF₆)
- Sinks projects (only afforestation and reforestation with limitations) (UNEP 2002).

There are four different project categories that a CDM project activity can register as; large-scale project, small-scale project, afforestation or reforestation project or small-scale afforestation or reforestation project. The project has to meet specified requirements to fit into

⁹ See Appendix 2 for the Kyoto Protocol's article 12 regarding the CDM.

¹⁰The marginal abatement cost refers to the cost of eliminating an additional unit of emissions.

¹¹ Even though emission targets were accepted at a national level, governments have transferred parts of the responsibility of meeting the targets onto the industries (TFS Green). Private entities need to be authorized by their government (UNEP 2).

a certain category and the modalities and procedures that are used during the CDM project cycle is determined by what category the project is registered as. The modalities and procedures are the rules that govern the CDM, and these are specified in both the Kyoto Protocol and the Marrakech Accords¹² (CDM Rulebook).

There are three specific requirements for a CDM project activity to be able to register:

- the project should assist the host Country to achieve sustainable development;
- the project should provide real¹³, measurable, and long-term benefits related to the mitigation of climate change; and
- the project should deliver reductions in emissions that are additional to any that would occur in the absence of the certified project activity.

Regarding the first criteria it is up to the host country to determine whether a CDM project assists in achieving sustainable development or not. The second criterion is determined by the DOE in the validation process¹⁴ (UNEP 2004b). The third criterion is a more complex issue, but of great importance to the integrity of the CDM. The project developer has to ensure that the emission reductions are real, measurable and additional to any that would have occurred in the absence of the CDM project activity. The *baseline* for a CDM project is the scenario representing the volume of GHGs that would have been emitted if the project was not implemented. The baseline is used to verify additionality and to measure the volume of additional GHG emission reductions achieved by a CDM project activity. It is only the emission reductions below the baseline that are credited, if a project activity has a high baseline it is possible to get more additional emission reductions than if the projects starts out with a low baseline. To determine the correct baseline and avoid the tendency of setting a baseline that is too high and thus achieving “false emission reductions”, the baseline is established on a project-specific basis where the project developers comply with baseline methodologies¹⁵ approved by the EB. (Sepibus: 2009 and CDM Rulebook)

¹² An agreement reached in October and November 2001 at Cop 7 in Marrakech. The Marrakech Accords provides a comprehensive agreement on the development and operation of the UNFCCC and Kyoto Protocol. It in particular establishes detailed operational guidelines for the CDM (UNEP 2).

¹³ Real emissions reductions are ones that are can be monitored to insure that they actually occur.

¹⁴ This will be explained in more detail below.

¹⁵ The baseline methodology is the means to estimate the emissions that would have occurred in the baseline scenario.

2.4.1 The Main CDM Players and their Roles

COP/MOP

The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP) is the supreme body of the Kyoto Protocol that has authority over the CDM. The Conference of the Parties refers to the Parties to the UNFCCC and the meeting of the Parties refers to the Parties to the Kyoto Protocol. The purpose of this arrangement is to reduce costs and streamline management between the UNFCCC and the Kyoto protocol (CDM Rulebook). The COP/MOP decides and provides guidance to the Executive Board (EB) on the basis of recommendations provided by the EB. They also designate operational entities that have been provisionally accredited by the EB.

Executive Board

Under the authority of COP/MOP the EB is the regulatory body that supervises the CDM. Some of its main responsibilities are:

- To make recommendations to the COP/MOP relating to the CDM rules.
- To approve new baseline and monitoring methodologies
- To provide guidance and clarifications on the CDM rules created by the COP/MOP;
- To review the accreditation standards of operational entities and being responsible for the accreditation of operational entities.
- Register project activities and approve the issuance of CERs. (CDM Rulebook)

The EB consist of ten members from the Kyoto Protocol Parties divided as follows; one member from each of the five United Nations regional groups; two members from the Parties included in Annex I; two members from the Parties not included in Annex I; and one representative of the small-island developing states (CDM Rulebook).

The EB may establish committees, panels and working groups that assist them with their responsibilities. Currently there are five panels/groups:

- *The Accreditation Panel (CDM-AP)*: was established to support the EB in the accreditation process.
- *The Methodologies Panel (Meth Panel)*: was established to develop recommendations to the EB on guidelines for methodologies for baselines and monitoring plans and prepare recommendations on submitted proposals for new baseline and monitoring methodologies.
- *The Afforestation and Reforestation Working Group*: was established to prepare recommendations on submitted proposals for new baseline and monitoring methodologies for CDM afforestation and reforestation project activities. The working group is expected to work in cooperation with the Meth Panel.
- *The Small Scale Working Group*: was established to prepare recommendations on submitted proposals for new baseline and monitoring methodologies for CDM small scale project activities.
- *The CDM Registration and Issuance Team (RIT)*: was established to assist the CDM Executive Board by appraising requests for registration of project activities and requests for issuance of CERs. (CDM UNFCCC 2)

Designated National Authority

All Kyoto Parties that want to participate in the CDM must establish a Designated National Authority (DNA). The DNA is responsible for authorizing and approving participation in CDM projects. The DNAs role is particularly important in non-Annex I Parties since they are responsible for ensuring that the host country maintains control over the CDM project and, most importantly, ensure that the CDM project meets the sustainable development criteria specified by the host country (UNEP 2004b).

Designated Operational Entity

The Designated Operational Entities are independent auditors that are hired by the project developers to oversee whether CDM project activities are in compliance with the CDM rules established by the COP/MOP and the EB. The DOEs have two functions: 1) to validate; to assess whether a potential CDM project meets all the requirements of the CDM and 2) to verify and certify; to confirm whether a CDM project is additional or not. To perform these

functions the DOEs need to be accredited¹⁶ by the EB and designated by the COP/MOP. Usually there are two separate DOEs that perform the validation and verification/certification for the same project. However, the EB can give permission for the same DOE to perform all tasks. The majority of the DOEs are large private profit-driven risk management firms, while others are small local firms or non-profit organisations¹⁷. To date there are 26 accredited DOEs. (Green: 2008 & CDM rulebook)

2.4.2 The CDM Project Cycle

The CDM project cycle involves many steps (see figure 2). The first step is for the project developer to prepare a project design document (PDD). The PDD describes the proposed project activity and demonstrate how the project will create emission reductions that are real and additional. In addition to this, the PDD should inter alia include comments from local stakeholders, a description of the baseline methodology, which is used to determine the baseline scenario from which the additionality will be measured, and a monitoring plan that includes a description of the monitoring methodology¹⁸. The PDD is submitted to be validated by an independent entity, a DOE, who is selected and paid by the project developer. The DOE reviews the PDD to ensure that the project meets the requirements for validation. To ensure that the project contributes to sustainable development, a letter of approval from the DNA of the host country is required. The Annex I country actors also needs a letter of approval from the DNA of their country. If the project receives a positive validation the DOE sends the validation report, the PDD and the letters of approval to the EB making a request for registration. These documents then have to get approved by the EB. Unless three or more members of the EB or a Party request a review of the registration, the EB registers the project. After registration the project developer monitors¹⁹ the emission reductions resulting from the

¹⁶ The accreditation process will be described in more detail in section 4.

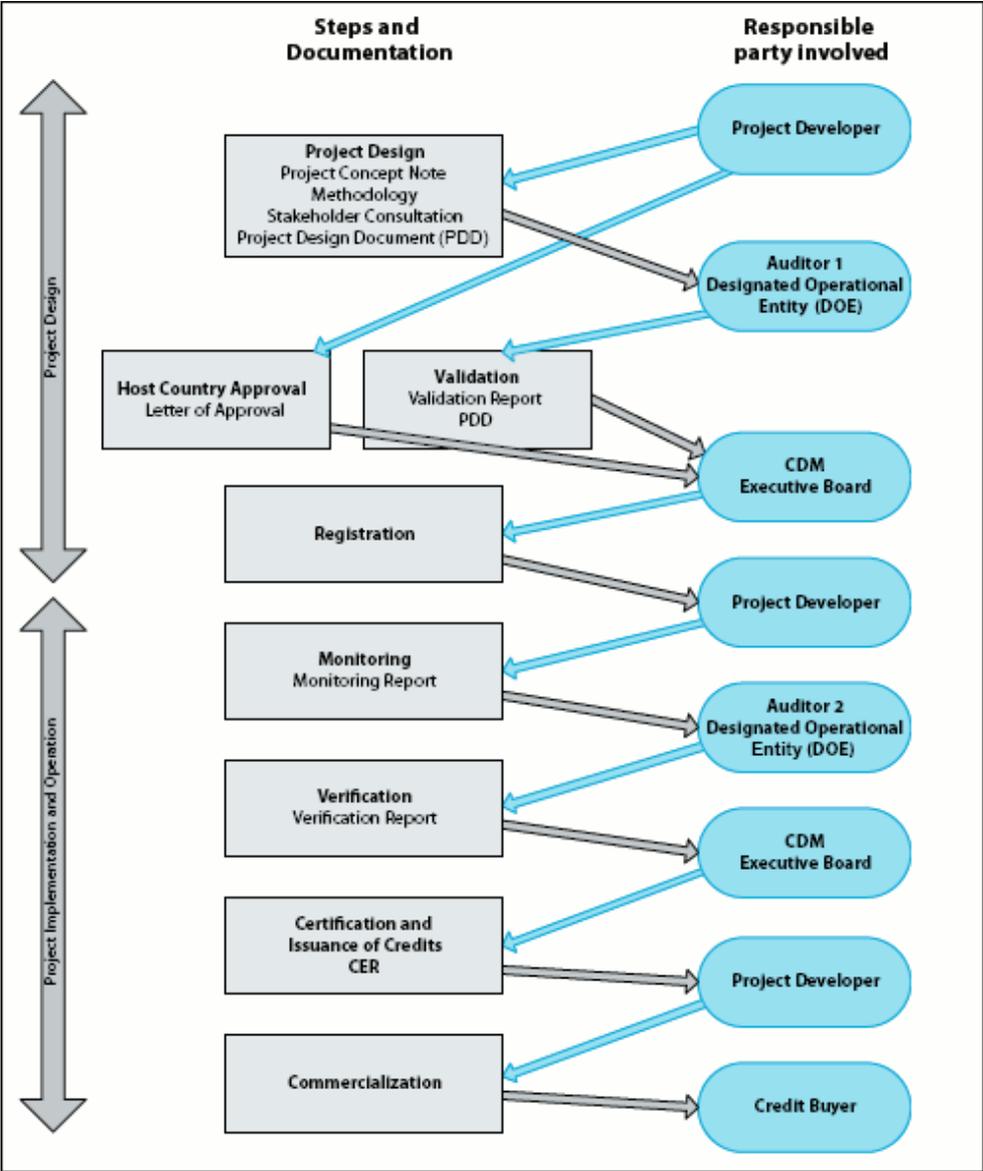
¹⁷ No distinction between the DOEs will be made. However, the thesis will focus on the DOEs that are private and profit-driven.

