

“Experts in saving the world”

Why the CDM project CUIDEMOS is successful

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List of Abreviatures

BANCOMEXT	Banco Nacional de Comercio Exterior
CEMD	Centro Mexicano de Derecho Ambiental
CERs	Certified Emission Reductions
CDM	Clean Development Mechanism
CFE	Comisión Federal de Electricidad
CFL	Compac Fluorescent Lamp
CICC	Comisión Intersecretarial de Cambio Climático
COMEGEI	Comité Mexicano para proyectos de reducción de Emisiones y Captura de Gases de Efecto Invernadero
CONACYT	Consejo Nacional de Ciencia y Tecnología
CONUEE	Comisión Nacional para el Uso Eficiente de Energía
COP	Conference of the Parties
CUIDEMOS	Campana para el Uso Inteligent de Energía Mexico
DNA	Designated National Authority
DOEs	Designated Operational Entity
EB	Executive Board CDM
ENAC	Estrategia de Acción Climática
FIDE	Fideicomiso para el Ahorro de Energía
FOMECAR	Fondo Mexicano de Carbono
GEI	Inventario de Gasees de Efecto Invernadero
GHG	Green House Gases
HENAC	Hacia una Estrategia Nacional de Acción Climática
IMF	International Monetary Fund
IMTA	Instituto Mexicano de Tecnología del Agua
INE	Instituto Nacional de Ecología
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
LAERFT	Ley para el Aprovechamiento de la Energía y de Financiación para la Transición Energética

LAFRE	Ley para el Aprovechamiento de las Fuentes Renovables
LASE	Ley para el uso Sustentable de la Energía
NOM	Norma Oficial Mexicana
OECD	Organization for Economic Development and Cooperation
PAN	Partido Acción Nacional
PDD	Project Design Document
PECC	Programa Especial Cambio Climático
PND	Plan Nacional de Desarrollo
PoA	Program of Activities
PRI	Partido Revolucionario Institucional
SEDESOL	Secretaría del Desarrollo Social
SEMARNAT	Secretaría del Medio Ambiente y Recursos Naturales
SENER	Secretaría de Energía
SHCP	Secretaría de Hacienda y Crédito Público
UNAM	Universidad Autónoma de México
UNCED	United Nations Conference on the Environment and Development
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention Climate Change
WB	World Bank
WCDE	World Commission on Development and the Environment

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Preface

The Climate Change phenomenon involves an increase of the global overall temperature of the earth. This sort of change has happened naturally several times during the earth's geological history. However, according to scientific evidence the current climate change phenomenon is different from other similar natural processes. It is very likely¹ that the effect of warming in the 20th Century has been caused by the release of greenhouse gases resulting from human industrial activities through history (IPCC 2007: 9).

As said before, climatic changes have happened naturally before. There is geological evidence that shows that the complex climatic system of the earth stabilizes and regulates the temperature by its own devices, adapting naturally to climate changes. Nevertheless, the rate of human interference within the system is so high-paced that the adaptive capacity of the earth's systems has been diminished, destabilizing the earth's fragile biosphere. It is not the warming of the earth per se that burdens both the natural and social systems but the rate of change and the sudden nature of this climatic change², which surpasses the adaptive capacity. Ecosystems and species are unable to cope with such a rate of change (Gardiner 2006: 558). Hence, the current warming can induce dangerous climatic conditions that will have global impacts on both the social and natural systems, compromising the livelihood for today's people as well as future generations.

As the understanding of the earth's climatic systems has improved during the last decades, scientist, experts, governments, civil society, NGOs and the business sector have realized and accepted the dangers that climatic instability poses to civilization. The United Nations (UN), as the international body of global leadership, mandated the elaboration of scientific reports to enable consensus

¹ According to the IPCC 'very likely' means a probability of 90-99% of occurrence (IPCC 2007).

² It is important to note the difference between 'Climate Change' and 'Climate Variability'. While the former is a matter of short-term fluctuations; the latter is concerned about long-term shifts.

about the highly complex and only recently explored science of climate change. The resulting scientific research body, the Intergovernmental Panel on Climate Change (IPCC), gathered the world's climate experts and scientists coming from diverse disciplines to perform a thorough analysis of the climatic data and its implications on the human social systems. The overall message and conclusions of the reports are that global warming has been provoked by humanity and that global and coordinated action is needed to adapt to the present and mid-term impacts of climate change. Furthermore, it is urgent to implement mitigation measures to reduce the current level of emissions in order to avoid a higher warming that will impact future generations.

The different specialists in natural science, technology, economics and policy-making gathered by the IPCC have elaborated scenarios of possible futures, depending on if and what kind of mitigation measures are implemented (Special Report on Emission Scenarios – SRES). Using economic methodologies like cost-benefit analysis, the SRES predicts that impacts of climate change, aggregated and discounted to the present, are very likely to impose net annual costs which will increase over time as global temperature increases (IPCC 2007: 17).