¹⁸ The methodologies define the rules that a project developer needs to follow to establish a project baseline and to monitor the emission reductions. If none of the existing methodologies are applicable, the project developers may develop new baseline and monitoring methodologies, but these have to be approved by the EB.

¹⁹ Monitoring refers to the measurement and analysis of GHG emissions from a CDM project within its boundary to determine the volume of emission reductions that are attributable to the project.

project and eventually provides a monitoring report to a second DOE²⁰ for verification. Based on the monitoring plan in the PDD and other collected information, the DOE writes a verification report. If the monitoring is satisfactory the DOE certifies to the EB that the claimed emission reductions actually have been achieved. Unless three or more members of the EB or a Party request a review of the issuance, the EB issues to the project developers the CERs credits in the amount that corresponds to the verified emission reductions. The CER's can then either be used by the Annex I party actor to meet their Kyoto emission targets or be traded on the carbon market. (CDM Rulebook & Paulsson: 2009b)

Figure 2: The CDM Project Cycle



Source: Carbon Association Australasia Ltd

²⁰ To prevent conflicts of interest the same DOE is not allowed to perform both the validation and verification/certification of a project activity.

3. The Theoretical Framework

The theoretical framework will introduce the reader to the theories that will be used to discuss and analyze the purpose of the thesis. The chapter begins with a short introduction to the agency theory. Agency theory is a delegation theory that can be applied to several different disciplines; inter alia economics and political science. Next the basic principal-agent model, constrained delegation and veto-based delegation will be presented to explain the economic aspects of delegation theory. Through international delegation theory the political science approach to delegation theory will be presented, where its central ideas of delegation design and monitoring will be described.

3.1 Agency Theory

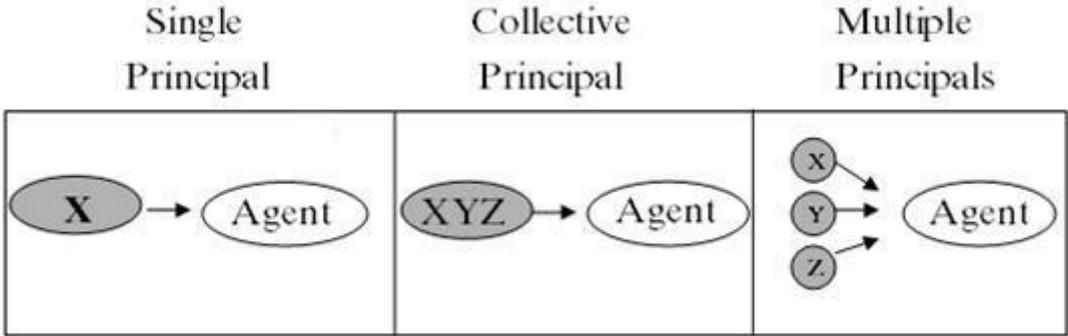
Agency theory reflects the relationship between two parties, the principal and the agent, that are engaged in a contract. The central feature of agency relationships is that the principal delegates authority to an agent to perform a task for the principal. Clients and lawyers, employers and employees, citizens and politicians are examples of delegation of authority relationships where the former serves as the principal and the later as the agent. There is a problem that pervades all principal-agent relationships; once the principal delegates authority to an agent he often has difficulties controlling them. The reason for this is twofold: first there is the issue of *goal conflict* i.e. the agent and the principal may have differing preferences and objectives; second there is a problem with *information asymmetry* between the parties i.e. the agent possesses information that may be useful in the decision-making process but he might be unwilling to reveal the information to the principal (Kiser: 1999).

That agents pursue their own interests strategically is a general assumption in agency theory. *Agency slack* is the term used to define independent action of an agent that is undesired by the principal. There are two forms of agency slack: *shirking* is when an agent minimizes the effort it exerts on its principal's behalf; and *slippage* is when an agent changes strategy away from the principal's preferred outcome and towards its own preferences. To avoid agency slack the principal establishes mechanisms to constrain their agent's behaviour, different principles are used in different disciplines. When principals engage in a contract with an agent there are

always *agency losses* or *cost* that the principal incurs. Agency slack and resources spent on monitoring and controlling the agents are examples of agency losses (Hawkins et al: 2006). A main objective of agency theory is to show that the principal’s delegation strategies can be designed to minimize agency losses.

There are several types of agency relationships (see figure 3). The simplest relationship involves one single principal and an agent. Collective principal is the most common type of principal when observing international delegation and describes the situation when several states jointly agree upon and design an arrangement which governs the agent²¹. In comparison multiple principal is the action when several individual states independently delegate to a single agent (Green: 2008).

Figure 3: Types of Agency Relationships



Source: Tierney, M. J., *Delegation Success And Policy Failure: Collective Delegation And The Search For Iraqi Weapons Of Mass Destruction*, Duke Law -Law & Contemporary Problems Vol. 71

3.1.1 Agency Problems

“The premise of agency theory is that a principal designs contracts in order to guide appropriate actions by an agent” (Prendergast: 1999). The classic agency model looks at the economic relationship between the principal and the agent where the principal wants to affect

²¹ When states face with international collective action problems they can create a collective principal to deal with these issues. The UN is an example of a collective principal, where 192 member states have gone together. Getting states with heterogeneous preferences to cooperated by designing international agreements and creating international organisations is a difficult task per se. Collective action problems is a complex issue and will not be discussed in more detail here.

the actions/efforts of the agent by means of incentives (Dixit: 2002). By designing contracts based on incentives the principal can avoid agency problems, i.e. *moral hazard* and *adverse selection*, which may occur because of goal conflict and asymmetric information. Moral hazard refers to the agent's lack of effort in performing the assigned task, the agent minimizes the effort it exerts on its principal's behalf; shirks. Since the agent's actions affect the principal's payoff, the principal needs to create incentives and design contracts that change the agents preferences so that they become more aligned with the principals. To reduce moral hazard problems and to minimize costs associated with these problems the contracts may have a *carrots and sticks* approach. Adverse selection is caused by information asymmetry and refers to the agent hiding information or misrepresenting his abilities at the time when the contract with the principal is being considered. There are two mechanisms where either the principal or the agents become active in trying to reduce adverse selection problems: *signalling* and *screening*. Signalling refers to the act of the agent that knows his own ability and will try to signal that ability to the principal to get employed. Signalling is a way for the agent to reveal positive information about oneself. In the labour market the act of showing willingness to pay a bond is an example of this.²² Screening is the act of the principal "checking up" or screening the agent before signing a contract. The principal can affect the type of agents they get by the type of contract they offer. The agents, knowing their own abilities will choose the contract most beneficial to them, e.g. low productivity agents will choose fixed salaries while high productivity agents will a choose piece-rate contract.²³ (Dixit: 2002, Eisenhardt: 1989 and Padilla: 2002)

3.1.2 The Basic Principal- Agent Model

In this basic principal-agent model we assume that the agent is risk averse²⁴ with a von Neumann-Morgenstern utility function²⁵ and for simplicity we assume that the principal is a risk neutral²⁶ profit maximizer.

²² Another example of this is sellers with high quality products will try to signal the quality of their products by offering long guarantees for their products, because it is less costly to them than to sellers of lower quality products (Kiser:1999).

²³Using an example from the labour market again, the firm can screen the type of employees they want by requesting applicants with certain experiences and characteristics.

²⁴ The agent has a concave utility function i.e. exhibits a diminishing marginal utility of wealth. The agent will always refuse a fair bet since the expected utility of a fair gamble will always be less than the utility of refusing the gamble. (Nicholson: 2005).

The agent's action/effort e is not verifiable, which means that the optimal effort cannot be contracted on. The agent's production function is: $x = e + \varepsilon, \varepsilon \sim N(0, V)$, where the outcome depends on effort and a random effect. The cost of the effort is: $c(e) = \frac{ce^2}{2}$

The principal wants to maximize his expected payoff: $\pi = y - y(x)$, i.e. the difference between agent's total contribution to the principal's firm's value and the compensation paid to the agent. The principal's problem is to create a compensation contract/ incentive contract $y(x)$ to maximize his expected payoff subject to two constraints:

1. The participation constraint: the agent must get enough expected utility out of the relationship to match his opportunity elsewhere
2. The incentive constraint: the knowledge that the agent will choose an action to maximize his expected utility which depends on the $y(x)$ and the $c(e)$.

How should the agent's effort be rewarded when it is not verifiable, in other words how should the principal create incentive contracts when there is no optimal effort to contract? According to Dixit (2002) if the agent's effort is verifiable the first best effort is: $e_{FB} = \frac{1}{c}$, i.e. the agent's effort depends on cost of the effort c . When the optimal effort can be contracted on the contract will require the effort e_{FB} ²⁷ and the agent will receive a fixed salary and no marginal incentive. When the agent's effort is not verifiable the second best effort is: $e_{SB} = \frac{m}{c}$ i.e. the agent's effort depends not only on the cost of the effort c , but also on the marginal incentive m . The agent will in general not find it optimal to choose the e_{FB} .

The compensation that the agent gets for the period of the contract is assumed to be a linear incentive contract that consists of a fixed part F (base salary) and a marginal incentive m ²⁸ (bonus/reward):

$$y(x) = F + mx$$

²⁵ The von Neumann Morgenstern model assumes that individuals make choices in uncertain situations based on expected utility and not on the highest expected value. Agents will choose the option that gives them the highest level of expected von Neumann-Morgenstern utility. (The theory of expected utility maximization assumes a utility function U that assigns a numerical measure to the satisfaction associated with different outcomes) (Nicholson: 2005)

²⁶ The principal has a linear utility function, i.e. exhibits a constant marginal utility of wealth (Frank: 2006).

²⁷ See Dixit (2002) and Gibbons (1998) for more detailed calculations.

²⁸ The m in an important contract design tool for the principal and is used to create incentives for the agents. High m = strong incentives.

The agent chooses an e to maximize his expected utility (incentive constraint), since the effort depends on c and m the outcome also does, $x = \frac{m}{c} + \varepsilon$. According to Dixit (2002) if we assume a linear incentive scheme and choose its coefficients optimally the marginal incentive coefficient m will be: ²⁹

$$m = \frac{1}{1 + rcv}$$

The base salary F is then chosen to satisfy the agent's participation constraint. ^{30 31}

A high marginal incentive, i.e. m close to one, indicates that the agent's reward is closely connected to outcome and thus closely connected to the agent's effort. A low risk aversion implies a high marginal incentive i.e. the agent is not worried about the consequences for the reward, if the outcome is bad the agent will in nonetheless make an effort. If the principal knows this he is willing to use strong incentives. If the agent will be willing to make an extra effort to get a greater reward, i.e. the marginal cost of an extra effort c is low, and there is less uncertainty about the outcome, i.e. if the variance is low, the principal will be more confident in providing higher rewards, i.e. using stronger incentives. However if risk aversion, variance and/or marginal cost of an extra effort are high the principal will be less willing to use strong incentives. (Dixit: 2002).

Incentives can be stronger when the agent is less risk-averse. A key feature in this model is the assumption that the agent is risk averse, $r > 0$, which affects the reward. High rewards m create strong incentives for the agent but also imposes more risk to the agent. If the $m = 0$ the agent has full insurance³² and no risk is imposed on the agent. If on the other hand $m = 1$ the agent gets all the output x but no insurance, i.e. bears all the risk. Therefore by spreading the risk we get the most efficient reward, which lies between $0 < m < 1$ (Gibbons, 1998). Risk has an important role in the economic theory of agency given that risk preferences affect contract choice. Risk adverse actors may reject a contract in which they bear the most risk

²⁹ r is the agents risk aversion, c is the marginal cost of an extra effort and v is the variance.

³⁰ If the principal was not risk neutral, i.e. the principal's risk aversion $R > 0$, the marginal incentive coefficient would be: $m = \frac{1+Rcv}{1+(r+R)cv}$

³¹ See Dixit (2002) and Gibbons (1998) for more detailed calculations.

³² Full insurance means that the agent is insured against really bad outcomes and receives a fixed salary contract with lower total value but less variation.

even if it is efficient. Risk can therefore explain the existence of “inefficient” contracts ³³ (Kiser: 1999).

The basic agency model explains how the incentives contracts between the principals and the agents are designed. The agents risk aversion, the marginal cost for an extra effort and the outcome uncertainty affects how the principal choose the marginal incentive to maximize his expected payoff. For the agent to choose the effort that the principal desires the marginal incentive has to be sharp enough, and the incentive constraint and the participation constraint have to be satisfied.

3.2 Delegation Theory

Organisations are run by rules. When principals delegate authority to an agent the contract stipulates decision rules for the agent, what decisions the agents may make and how they should make them. Here, two types of delegation models will be presented: constrained delegation³⁴ and veto-based delegation. These describe two different ways in which the principal can control the agents and the agent’s decision-making authority.

3.2.1 Constrained Delegation

In constrained delegation the agent is given freedom to make decisions subject to constraints from the principal. The main assumptions are; that we have a biased agent with an information advantage³⁵, i.e. we have asymmetric information between the two parties, and that contingent transfers between the parties are not feasible. The principal’s value of delegation depends on how coherent the principal’s and the agent’s preferences are and what opportunities there are for the principal to control the agent’s decisions and thereby get his preferences more aligned with the principals. (Holmström: 1982).

The delegation problem refers to the principal’s problem of choosing which decision rights should be delegated to the agent. When the principal delegates decision making authority to a

³³ i.e. contracts that would be inefficient if all actors were risk neutral.

³⁴ Also known as optimal delegation.

³⁵ According to Holmström (1982) delegation is unnecessary if the agent does not have private information.

better-informed agent whose interest may differ from his own the principal has to design a decision mechanism that optimally exploits the agent's cooperation. In constrained delegation the principal offers the agent a "menu" or a set of decisions from a constrained set, and the agent is then allowed to make any decision from this predefined delegation set. If the principal's ability to delegate is restricted³⁶ the principal engages in *interval delegation*, i.e. the delegation set has to take the form of a single interval. The coherence of the principal's and the agent's preferences and the agent's information advantage affect the principal's choice of which decisions rights should be delegated to the agent. According to Holmström³⁷ (1982) the principal's delegation decision results in more discretion to an agent when his preferences become more aligned with the principal's³⁸ or when the agent has a greater information advantage³⁹.

On the contrary Alonso & Matouschek (2008) argues that when the principal's ability to delegate is unrestricted⁴⁰ he may give less discretion to an agent with a bigger informational advantage and/or a less biased agent. The solution to the delegation problem for the principal is to optimize the delegation set⁴¹. The principal's preferred delegation set depends on whether the principal's preferred decisions are better approximated by a flat function or a step function. If the principal's preferred decisions are sufficiently steep relative to the agent's in a specific delegation set the principal may prefer to reduce the agent's discretion⁴². The principal can change the agent's discretion by adding decisions to or removing decisions in a delegation set. With a relatively steep preferred decision function the principal wants to restrict the agent's decision-making since the agent's decision would be too insensitive to changes in the state. To encourage the agent to make more state-sensitive decision-making the principal may rule out intermediate decisions from the delegation-set. "*when the principal's preferred decisions are relatively steep, she wants to force the agent's decision-making to be more sensitive to the state and she can ensure this, albeit in a coarse manner, by removing the*

³⁶ i.e. the delegation set has to take a specific form.

³⁷ This is based on the assumption that both parties' payoffs are quadratic loss functions.

³⁸ In the political-economy literature of delegation this is known as the *ally principle*. The ally principle argues that a principal is more likely to delegate more discretion to an agent with converging preferences (Huber et al: 2006).

³⁹ In the political-economy literature of delegation this is known as the *uncertainty principle*. The uncertainty principle argues that a principal is more likely to delegate more decision-making authority to an agent who is relatively more informed (Huber et al: 2006).

⁴⁰ i.e. the delegation set can take any form.

⁴¹ See Alonso & Matouschek (2008) for more details on how to optimize the delegation set. .

⁴² See Alonso & Matouschek (2008) for more details regarding the rationale behind this.

intermediate decision” (Alonso & Matouschek : 2008). The principal may do this even if the agent is locally very aligned.

Alonso & Matouschek (2008) show that simple decision rules that are specified by an interval of decisions are optimal when the agent is sufficiently aligned with the principal. However, when this is not the case the “*optimal decision rules may contain gaps, that is, they may allow the agent to make high or low decisions but not intermediate ones. Such gaps may be optimal since they can be used to induce more state-sensitive decision-making by an otherwise unresponsive agent*” (Alonso & Matouschek: 2008). Hence, as mentioned above, if the delegation set can take any form the principal’s delegation decision may result in less discretion for a more aligned agent or an agent with an information advantage, i.e. the ally principle and the uncertainty principle may not hold.

3.2.2 Veto- based Delegation

Veto-based delegation has evolved from constrained delegation and assumes hidden information⁴³ and no monetary transfers between the parties. There are three common characteristics in all veto-based delegation relations. 1) the agent has superior decision-relevant information and the right and responsibility to initiate decisions, 2) the principal has the right to reject the decisions made by the agent but usually does not have the possibility to create a counter proposal and 3) there are no payments between the principal and the agent that are directly tailored to the proposed decision (Mylovanov: 2008).

In veto-based delegation the principal delegate agents the formal right to initiate and implement decisions and they encourage the agent to take advantage of his information advantage. To avoid the agent from getting too opportunistic⁴⁴ in his decision-making the principal holds the right to block the agent’s decision, i.e. we have a veto-power principal.

In this delegation model the agent can choose, from a closed convex set of possible decisions, any preferred decision given his beliefs. The principal then updates his beliefs regarding the state and thereafter either approves or vetoes the agent’s decision. If the decision is vetoed a

⁴³ Hidden information is similar to asymmetric information and describes a situation with two parties where one party (the agent) possesses information that is mutually relevant to both parties but the second party (the principal) does not have that information.

⁴⁴ Opportunistic agent behavior is not desired by the principal since it refers to a situation when the agent acts according to his own preferences and in a self-interested manner.

default decision, which is decided by the principal in advance, is implemented. If the agent proposes an unauthorised decision or fails to make a decision the default decision is applied. The principal's choice whether to approve⁴⁵ or veto a proposed decision is optimal given the principal's beliefs. The principal's choice of default decision is important as it forces the agent towards a decision that is optimal for the principal, since any decision not in line with the principal's preferences will be vetoed. According to Mylovanov (2008) the principal's optimal outcome can be achieved through veto-based delegation if the default decision is properly chosen⁴⁶.

3.2.3 Summary Delegation Theory

Constrained delegation and veto-based delegation are based on similar assumption. The main difference between them is *how* the principal controls the agent's decision-making. In constrained delegation the agent can select a decision from a constrained set of decisions, the delegation set, while in the veto-based the agent can freely choose between decisions from the closed convex set of possible decision, but the principal can veto the agent's decision. In both theories the agent's decision rules are restricted by the principal's preferences.

3.3 International Delegation

International cooperation occasionally requires that individual states give up some of their autonomy to international bodies. This is done through international agreements where these international bodies are delegated authority. International delegation theory, which has a political science approach to delegation, focuses on the delegation relationship between states granting authority to international organizations. International delegation is defined as “*a grant of authority by two or more states to an international body to make decisions or take actions*” (Bradley et al: 2008). To clarify, delegation from states to an international body is often a part of a longer delegation chain, which includes redelegation. Redelegation is a form

⁴⁵ The principal will approve the agent's proposed decision if it is closer to his preferred decision than is the default decision.

⁴⁶ How to choose the optimal default decisions is described in Mylovanov 2008.

of international delegation and refers to the procedure when states first delegate authority to one international body which then has the mandate to redelegate that authority to another international body. Delegation chains involve several steps where authority is granted. The term international body is broad and includes any entity that is created by states; council of states, conference of parties or board of directors (Bradley et al: 2008). Delegation can be either direct or indirect, direct is the situation when the states delegate to an international body that carries out the task. Indirect delegation is however when the international body redelegates to a third body that performs the required task (Green: 2008). There are several different types of delegated authority inter alia; legislative, adjudicative, regulatory, monitoring and enforcement, agenda setting, research and advice, policy implementations and redelegation (Bradley et al: 2008).

3.3.1 Delegation Design

Within the political science approach to delegation theory delegation design describes how principals can use effective delegation mechanisms to maximize gains and reduce costs. “(...) *mechanism of control are intentionally designed and used to minimize agency slack*” (Hawkins et al: 2006). Principals have five monitoring tools they can use to avoid agency slack. First, the principal can choose between two ways of delegating authority to the agent; ruled-based delegation or discretion-based delegation. Rule-based delegation is when the principal writes details rules describing exactly how the agent should perform the task. This form of delegation is relatively inefficient. Ruled-based delegation generally reduces the gains from specialization and increases the costs since the principal herself must spend time and effort learning about the task and writing rules. Alternatively, under discretion-based delegation, the principal can articulate its objectives and leave it up the agent to decide how to achieve these objectives. Greater discretion often gives agents greater autonomy. Autonomy is the choice of actions that the agent can employ after the principal has selected mechanisms of control. While discretion is intentionally designed into the contract, autonomy is an unavoidable act of imperfect control since the principal cannot control everything. Second, since the agents always obtains certain autonomy there are two types of monitoring and reporting mechanisms the principals can use to control the agents actions. When using *police patrols* the principal is through direct monitoring of the agent trying to identify malfeasance and when using *fire alarms* the principal is relying on affected third parties to inform them

about and bring evidence of agency slack. Fire alarms are usually more efficient since there is no cost for the principal and more effective since third parties harmed by an agent have strong incentives to publicize agency slack. Third, the principal can by using screening and selection mechanisms check the agents carefully before delegation authority. By screening, the principal can select the agent whose preferences are more aligned with theirs and thereby avoid slippage. Fourth, principals can structure agency relationships so that they contain institutional checks and balances that limit opportunistic agent behavior. Checks can be created by delegating similar tasks to more than one agent and competition between the agents may reveal important information to the principal such as the true cost of the task or the preferences of the agents. Fifth, through sanctions, by utilising a carrot and stick approach, the principal can encourage desired behavior and punish agency slack (Bradley et al: 2008, Paulsson: 2009b and Nielson et al: 2003).