The scientific knowledge generated by bodies like the IPCC, their views on how climate change should be approached and their priorities in taking action, have been adopted and accepted as legitimate. The knowledge produced by the IPCC is coded in scientific-economic language, disseminating the use of this type of language in world summits, where it is received and reproduced by governments, corporations, the media, civil society and NGOs. Thus, the generalized accepted wisdom, the knowledge and scientific research about climate change, is used as a legitimate justification for policy-making and intervention (Adger et al. 2001). These factors produce and reproduce a certain kind of ideas, structuring the global environmental discourse about climate change.

1. Introduction: From discourse to practice

Discourses can be seen as truth systems, shared ways of apprehending and perceiving a certain phenomenon. The global environmental discourse about climate change has particular ways of apprehending the climate change phenomenon and a specific language used to communicate knowledge about it. Notwithstanding, discourses are more than shared ways of thinking, to produce meaning or constitute knowledge. The knowledge carried on by discourse is intersubjective and contains power relations. These create social structures of power by defining what is true, right or legitimate.

Besides the scientific knowledge, the global environmental discourse has a stark market view on the issue of climate change and the possible measures to mitigate it. Through this perspective flexible market-orientated cooperation mechanisms have been created, like the CDM (Clean Development Mechanism). The CDM, as a cooperation mechanism, allows industrialized countries with a large amount of GHG emissions to get credited for emission reduction in other parts of the world and count them as emission reductions achieved at home. This is based on the scientific argument that emissions are global and that it does not matter where they are reduced. Thus, an industrialized country can transfer financial resources and technology to needy developing countries, which benefit from a greener development. In this win-win scenario developing countries benefit from achieving sustainable development goals, while industrialized countries can reduce emissions cheaply. The twin goal of CDM is: cost-efficient emission reductions and sustainable development profits for the hosting country.

A typical CDM project would be for example a renewable energy project like a hydroelectric power plant. CUIDEMOS, the CDM project subject to research on this thesis, is not a typical CDM project. CUIDEMOS belongs to a new type of project called programmatic. In contrast to large-scale projects like a hydroelectric power plant, the programmatic (also known as PoA, Program of Activities) CDM consist of emission reductions achieved in smaller amounts but

in large-scale and geographically widespread. In the case of the CDM CUIDEMOS the GHG emission reductions are achieved through the domestic use of energy efficient lighting devices i.e. CFLs (Compact Fluorescent Lamps).

The programmatic CDM CUIDEMOS exchanged, as a first step, 1 million incandescent bulbs with more energy efficient CFL technology. The exchange took place in the households of the low-income urban population of Puebla, a central state in Mexico. The exchange makes it possible for these types of households to acquire and use expensive energy efficient technology, which otherwise would not be possible for them to acquire because of high costs.

The energy-efficient technology devices allow for small GHG emission reductions at a large scale, since the program of activities has expanded to other states until reaching almost the totality of the country. Furthermore, while achieving emission reductions through less electricity consumption, there are sustainable development gains. The Mexican government is saving in expenditures in subsidized electricity and avoiding investments in infrastructure. In addition, the households that exchanged the bulbs with CFL are enjoying a reduction on the utility bill.

1.1 Rationale for the thesis

It is hard to dispute the success of the CDM CUIDEMOS as a solution for energy efficiency in the Mexican domestic sector within the larger agenda of climate change mitigation. As a CDM, CUIDEMOS achieved quantifiable reductions of GHG emissions by avoiding energy consumption, while contributing to the sustainable development of the country. The project succeeded to do that by allowing savings in the electricity bill for low-income households by reduced consumption, avoiding costs for the Mexican government in both infrastructure enhancement and electricity subsidies and further aspects. Moreover, it was a first-of-a-kind project of which the innovative implementation enhanced the prestige of Mexico as a frontrunner *Non-Annex* country in the mitigation of

climate change. The project also inspired other countries to host more programmatic CDMs for the energy efficiency in the domestic sector field.

From a reductionist perspective, the reason behind the project's success can be explained by pointing to the adequate Mexican institutions surrounding climate change action that permitted efficient negotiations and implementation of the project. There are also experienced officials in technical and bureaucratic aspects of the CDM, as other similar projects have been implemented in Mexico before. In addition, there is the CDM institutional structure, which allows the entry of private actors experienced in the technological solutions of climate action and with innovative approaches to CDM. Another important aspect to consider the way CUIDEMOS was designed and implemented. Furthermore, there was an overall political willingness to make all the actors (national, international, local) involved in cooperating and carrying on this project.

However, instead of this reductionist perspective, the aim of this thesis is to offer a critical point of view on the reasons for the CDM CUIDEMOS to succeed. This thesis takes into consideration how a *thought community* (Antoniades 2003) involved in CDM permitted the cooperation among the actors to see that the project reaches its goals. These '*thought communities*', better known as epistemic communities, "(are) made up by socially recognized knowledge-based networks, that share a common understanding or world view and seek to translate their belief into dominant social discourse and social practice" (ibid: 26-27). From this perspective, the emergence of an epistemic community around CDM is treated in this thesis as an independent variable to explain the success of CUIDEMOS.