3.3.2 Benefits and Costs of Delegation

What are the main reasons for delegating? There are both benefits and costs of delegating authority. According to Hawkins et al (2006) all delegation is based upon the division of labor and gains from specialisation. Therefore, the main reason principals' delegate is to achieve gains from specialization, because without it there is no reason to delegate anything to anyone. Delegating a task to a specialised agent, i.e. an agent with expertise, ability and resources to perform, can benefit a principal since it saves him time and resources to conduct the task himself. The greatest gain from specialization will be achieved when the task to be performed is frequent, repetitive, and requires special expertise of knowledge (Hawkins et al: 2006). Another delegation benefit is reduced transaction costs⁴⁷ for the principal. States may benefit from delegating authority to international bodies when faced with heterogeneous preferences or other collective decision-making problems. In this situation delegation may enhance the credibility of international commitments and reduce the states incentives to renege, since the delegated party, the international organization, is authorized to monitor and enforce the commitments (Hawkins et al: 2006 and Bradley et al 2008).

There are several potential losses of delegating authority. Divergent preferences between the principal and the agent are a major concern which may lead to slippage. This could lead the

⁴⁷ Transaction cost is the cost incurred when making an economic exchange, refers not only to the monetary cost but to any cost associates with the exchange e.g. time and effort.

agent to hide information and conceal actions from the principal in purpose of maximizing their own interests. This leads to the agency problems mentioned earlier, moral hazard and adverse selection. Another concern is that the delegated agent might not be using resources as efficiently as possible, shirking. In this case delegation may actually increase costs for the principal. (Paulsson: 2009b and Nielson et al: 2003)

3.4 Summary of the Theoretical Framework

There are several similarities between the economic and the political science aspect of delegation theory. Both theories want to avoid agency slack and maximize the gains from delegation, but they have different approaches on how to achieve this. The economic approach focuses on the contract design. By designing in incentives and decision rules in the contract the principal tries to affect the agent's actions and preferences. Similarly the political science approach has focus on the delegation design, but pays more attention to how the principal can control and monitor the agent during the delegation period.

4. Delegation in the CDM

In this chapter, by using the theories presented in the theoretical framework, the problems that might arise from delegating to private profit-driven agents will be analysed and the question of whether delegation to DOEs impedes the integrity of the CDM will be discussed. Throughout the analysis the focus will be on the integrity of the CDM. The two main parties that are involved in the assessment of additionality are of interest since additionality is of central importance when looking at the integrity of the CDM. Given that the purpose of the CDM is to reduce GHG emissions the main objective for the EB is to ensure that this actually occurs, which implies that the EB's main interest is to ensure that the CDM projects produce emissions reductions that are additional. The DOEs are involved as they are delegated the task of validating and verifying whether the projects are additional or not.

The chapter begins with a description of the delegation chain of the CDM, where the analysis is narrowed down to the delegation of authority from the EB to the DOEs. In the following section the delegation relationship between the EB and DOEs is described and analysed in more depth.

4.1 The Delegation Chain of the CDM

The CDM has a long delegation chain with multiple redelegations of authority and indirect delegation (see figure 4). Therefore there are several principal-agent relationships within the CDM, and a party can from one instance be regarded as the principal and from another be seen as the agent. The CDM is a typical example where we have a collective principal that deals with the collective action problem of reducing the GHG emissions. The international delegation of authority within the CDM is initiated by states. The delegation chain starts with the individual states that have through international agreements established the UNFCCC and the Kyoto Protocol. From these treaties other arrangements and mechanisms were established, inter alia the CDM. Within the CDM the states are collectively represented by the COP/MOP.

The scope of delegation of authority in the CDM was first established in Article 12 of the Kyoto Protocol and was further redefined in the Marrakesh Accords.

The clean development mechanism shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Protocol and be supervised by an executive board of the clean development mechanism. (Kyoto Protocol, Article 12 Paragraph 4)

The COP/MOP can be seen as the ultimate principal, i.e. the head principal, which redelegates authority to the EB, which is the proximate principal. The proximate principal is the body with the formal authority to employ, fire or change an agent’s employment contract (Nielson: 2003 and Green: 2008). Even though the COP/MOP is the ultimate decision-making body, an assumption, similar to the one Martin makes about the IMF⁴⁸, will be used to simplify the analysis. From now on when discussing the principal of the CDM this refers to the EB, and when discussing the agents of the CDM this refers to the DOEs. The reason for this generalization is that the EB and the DOEs are the two main parties that are involved in the assessment of additionality in the CDM project activities.

Figure 4: The Delegation Chain of the CDM

Individual States	International Agreements (Collective Principal)	International body (Ultimate Principal)	International body (Proximate Principal)	Agents
Member Parties →	UNFCCC & Kyoto Protocol →	COP/MOP →	Executive Board →	DOEs

The type of delegation that occurs between the EB and the DOE is indirect delegation, given that we have the EB as an international body redelegating a task to a third party, the DOEs. As mentioned earlier there are several types of delegated authority. Monitoring and enforcement delegation is the most relevant when looking at the relationship between the EB and the DOEs. Monitoring and enforcement delegation involves granting authority to an agent to take measures to monitor or enforce compliance with the principal’s objectives (Bradley et al: 2008). The DOEs are delegated the task of ensuring that the project activities emission reductions are additional, a task whose purpose is to monitor and control that the EB’s main

⁴⁸ Lisa Martin makes a similar assumption regarding the IMF in *Distribution, Information, and Delegation to International Organizations: The Case of IMF Conditionality*, in Hawkins et al., (2006)

objective of additionality is ensured. According to Bradley et al (2008) monitoring may involve mandatory on-site inspections, an activity that the DOEs may employ to ensure that the emission reductions are additional. The DOEs base their verification reports on the project developers monitoring report and on information collected from on-site inspections, which further implies that the DOE's are engaged in monitoring and enforcement delegation.

4.2 The EB's Delegation of Authority to the DOEs – the Delegation Design

In this section the delegation of authority from the EB to the DOEs is examined in more depth. We will be looking at the delegation design and discussing the problems that may arise when the EB delegates authority to DOEs. The analyses will be done by using agency theory and combining the economic and the political science approaches to delegation theory. The reason for having an interdisciplinary approach is to get a broader and deeper analysis of the delegation relationship between the EB and the DOEs.

The delegation design refers to the description of the delegation relationship between the EB and the DOEs according to the CDM's modalities and procedures. The design of the delegation is based on decisions and rulings at COP/MOP's and the EB's meetings. The screening mechanisms, the type of delegated authority, the decision rules, and the mechanisms of control within the CDM that concern the EB's and DOEs' delegation relationship are stipulated in the delegation design.

From here on another assumption to simplify the analysis of the delegation relationship between the EB and the DOEs will be made. The work and actions of the EB's supporting bodies; the CDM-AP, the CDM-AT and the RIT, will be discussed and analysed as work and actions made by the EB. The rationale behind this is that these bodies work under the guidance of the EB and that the EB is the principal actor that eventually makes the final decision regarding the DOEs based on recommendations from their supporting bodies.

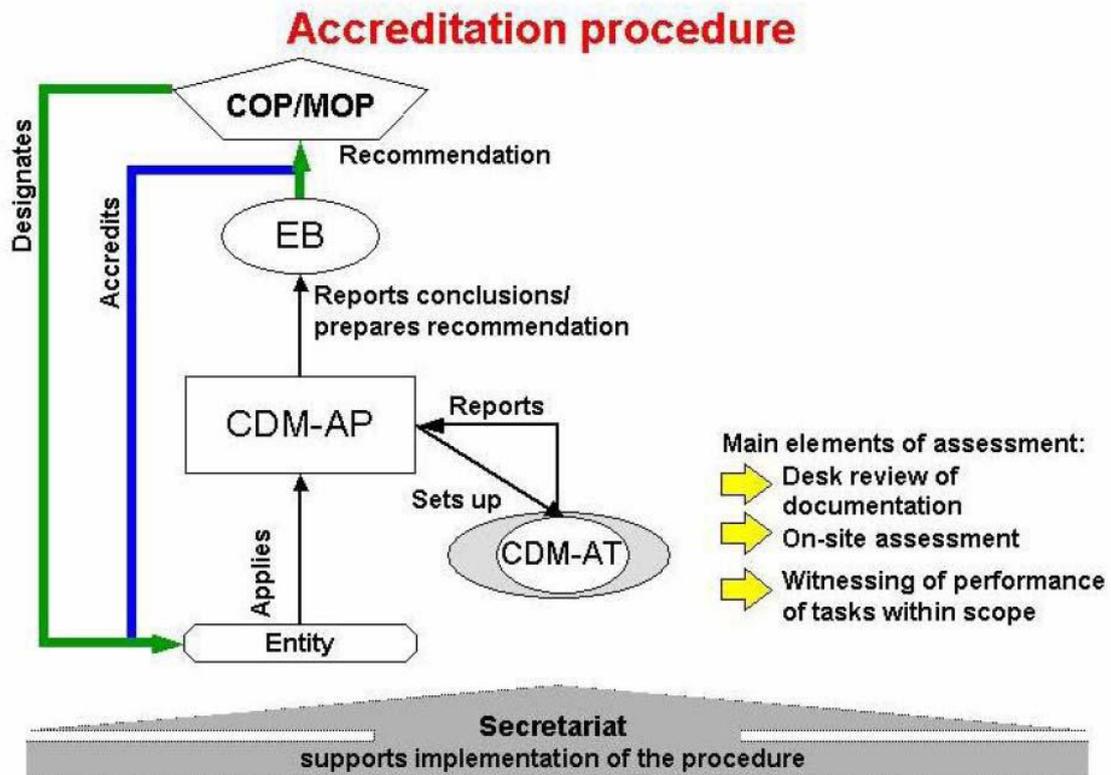
4.2.1 The EB's Screening Mechanism

Through the agent selection process, the accreditation procedure, the EB can effectively screen the entities applying for DOE status. The accreditation procedure is comprehensive and involves several actors (see figure 5). The entities that are under the process of accreditation are called applicant entities (AEs). To begin with the AE has to select under which sectoral scopes they want to apply for DOE status, there are 15 different sectoral scopes⁴⁹ and the accreditation for each scope includes both the validation and verification/certification procedures. Then the AE submits a complete application form to the Secretariat and pays a non-reimbursable application fee of US\$ 15.000⁵⁰. After publishing the name of the AE and the applied sectoral scopes on the UNFCCC CDM website Parties, accredited NGOs and stakeholders have 15 days to provide comments and information regarding the AE. Thereafter the Secretariat prepares an application file and sends it together with the comments to the CDM Accreditation Panel (CDM-AP). The CDM-AP considers the application file, selects members to a CDM Assessment Team (CDM-AT) and identifies key areas or issues that should be addressed by a CDM-AT. Under the guidance of the CDM-AP the CDM-AT investigates whether the AE fulfills the CDM accreditation requirements for becoming a DOE. This is done through a desk review of the documentation provided by the AE and an on-site assessment. The AE has to demonstrate its competence in performing validation and verification/certification procedures within the applied sectoral scopes. Next the CDM-AT writes a report to the CDM-AP regarding the AEs performance, and based on the report the CDM-AP submits their recommendations to the EB. The EB decides whether to accredit the AE or not and sends its recommendations to the COP/MOP who finally designates the AE DOE status. The accreditation is valid for three years and DOEs can apply to be accredited for additional sectoral scopes during the accreditation period. (EB 48 Report Annex 3 and CDM Rulebook)

⁴⁹ See Appendix 3 for a list of sectoral scopes

⁵⁰ Applicants from non-Annex I parties have the possibility of paying half of the application fee upfront.

Figure 5: The Accreditation Procedure



Source: The CDM Rulebook

Agency theory can be applied to the relationship between the EB and the DOEs because it reflects two contracting parties. When an AE gets DOE status he becomes engaged in a contract with the EB where he is delegated the authority from the EB to perform the task of validating and verifying/certifying the additionality of the CDM project activities. Screening is an important pre-contracting mechanism to avoid adverse selection problems and in the CDM the DOEs are screened through the accreditation procedure.

The accreditation procedure has been criticised for being slow and lengthy (Green: 2007), but the EB may have responded to some of the critic as they relatively recently reformed the accreditation procedure. In the EB 34th report Annex 1 the procedures for accrediting AEs by the EB are established. Paragraph 4 describes the main elements of the accreditation assessments of an AE. In this report they consisted of three elements, the desk review, on-site assessment and witnessing. Witnessing is when the CDM-AT witnesses the performance of a

task by an AE, a task that is related to the scope of accreditation for which the AE has applied. The purpose of the witnessing activity is to;

assess whether an AE is implementing its tasks in line with its documented quality policy and procedures, including its procedures and substantive decision making capacity of the AE for performing validation and verification/certification of CDM project activities within the scope applied for. Witnessing activities shall be required for both functions: validation and verification. (EB 34 Report Annex 1)

According to Green (2007) these witnessing requirements delayed the accreditation procedure and AEs had to wait for several years to get their accreditation assessments completed and formally granted. In the most recent version of these procedures established in the EB 48th report in July 2009 the witnessing element is no longer included. Whether this will speed up the accreditation procedure is too soon to tell. However, the screening of the AE's performance in validating and verifying/certifying is an important activity for the integrity of the CDM, which ensures that the potential DOEs have the ability to perform the task of assessing additionality according to the CDM requirements. The EB acknowledged the importance of witnessing activity and replaced it with a performance assessment. The performance assessment is applied when the DOEs are already accredited and it has the same purpose as the witnessing but is instead used as a way to monitor the agents behavior, a police control mechanism⁵¹, rather than a screening mechanism.

As mentioned in the theoretical framework screening is a mechanism principals can use to reduce adverse selection problems. The accreditation procedure screens an AE thoroughly throughout the whole process, e.g. if the AE is a part of a larger organization they have to inter alia demonstrate that no conflict of interest exists and that they are not involved in any activities that might influence their judgement or jeopardize their independence of judgement (CDM Rulebook). The EB has designed a strict CDM accreditation procedure, to reduce adverse selection problems and ensure that they delegate the authority of assessing additionality of CDM projects to entities that have the knowledge and ability to conduct validation and verification/certification within the sectoral scopes they have been accredited for. The screening process is also a way for the EB to ensure that they choose an agent whose preferences are relatively aligned with theirs. According to the ally principle principals are more likely to delegate to agents whom they believe have preferences closer to their own.

⁵¹ The performance assessment as a police control mechanism will be discussed in more detail in section 4.2.4.

Since the DOEs are delegated the tasks of controlling and ensuring the integrity of the CDM, careful screening is necessary to make sure that they accredit DOEs that can perform the tasks of validating and verifying/certifying a CDM project in a satisfactory way, i.e. in line with the principal's preferences.

Signalling

Agents can engage in signalling activities to reduce adverse selection problems. Signalling is a way for DOEs that know their abilities to reveal information about themselves. The application fees can function as a signalling activity. By paying the non-reimbursable application fee the AEs signal their perceived ability to the EB, as one assumes that no AEs would pay the high non-reimbursable application fee unless they were confident enough in their abilities to pass the screening. By applying and not meeting the accreditation requirements the AE risks losing the application fee. The purpose of this fee, apart from just helping to cover the expenses, might also be that it is an additional way for the EB to influence which AEs actually apply for DOE status. By having a non-reimbursable application fee the EB wants to try to affect the type of entities applying. As the accreditation process is costly for the EB they want to ensure that they only get applications from AEs who think they have the ability to get DOE status. The EB may hope that a high non-reimbursable application fee would help to avoid getting applications from AEs who are uncertain about the ability to pass the screening, and only AEs who think they have ability to pass the screening would apply because of the risk of losing the high application fee. This shows that the EB may actually use the fee as a signalling device.

The application fee is not the only cost brought upon on the AEs during the accreditation process⁵², they also have to pay for the desk-review and the on-site assessments. Other additional costs that occur when the DOE is accredited are; performance assessment costs, regular surveillance costs, spot-check costs, costs for extending the accreditation scope and costs for an appeal (EB 48 Report Annex 3). As the DOEs are aware of these additional costs beforehand, no entity would apply unless they could afford to pay these additional fees when they are accredited. These additional costs could be a way for the EB to ensure that only AEs who have high assets apply, since being a DOE comes with many costs. The majority of the DOEs today are large private profit-driven firms, which have access to capital. The non-

⁵² See Appendix 4 for indicative level of fees paid by the AE to the CDM-AT.

reimbursable application fee and all the other additional costs makes it harder for smaller firms or non-profit organisations to apply for DOE status. However, the EB should have an interest of getting more non-profit organisations to apply for DOE status as these organisations may have more aligned preferences with the EB than the profit-driven actors do⁵³. According to the ally principle the EB should prefer to delegate to agents whose preferences are closer to theirs, the fact that this is not the case within the CDM shows that the ally principle does not always hold.

4.2.2 The Type of Delegated Authority

As mentioned earlier there are two types of delegated authority; rule-based delegation and discretion-based delegation. Rule-based delegation is when the principal writes detailed rules describing exactly how the agent should perform the delegated task, while in discretion-based delegation the principal articulates its objectives and leaves it up to the agent to decide how to perform the task to achieve these objectives. In the end of 2008 at the EB's 44th meeting the CDM Validation and Verification Manual (VVM) was adopted. On request from the COP/MOP the EB developed this manual to serve as guidance for DOEs for validation and verification. The purpose was to have clear standards for the DOEs and thereby insure quality and consistency in the validation and verification reports (EB 51 Report Annex 3).

With the implementation of the VVM the principal-agent relationship between the EB and the DOEs became more rule-based, since the VVM is a detailed manual describing how the DOE's should assess the CDM project activities and write their validation and verification reports. Rule-based delegation generally reduces the gains from specialisation since the principal must spend time and effort learning about the task and writing rules (Hawkins et al: 2006). The preparation of the VVM did of course exhaust resources for the principal and thereby reduce specialization gains. However, as argue in the theoretical section there are always agency losses associated with delegation and the intention of the VVM is to reduce another agency loss, the DOEs' possibilities for agency slack. The VVM may help the EB to reduce both shirking and slippage by the DOEs. One can also argue that the VVM may actually increase the gains from specialisation as the DOEs, if they follow the manual, will perform the tasks in according to the CDM requirements. In this case the consequence of the

⁵³ The profit-driven DOEs preferences will be discussed in 4.2.3.

increased rule-based delegation may in contrast with Hawkins be an improvement of the DOEs knowledge of how to perform the validation and verification tasks, which would help ensure the integrity of the CDM.

The adoption of the VVM leads to less discretion for the DOEs. Hawkins et al. argues that ruled-based delegation with less restrictive mechanisms of control may give the agent more autonomy⁵⁴ than under large discretion with strict mechanisms of control (2006). Since the control mechanisms are the same as before the implementation of the VVM the autonomy stays the same, however, the DOEs may feel more confident in their actions of completing the validation and verification reports given that the terms of reference of the tasks are clearer. The DOEs themselves actually requested a standardised manual to avoid criticism of them determining additionality in an arbitrary way (Paulsson: 2009).

Even though the VVM seems like a step forward in the sense of upholding the integrity of the CDM, it is impossible for the EB to write rules that are detailed enough to completely evade agency slack among DOEs. *“Though more detailed verification rules have been laid down and the oversight on verifiers has recently been enhanced, it is doubtful that the current institutional and procedural safeguards of the CDM are sufficient to guarantee a robust outcome of the verification process”* (Sepibus: 2009). Whether the VVM will reduce agency slack and consequently reduces gain from specialisation will be determined in the future when the VVM has been operating longer. The CDM is relatively new and the institutional setting is gradually being revised to improve the functioning of the CDM and to insure its integrity.

4.2.3 The DOEs’ Decision Rules

The decision rules is the part of the delegation design that describes the DOEs decision-making authority, i.e. what decisions the DOEs may make and how they should make them. Within the CDM the DOEs are primarily responsible for making decision regarding whether the emission reductions are additional or not. This is done through the validation and verification/certification procedures. In order for project activity to be validated it must meet certain validation requirements, and it is the DOEs job to ensure that these are met. In the validation process the DOE has to determine that the expected reductions of GHG from the

⁵⁴ Autonomy is the choice of actions that the agent can employ after the principal has selected mechanisms of control.

proposed project activity are additional to any that would have occurred in the absence of the project. In addition to this the DOE shall in their validation report also include a statement of the likelihood of the project achieving the anticipated emission reductions that are stated in the PDD. This implies that they have to ensure that the baseline and monitoring methodologies comply with the requirements set out by the EB. In the verification process the DOE shall, based on the monitoring plan, confirm the authenticity of the reductions in GHG emissions by the CDM project during the verification period. The monitoring methodology explains in detail how the project developer will monitor and calculate the actual emissions reductions from a project. Several steps will be carried out to determine whether the emission reductions are additional or not, inter alia reviewing monitoring results and conducting on-site inspections. If the DOE is satisfied he will verify that the monitoring methodologies for the estimation of reduced GHG emissions have been applied correctly and that the documentation is complete and transparent and in accordance with CDM rules. The certification is a written assurance by the DOE that the emission reductions set out in the verification report were actually achieved (UNEP 2004a and CDM rulebook).

In both constrained delegation and veto-based delegation the delegation problem refers to the principal's problem of choosing which decisions rights should be delegated to the agent. The difference between constrained delegation and veto-based delegation is that in the former the agent should select a decision from a constrained set of decisions while in the later the agent can generally choose from a larger set of possible decisions, but the principal can veto this decision. The delegation set, the "menu" of decision that the DOEs can choose from are predetermined by the CDM's modalities and procedures and they were established by the COP/MOP. Therefore the DOEs only have four decision options to choose from when doing their delegated tasks of validating and verifying/certifying the CDM project activities. These decisions are: 1) to give the proposed project a positive validation and make a request for registration; 2) to give the proposed project a negative validation; 3) to give the project an positive verification and certify to the EB that the claimed emission reductions actually were achieved; or 4) to give the project a negative verification and not certify any emission reductions. The DOEs are in there delegation relationship with the EB involved in interval delegation, i.e. EB lets the DOE's make any decision from a single interval. According to Alonso & Matouschek (2008) in practice principals often engage in interval delegation. Within the current delegation relationship between the EB and the DOEs we actually have a

combination of constrained delegation and veto-based delegation⁵⁵. The rationale behind this is that the DOEs can choose from a constrained set of decisions but the EB can veto their decision. Hence, the main difference between constrained delegation and veto-based delegation, within the delegation design of the CDM, is that they offer the EB two different options on how to control the DOEs' decision-making. Which delegation option is optimal for the EB depends on how aligned the parties' preferences are. In constrained delegation the EB can not intervene when the DOEs make their decisions, and therefore has to trust the DOE to make the right decision from the constrained delegation set described above. The right decision for the EB is the decision that ensures that project activity produces additional emission reductions. For the DOE to be able to choose the right decision from the delegation set it requires that the EB's and the DOEs' preferences are aligned. Constrained delegation is therefore a good delegation option when parties' preferences are sufficiently aligned. Since in the current design of the delegation relationship between the EB and the DOEs the preferences are not very aligned⁵⁶, it has been vital for the integrity of the CDM for the EB to be able to veto a DOE's decision. Veto-based delegation is a preferred delegation option if the parties have different main preferences. Veto-based delegation offers the EB more options to control the DOEs, not just through the power to veto their decisions but also because the EB can within this delegation update his beliefs regarding the state of the DOEs' decisions and choose a default decision that may affect the DOEs' decisions.

In constrained delegation, according to Holmström, the principal's delegation decision results in more discretion to an agent when his preferences become more aligned with the principal's (ally principle) or when the agent has a greater information advantage (uncertainty principle)⁵⁷. Because the EB's and the DOEs' preferences are not aligned, the implementation of the VVM may have been necessary for the integrity of the CDM. With the VVM the DOEs have the same decision rights but less discretion when making the decisions regarding the validation and verification/certification assessments. Preferences can change if there are incentives to change them. Weak incentives in the delegation design of the CDM are one reason why the DOEs' preferences are not aligned with the EB's. The basic principal-agent

⁵⁵ The following analysis will therefore combine aspects from both theories.

⁵⁶ The reasons why the preferences are not aligned will be explained below.

⁵⁷ Since the principal's ability to delegate is restricted, the unrestricted delegation that Alonso & Matouschek discuss is not applicable in the CDM case, and consequently the ally principle and the uncertainty principle may hold.

model states that for the agent to choose the effort the principal desires there has to be strong incentives. If applied to the CDM there has to be strong incentives for the DOEs to choose the decisions that the EB desires. According to Paulsson (2009) when delegating to private actors the contract has to be designed in a way that it takes into account the specific preferences of the agents, and incorporates these preferences in the incentive structure. This has not been done in the design of CDM. A great problem within the delegation between the EB and the DOE is that the EB's incentives to the DOEs may not be sufficient. The rationale behind this is that there might be a conflict of interest for the DOE between the EB and the project developer. Given that the DOEs are profit-driven they have an economic incentive to profit maximize and thereby also an incentive to be more loyal to the project developers than to the EB as they are paid by the former. *"As project proponents can designate the DOEs of their choice and negotiate the price, DOEs which guarantee a positive outcome at the lowest price, will have a comparative advantage. These perverse incentives will eventually lead to a 'race to the bottom' in the quality of the validation and verification services"* (Sepibus: 2009). Reduced quality may imply that the validations and verifications/certifications will not be performed in such a way that the integrity of the CDM can be ensured. An example of a race to the bottom activity within the CDM is success-related payments, i.e. contracts between the DOE and the project developer which is based on the fact that the project developer does not make the last payment to the DOE until the projects registration or issuance is successful. This type of contract creates an economic incentive for the DOE to decide on a positive validation or verification/certification, which raises questions regarding the DOEs' objectivity (Schneider: 2007). According to the VVM the DOEs are required to apply the principles of consistency, transparency, impartiality and confidentiality when preparing the validation and verification reports (EB 51 Report Annex 3). If a DOE's objectivity is questioned it may imply that the DOE is not applying the principles above.

If we have a biased agent, as we assume in constrained delegation, there is more risk for slack. The DOEs become biased because they are paid by the project developers, which consequently creates an economic incentive for the DOE to slack when performing the validation and verification/certification of the CDM projects. To partly avoid the conflict of interest problem the same DOE is not allowed to perform both the validation and the verification/certification assessments. This has however raised concerns about cartels. Even though we have 26 accredited DOEs the market is primarily dominated by six. *"Given the*

small number of DOEs, there could easily be an incentive to approve other DOEs' projects with the expectation that such favor would be reciprocated" (Green: 2007). Once again this raises concern about the DOEs' objectivity when determining the additionality of the CDM projects. To help DOEs cooperate in a positive manner in regards to integrity of the CDM, Schneider (2007) suggest the establishment of "*an informal database of projects where DOEs have refused a validation contract due to concern about the project fulfilling the requirements for the CDM*". This may help to evade the problem of project developers approaching several DOEs to get their project validated.

Since the agent's actions affect the principal's payoff, the principal needs to create incentives and design contracts that change the agents preferences so that they become more aligned with the principals. The decision to let project developers select and pay DOEs is an example of poor delegation design, since it has not created incentives that are strong enough to change the DOE preferences and make them choose the decisions that the EB desire. According to Schneider (2007) the DOEs' independency from the project developers could be strengthened if the EB themselves selected and paid the DOEs. Thereby the DOEs' decisions would no longer be influenced by economic incentives from the project developers. According to Paulsson (2009) this could create a system of carrots and sticks, where DOEs that perform a good job could be favoured, i.e. get selected again. This would reduce moral hazard problems and create incentives for the DOEs to become more aligned with principal's preferences. The incentives may change the DOEs' preferences in such a way that they will want to ensure that the CDM project activities emission reductions are additional because if they slack and the EB finds out about it they might not get hired by the EB again, consequently leading to a loss of income for the DOE. Having the EB select and pay the DOEs would however entail an amendment of the CDM's modalities, which requires the approval of the COP/MOP. Schneider (2007) suggests that this could be considered during a review of the modalities and procedures prior to the start of a possible second commitment period.

Discussions concerning what will happen with the CDM when the Kyoto Protocol's five-year period with binding targets comes to an end are ongoing. During the COP 15 climate conference in Copenhagen in December 2009 no new international climate agreement encompassing the CDM was signed, and criticism of the mechanism is becoming more extensive. The criticism involves inter alia that some of the CDM projects would have been realized without the involvement of Annex I Parties, i.e. that the projects would have have

occurred in the absence of the CDM project activity implying that the emissions would not be considered additional. For this and several other reasons⁵⁸ the uncertainty regarding the future of the CDM post-2012 is widespread. A possible new agreement might therefore require a change of the framework of the CDM, and thus also change the delegation relationship between the EB and the DOEs. Hopefully a new arrangement is designed in such a way that new incentives change the DOE's preferences so that their decisions no longer are affected by economic incentives but on incentives that ensure that the DOEs perform the validation and verification/certification procedures in a way that upholds the integrity of the CDM. If the DOEs' preferences become more aligned with the EB's there might not be any reason for the EB to have the power to veto the DOEs decision and thus just constrained delegation might be an alternative delegation option.

4.2.4 The EB's Mechanisms of Control

The mechanisms of control are a part of the delegation design and are the monitoring and reporting mechanisms that the EB can employ towards the DOEs to control that they follow the CDM's modalities and procedures when performing the validation and verification/certification tasks. Below is a review of the *police patrols* and *fire alarms* mechanisms within the delegation design of the CDM.

Police Patrols

Police patrols are the way in which the principals themselves directly monitor the agents' actions. There are several police patrol mechanisms within the delegation design of the CDM, where the EB can control the DOEs performance. One of the major police patrol mechanism is the Registration and Issuance team (RIT), which was created in 2005 to assist the EB in assessing the requests to reviews. The RIT helps the EB to ensure that the DOEs have performed according to the modalities and procedures, and made appropriate decisions with respect to validating projects and certifying CERs. A Party involved in a project activity or at least three members of the Executive Board may request a review of the registration of a project activity or request a review of the issuance of CERs. A request for review may be

⁵⁸ The CDM is being criticised for many other reasons. However, these reasons do not fall within the scope of the thesis, and will therefore not be discussed any further.

made for several reasons, however it is expected that the EB members request a review if, e.g. the information available indicates that the project activity may not be additional; or the methodology may not be applicable or may be applied incorrectly; or the information available indicates that the monitoring has not been conducted in accordance with the monitoring plan or methodology. The RIT role is: to prepare appraisals of the request for registration submitted by the DOE, where they assess whether the validation requirements are met and appropriately dealt with by DOEs, and to prepare appraisals of the request for issuance of CERs, where they assess whether the verification and certification requirements are met and appropriately dealt with by DOEs. The RIT assesses every registration or issuance request, and points out potential concerns to the EB, who then decides whether to undertake a review of a proposed project activity. The review process is conducted by a review team consisting of members from the EB and the RIT (CDM Rulebook).

If DOEs make decisions that the EB suspect are not according to the modalities and procedures, a request for review may be initiated. If the EB decide to undertake a review it can within the veto-based delegation theory be seen as a way for the EB to control the state before approving the DOEs decision to either register a project or certify CERs. If the EB after the review decides not to veto the DOE's decision the project activity will be registered or the CERs will be certified. However, if the EB after the review decides to veto the DOE decision to approve the registration or issuance there are two predetermined default decisions at hand. Based on the recommendations from the review team the EB can decide to either request that the DOE and project participants make corrections to the project documentation before proceeding with registration or to reject the project activity (CDM Rulebook). According to veto-based delegation theory the choice of default decision is important as it forces the agent towards an optimal decision for principal. However, within the CDM the default decisions are not strong enough to influence the DOEs' decision since the default decision do not in any way affect the DOEs' profit. If the DOE choose the wrong⁵⁹ decision and the EB vetos it, there are no consequences for making the wrong decision, implying that default decisions, contrary to what the veto-based delegation theory claims, are not strong enough to force the agent towards the principal's optimal decision⁶⁰. If on the other hand the EB often has to request a review for the same DOE and additionally the projects often get

⁵⁹ A wrong decision for the EB is a decision that does not ensure that a project activity produces additional emission reductions.

⁶⁰ The EB's optimal decisions are decisions that ensure that the project activity achieves emission reductions that are additional.

vetoed, the EB might suspect that the DOE is slacking and consequently suspend or withdraw the DOE from his accreditation because it appears that the DOE is not following the CDM requirements. The threat of getting suspended can, in contrast, be seen as a way to push the DOE to make decisions that are optimal for the EB. The EB does not veto a DOE's decision when the DOE decides not to register a project or certify CERs. The rationale for this might be that there in this case is no reason for the EB to veto the DOE's decision, since the EB knows that the DOE does not have anything to gain from such a decision. In addition the EB also knows that this type of decision does not affect the integrity of the CDM, since consequently the project has not been registered and no potential non-additional emission reductions have been credited since the DOE did not certify the CERs.

The RIT as a police patrol mechanism has gotten critic for redoing work already done by the DOEs (Paulsson: 2009b). As mentioned in the theoretical framework there will always be a tradeoff between the gains of delegation and the possibility to control the agent. *"If the principal must learn everything that the agent knows and observe everything that the agent does, the gains from specialization diminish accordingly. At the extreme, with perfect knowledge and monitoring, it is almost as if the principal has performed the task herself"* (Hawkins et al: 2006). This means that if the reviews are, as the International Emission Trading Association (IETA 2008) claims, just duplicating the works already done by the DOEs, then the possible specialisation gain made from delegation is lost. It also minimizes the need of accrediting DOEs with special knowledge within the sectoral areas that they are accredited for. Controlling the DOEs' work in this way is costly and leads to high agency losses for the EB as they have to employ people for the RIT and the review team that have the knowledge needed to perform the requested reviews. However, delegation is always associated with agency losses, and the requested reviews can be a delegation strategy that is designed to minimize the agency losses associated with delegation, not to duplicate the DOEs work. The purpose of the requested reviews and the RIT is to only intervene when there are concerns that the DOEs have been slacking and not done their job thoroughly enough according to the requirements of the CDM.

There are also other police patrol mechanisms within the CDM. According to the CDM modalities and procedure there are three other direct ways in which the EB can, during the DOEs' accreditation period, control whether a DOE still meets the accreditation requirements, and performs the tasks of validating and verifying/certifying the CDM projects in accordance

with the EB's requirements. First, there are performance assessments of both the validation and verification activity, which shall occur over the period of the DOE's accreditation. The CDM-AT conducts the assessments, which should for the validation functions be based on documentary evidence, and for the verification functions be based on observations of the verification activities carried out by the DOE at the project site and an evaluation of the compliance of the DOE's draft verification report. On the basis of this the CDM-AT prepares a performance assessment report and a non-conformity report which is forwarded to the DOE, who then proposes corrective actions regarding existing non-conformities. The report is then handed on to the CDM-AP. They inform the EB of the successful or unsuccessful outcome of the performance assessment. In case of the later the CDM-AP should make recommendations to the EB to either suspend the DOE's accreditation for limited sectoral scopes or to suspend the DOE for all scopes. Second, at least one regular on-site surveillance shall be conducted during the DOE's three year accredited period. The CDM-AP decides the location for the regular on-site surveillance, while the CDM-AT performs the assessment and prepares a surveillance assessment report for the CDM-AP. If there are non-conformities the DOE shall have time to correct them. The CDM-AP then makes a recommendation to the EB, either to maintain the accreditation of the DOE or in case of non-conformities to suspend the DOE or grant an extension to the deadline for the closure of the non-conformities. Third, the EB can request a spot-check to be conducted at any time. The scope of the spot-check is decided by the EB. A CDM-AT is established to review the documentation provided by the DOE and to prepare an assessment plan. After the spot-check the CDM-AT prepares a spot-check report, including a non-conformity report and send it to the CDM-AP. The DOE has the opportunity to comment on the report and be heard by the EB. Taking into consideration the comments and the CDM-AP recommendation, the EB shall decide to either: confirm the accreditation of the DOE; partially or fully suspend the DOE and indicate corrective actions; or withdraw the accreditation of the DOE. In case of suspension the DOE shall undertake corrective actions within the time-frame established by the EB. Once again the CDM-AT should verify the implementation of the corrective actions, and report back to the CDM-AP, who makes recommendation to the EB to either revoke the suspension or withdraw the accreditation of the DOE. (EB 48 Report Annex 3)

According to Hawkins et al (2006) delegation requires that the delegated grant of authority is "*limited in time or scope and must be revocable by the principal*" (Hawkins et al, 2006). The delegation relationship between the EB and the DOE complies with this definition, given that

the accreditation period is for three years and the EB has the mandate to suspend, withdraw, and revoke a suspension of a DOEs accreditation. Both the on-site surveillance and the spot-checks can involve checking up on the DOEs performance regarding validation and verification/certification activities, while the performance assessment primarily focuses on the assessment of those activities. If the principal has concerns regarding agency slack it is important that within the design of the delegation there are these types of control mechanisms that the EB can use to ensure that the DOEs are following the CDM's requirements.

These police patrol mechanisms and the request for review can in veto-based delegation be a way for the EB to update his beliefs regarding a project activity before approving the DOEs' validation and verification/certification decisions. If the EB after the use of the police patrol mechanisms find out that the DOE has slacked and has not followed the CDM's modalities and procedures there are consequences and the DOE may lose his accreditation status. Compared to the default decision the threat of being suspended or withdrawn from accreditation creates a stronger incentive for the DOEs to comply with the CDM requirements. The police patrol mechanisms that are designed within the CDM mechanism are indirect ways in which the EB can push the DOEs to change their preferences and force them to become more aligned with the EB. A way to reduce moral hazard problems is to use a carrot and stick approach. In this case the carrot is the DOEs profit, while the police patrol mechanisms can be seen as the sticks. If the DOE does not follow the rules and procedures that the EB has stipulated he may be suspended or withdrawn from his accreditation, which leads to him losing his profit. The police control mechanisms are important for the integrity of the CDM since the monitoring and controlling can help the EB reduce agency slack and force the DOEs to perform the tasks of validating and verifying/certifying in a way that is in accordance to the CDM requirements. According to the IETA (2008) *“an improved accreditation process, increased post-accreditation reviews, and strengthened sanctions will go a long way to reinforce the integrity of the CDM”*.

Even though the EB can veto the DOEs decision the EB might not have the time or ability to update his beliefs regarding the state, which may lead to the EB approving decisions made by the DOEs that should not be approved as they might harm the integrity of the CDM. However, the share of the projects for which a review was requested has grown over the years as well as the share of projects that were rejected. According to Green (2008) 67% of all reasons given by the EB for triggering a review where related to additionality, and among

those projects eventually rejected 81% of the trigger reasons and 82% of the rejection reasons stated doubts about project additionality. This shows that the EB takes issues regarding the credibility and integrity of the CDM seriously and that they act when doubts regarding the DOEs' assessment of additionality are raised.

Fire Alarms

Fire alarms refer to the action of third parties informing principal about agents slacking. Within the CDM, the third parties that primarily can be affected by the DOEs validation and verification/certification decisions are; the stakeholders⁶¹, the project participants and the Parties. According to the modalities and procedures the comments received from third parties should be taken into consideration when decisions are made, however there are only two instances through where the stakeholders can comment on the DOEs and thereby inform the EB about their performance. First, during the accreditation procedure stakeholders, Parties, and UNFCCC accredited NGOs have an opportunity to comment on and provide information about the applying AE to the Secretariat. This pre-contract fire-alarm mechanism attempts to avoid adverse selection problems. Second, stakeholders, Parties, project participants and UNFCCC accredited NGOs can register complaints with the EB regarding the DOEs activities. This method is not commonly used and therefore does not function properly as a fire-alarm mechanism (Green: 2008). There are other instances during the CDM where the stakeholders can comment on the CDM procedures. These are however not directly linked to the DOEs or their performance, but do affect their decisions. E.g. a requirement during the validation is to make the PDD publicly available and receive comments from locally invited stakeholders. The comments from the stakeholders, Parties and UNFCCC accredited NGOs are received by the DOE, who then based on the information received determines whether the project activity should be validated or not. The DOE has to demonstrate that the comments received have been taken into account in their validation. (CDM Rulebook)

The CDM Watch is concerned that there are no opportunities for public commenting on the DOEs performance after the validation report has been submitted. If a DOE decides to validate a project in spite of worrying comments from the public, *“there is no official way to challenge a designated operational entity against wrong claims in a validation report or to raise concerns about the project that only appear after the last official opportunity for public*

⁶¹ Stakeholders mean the public, including individuals, groups or communities affected, or likely to be affected, by the proposed clean development mechanism project activity (3/CMP.1, Annex, paragraph 1(e)).

input has taken place” (CDM Watch). They are also concerned about the fact that only Parties involved and three EB members can trigger a review and that there is no official way for the public to raise concerns about a project activity, neither at the stage of registration nor at the stage of issuance. The CDM Watch stresses the importance of public participation and therefore suggests that stakeholders should be able to trigger a request for review. The CDM Watch’s criticism implies that the fire alarm mechanisms within the CDM are not enough, and that the EB should take more advantage of the opportunity of receiving information from the affected third parties, i.e. the stakeholders. According to Lake et al. (2006) third party testimonies can create delegation success if the third party has information that the principal does not have. Comments providing information can be seen as third party testimonies and *“third-party testimony is an important part of successful delegation”* (Lake et al: 2006). Third parties can provide information to the principal on whether the agent’s action improves his welfare and thereby reduces the chances of delegation failure (Lake et al: 2006), i.e. they can identify and report agency slack to principal who then can do something about the delegation situation. In this specific case delegation failure means that the project activities emission reductions are not additional and hence the DOEs have not completed their tasks of validating and verifying/certifying in accordance to the CDM’s requirements. The principal’s welfare is defined by the achievement of a CDM activity producing additional emission reductions and thereby ensuring the integrity of the CDM.

The third parties’ interests in regards to the EB’s interest are of importance when evaluating the reliance of the third party testimonies. Generally fire alarms are more effective than police patrols, since third parties harmed by the agents generally have strong incentives to publicise agency slack. Lake et al (2006) says that when a principal wants greater knowledge he can get it from the testimony of third party. However, in the case of the CDM some of the third parties, the project developers and the investors, have a common main interest of getting the project approved and the credits issued, i.e. getting the project validated and verified/certified. Even if this requires that the project activity achieves additional emission reductions it might not initially make them want to report or make testimonies of slacking DOEs, given that it may benefit them. If the DOEs slack, i.e. does not do the validation or verification/certification according to the CDM requirements, and still approve the projects, there are no incentives for the project developer to report the slack as it may have been favorable for him. The close commercial relationship between the DOEs and the project developers has raised concern about project developers choosing DOEs that ask fewer

questions (Schneider: 2007). Fewer questions imply less scrutinized validation and verification/certification assessments, where the DOE are almost expected to slack. Since the DOEs are profit-driven they do not want to get a bad reputation amongst the project developers of performing too tough validation and verification/certification assessments and thereby risk not being hired again. Paulsson states “*the DOEs have an incentive not to scare their customers away by applying the rules overly strictly*” (2009b). The fact that the project developers do not have any incentives to report the DOEs when they are slacking, and may even gain from it, could be a reason why the fire alarm mechanism of registering complaints about the DOEs is not commonly being used.

The stakeholders’ interest might however be more aligned with the EB’s interests of achieving additional emission reductions than the project developers, and it could be an idea, as the CDM Watch proposes, to activate the public more to function as fire alarms to indirectly control the DOEs’ performances. Nevertheless, for the fire alarm mechanisms to function properly, i.e. identifying and reporting agency slack, it requires that all the third parties’ interests are aligned with the EB’s. This is however not the case now as the project developers’ main interests differ from the EB’s interest of ensuring the integrity of the CDM.

5. Conclusion

Delegating is always associated with delegation problems. This final chapter will highlight the specific problems that occur when the EB delegates authority to private profit-driven DOEs, and furthermore discuss whether these delegation problems impede the integrity of the CDM.

“though the CDM was designed in a way to maximize the Executive Board’s control over the Designated Operational Entities, in practice, we cannot be assured that these private agents are not pursuing their own goals, at the cost of those delegated to them” (Green: 2007).

In a CDM project, certified CERs for non-additional emission reductions are indications of failed delegation. This occurs at the cost of not just the EB but also the entire global community, as the objective of the CDM to reduce the global GHGs has failed. Failed delegation depends on poor delegation design. There are several problems with the design of the delegation within the CDM, problems that evolve around additionality and consequently impede the integrity of the CDM.

To begin with the design of the screening mechanism, the accreditation procedure, attracts AEs with high assets, primarily large private profit-driven firms. The high costs associated with being a DOE makes it harder for e.g. non-profit organisations to apply for DOE status, organisations which may have more aligned preferences with the EB than the majority of the DOEs today have. Designating DOEs with more aligned preferences may reduce the delegation problems associated with delegating to profit-driven DOEs, and consequently help ensure the integrity of the CDM. The fact that the DOEs are profit-driven implies that they have a different main preference than the EB, preference to make profits, which consequently affects the DOE’s objectivity when assessing the additionality of CDM projects and raises concerns regarding the integrity of the CDM. A major problem with the CDM’s delegation design is that the project developers select and pay the DOEs. Since the DOEs are profit-driven this creates an economic incentive for the DOEs to slack and provide a positive validation or verification/certification of the CDM projects. Agency slack that impedes the integrity of the CDM can even be encouraged by the project developers through success-related payments and through prioritisation of DOEs who ask fewer questions. According to the basic-principal-agent model, if the EB wants to ensure that the delegated agent makes decisions that the EB desires there has to be strong incentives. The current delegation design has not created incentives for the DOEs that are strong enough to change the DOEs

preferences. If however the EB selected and paid the DOEs, the DOEs would no longer have a bias towards the project developers. Depending on the design of the payment method, it may even create incentives that change the DOEs preferences to become more aligned with the EBs.

Another problem that is associated with the design of the delegation is that the default decision within veto-based delegation does not function as the theory predicts. The reason for this is that the default decisions that the EB may utilise are not strong enough to force the DOE towards the EB optimal decision. However, within the design of the delegation the delegated grant of authority is revocable, i.e. there is a risk of getting suspended or withdrawn from accreditation if the EB finds out that a DOE has been slacking. These consequences may substitute the weak default decisions as they within the design of the delegation function as sticks to push the DOEs towards making decisions that are optimal for the EB. The requested reviews and the other police patrol mechanisms⁶² are significant mechanisms for the EB when they need to update their beliefs regarding the state, before approving or vetoing a DOEs decision. However, since the EB might not always have the time or ability to update their beliefs regarding the state of all projects, they EB may approve decisions that should not have been approved as they might harm the integrity of the CDM.

Another problem with the delegation design is that the fire-alarm mechanisms, which are supposed to be more effective than the police patrol mechanisms, are not functioning sufficiently to ensure the integrity of the CDM. That the stakeholders cannot comment on the DOEs performance after the validation report has been submitted is problematic since the verification procedure of the project activities is just as important for the integrity of the CDM as the validation procedures. Another issue is the fact that stakeholders cannot trigger a review. This implies that there is no official way for the public to raise concerns about a project activity, hence making it hard for them to report slack during the registration of the projects or during the issuance of CERs. Two steps in the CDM's project cycle that are important for the integrity of the CDM. The rationale behind the fire alarm mechanism, that harmed third parties have strong incentive to inform the public about the agency slack, is not accurate, as some of the third parties do not have any incentive to publicise slack. DOEs slacking when validating and verifying/certifying CDM project activities might even gain the

⁶² performance assessments, regular on-site surveillance and spot-checks

project developers, which again demonstrates the problem of having profit-driven entities as DOEs.

With the recent implementation of the VVM the delegation design became more rule-based. Rule-based delegation usually reduces gains from specialization. This is not the case within the CDM, as the VVM may have actually increased the DOEs' knowledge of how to perform the validation and verification assessments, and thereby helped to ensure the integrity of the CDM. However, it is impossible to design rules that detailed enough to completely avoid slack, therefore the VVM does not fully guarantee that the DOEs perform the validation and verification assessment in a way that ensures the integrity of the CDM. The RIT has gotten critic for duplication work already done by the DOEs. The problems that may arise from this sort of monitoring delegation are that it increases the agency losses because of increased costs and potentially reduces the gains from specialisation, since DOEs with special knowledge within their accredited scopes are not needed to the same extent. However, the critic regarding that the RIT duplicates the DOE's work is not a delegation problem related to the delegation design, since the purpose of the requested reviews are to ensure the integrity of the CDM.

To conclude, one has to keep in mind that there are always agency losses associated with delegation. Therefore there will continue to be problems if the EB keeps delegating the tasks of validating and verifying/certifying the CDM project activities to other entities. However, delegation can be designed to minimise agency losses and mitigate delegation problems. All the problems mentioned above, that impede the integrity of the CDM, are problems that are associated with the delegation design. However, a change in the delegation design within the CDM requires an amendment of the CDM's modalities and procedures, an act that can only be done by the ultimate decision-making body, the COP/MOP. Whether we will see any changes in the modalities and procedures, that mitigate the delegation problems that impede the integrity of the CDM, will be determined in the future when and if a new global climate agreement will be reached.

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Appendix 1 – Kyoto Protocol Annex B

Party	Quantified emission limitation or reduction commitment (percentage of base year or period)
Australia	108
Austria	92
Belgium	92
Bulgaria*	92
Canada	94
Croatia*	95
Czech Republic*	92
Denmark	92
Estonia*	92
European Community	92
Finland	92
France	92
Germany	92
Greece	92
Hungary*	94
Iceland	110
Ireland	92
Italy	92
Japan	94
Latvia*	92
Liechtenstein	92
Lithuania*	92
Luxembourg	92
Monaco	92
Netherlands	92
New Zealand	100
Norway	101
Poland*	94
Portugal	92
Romania*	92
Russian Federation*	100
Slovakia*	92
Slovenia*	92
Spain	92
Sweden	92
Switzerland	92
Ukraine*	100
United Kingdom of Great Britain and Northern Ireland	92
United States of America ⁶³	93

* Countries that are undergoing the process of transition to a market economy.

⁶³ The United States of America has not signed the Kyoto Protocol.

Appendix 2 - Kyoto Protocol Article 12

1. A clean development mechanism is hereby defined.
2. The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.
3. Under the clean development mechanism: (a) Parties not included in Annex I will benefit from project activities resulting in certified emission reductions; and
(b) Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3, as determined by the Conference of the Parties serving as the meeting of the Parties to this Protocol.
4. The clean development mechanism shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Protocol and be supervised by an executive board of the clean development mechanism.
5. Emission reductions resulting from each project activity shall be certified by operational entities to be designated by the Conference of the Parties serving as the meeting of the Parties to this Protocol, on the basis of:
 - (a) Voluntary participation approved by each Party involved;
 - (b) Real, measurable, and long-term benefits related to the mitigation of climate change; and
 - (c) Reductions in emissions that are additional to any that would occur in the absence of the certified project activity.
6. The clean development mechanism shall assist in arranging funding of certified project activities as necessary.
7. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session, elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities.
8. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall ensure that a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.
9. Participation under the clean development mechanism, including in activities mentioned in paragraph 3 (a) above and in the acquisition of certified emission reductions, may involve private and/or public entities, and is to be subject to whatever guidance may be provided by the executive board of the clean development mechanism.
10. Certified emission reductions obtained during the period from the year 2000 up to the beginning of the first commitment period can be used to assist in achieving compliance in the first commitment period.

Appendix 3 – List of Sectoral Scopes

1. Energy industries (renewable - / non-renewable sources)
2. Energy distribution
3. Energy demand
4. Manufacturing industries
5. Chemical industry
6. Construction
7. Transport
8. Mining/Mineral production
9. Metal production
10. Fugitive emissions from fuels (solid, oil and gas)
11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
12. Solvents use
13. Waste handling and disposal
14. Afforestation and reforestation
15. Agriculture

Appendix 4 – Indicative Level of Fees Paid by the AE to the CDM-AT



Annex I

Indicative level of fees for the CDM AT Members

1. The table below provides indicative level of fees to be paid by the applicant entity to the CDM assessment team (CDM-AT).

Assessment Activity	Team Leader (man-days)	Team Member participating in the task (man-days)	No. of days times daily fee ⁽¹⁾ * Total Cost (US \$)
Preparation of desk review report (F-CDM-DOR)*	2	1*(2)	1,600
On-site assessment**	2	2*(2)	2,400
Verification of implementation of corrective actions to address non-conformities	1	1	800
Witnessing activity	2	2	1,600
Preparation of preliminary report (F-CDM-PR) per activity	1	1	800
Preparation of final report (F-CDM-FR) per activity	1	1	800

2. For information on number of the assessment team members and other details refer to the CDM accreditation procedure (http://edm.unfccc.int/DOE/edm_accr_01.pdf).

3. The entities shall pay the fees directly to relevant team leader/member based on the information provided by the secretariat. The secretariat shall forward to the AE, copy to the team members, a request for payment together with a pre-filled receipt form for each team member. The AE shall ensure that the secretariat receives the original signed receipts by the respective team member. The application process will be halted in case such receipts are not received within deadlines indicated in the procedure.

⁽¹⁾ The level of fee is determined by the Executive Board and presently set to US\$ 400 per day.

* The fee for desk review is included in the non-reimbursable application fee.

** The on-site assessment is typically undertaken by three AT members including the team leader. The on-site assessment may be combined with witnessing activities, in which case the on-site assessment may be extended accordingly.