The argument is that epistemic communities decisively influence the conceptual framework in which a policy process takes place and play a significant role in the day-to-day operation of a project or policy process. Likewise they deal with the uncertainties involved in CDM defining the problems, solutions and interests around the projects (ibid.). They can introduce their own worldviews about the

issues related to CDM and climate change policy due to that the knowledge that they own is socially recognized as valid.

1.2 Research Questions: Why is the CDM CUIDEMOS successful?

Some of the factors of success of the CDM CUIDEMOS that it is possible to see at plain view are the climate change institutions in Mexico and those in the UNFCCC (United Nations Framework Convention on Climate Change), the context of the energy sector in Mexico, the organizational form of climate change policy making, the project design and an overall political willingness of the actors involved in the project. While these factors are very important, the existence of the epistemic community around CDM involved not only in the project cycle but in the creation of the some of the factors mentioned above, was a fundamental part of the success of the project.

Rather than searching for a reductionist explanation of the success of the project that points out the mentioned most visible and graspable aspects, I emphasize the critical role of the epistemic community around CDM in the success of the project. The epistemic communities are sometimes indiscernible institutions or complexes of people, in this case formed around CDM. They exist as “*thought communities*” (ibid.) that share an understanding and have a common policy enterprise. The epistemic community around CDM works as networks that through the specific knowledge and expertise in the issue/area influence the conception, development and outcome of policy or projects like the CDM. They exercise authority because they have a socially recognized cognitive authority. With this authority they can influences the general perception of the subject or issue through their expertise, in this case on CDM. Furthermore, they do not necessarily have to belong or be employed by the same organization, but gain access to organizations through advisory positions, contract-based consultancies and other informal networks.

Armies of accountants, brokers, intermediaries, entrepreneurs, government officials in CDM, scientists, policy-makers etc. constitute the epistemic community around CDM. Together the members of this dense community support the advancement of a project in its everyday operation and also from above by influencing the constitutive norms and foundations of CDM and the rule-setting process. Thus, the members of the epistemic community may not have a formal authority but are engaged in broader forms of steering and social control (Newell 2009: 432).

1.3 Structure of the thesis

This thesis is structured into eight chapters. The introduction chapter describes the rationale for this research indicating the motivations of the author. The second part presents the research questions that are addressed in the thesis and the aims of the study.

The second chapter introduces the reader to the concept of epistemic communities and to their role in manufacturing reality and in the operation of policy. It brings about the theoretical framework in which epistemic communities are independent variables in world politics.

The third chapter lists the different methodological tools used in the research. It also gives the rationale for choosing those methods and comments on the methodological challenges of the research.

The fourth chapter presents the process of modernization and how it has become the hegemonic way of thinking constituting the global environmental discourse. It also introduces the ideas of ecological modernization and sustainable development based upon which the global environmental discourse about climate change has been institutionalized, in treaties like the Kyoto Protocol. These ideas are overarching in the current climate change action debate.

The fifth chapter, Mexico and climate change, provides the reader with the context in which the CDM CUIDEMOS was implemented. It explains the main challenges presented by climate change and also the institutional framework vis-à-vis this challenge. Building on that, the following chapter, chapter six, presents the project CDM CUIDEMOS and explains how it was designed to meet the Mexican policy, what were the main aspects of the implementation. It also speaks about the positive outcome of the project and the certification by the Gold Standard foundation as a project with high sustainability contributions to the host country

In Chapter seven, it is presented to the reader an analysis of findings relative to the success of the CDM CUIDEMOS by tracing back to the research question: *Why is the CDM CUIDEMOS successful?* It is divided in two parts. The first part the more evident reasons for the success of CUIDEMOS are accounted (i.e. the institutions, the context, the actors, etc.) In the second part, the question is answered again but from a more thorough perspective, in which the epistemic community around CDM is accounted as a fundamental variable in achieving a successful project.

The Conclusion comprises a summary of findings and the final remarks of this thesis.

2. Theoretical Framework

It is ideas, rather than material forces that structure our lives and create our identities and interests (Wendt 1999: 1).

As scientific rationality began to prevail over alternative paradigms, owners of scientific-technical knowledge have had a greater deal of participation in the modernization process of society. Harvey Brooks observed in 1965: “*Much of the history of social progress in the 20th Century can be described in terms of the transfer of wider and wider areas of public policy from politics to expertise*” (Haas1992: 8). In today’s world, there is still a tendency to move issues that traditionally were treated as political outside the political sphere, by treating them as technocratic whereas politics have little to say (Antoniades 2003: 34). Climate change is one of these problems.

Climate Change is a transnational complex problem full of uncertainties, with many salients and moral considerations regarding its ramifications and causes. In such complexity, political actors look for experts that can offer advice to ameliorate the uncertainties and get some handle on the reality or truth. Notwithstanding, the process of translating the information allows the experts to influence the decision-maker’s policy choices, introduce the expert’s views about the issue and widely determine how it should be interpreted. Thus, when articulating the cause-effect relationship of complex problems, the experts influence the political actors by helping them identifying their interests, framing the issues for collective debate and offering policy recommendations setting up the agenda for negotiation (Haas 1992: 21).

2.1 The concept of epistemic communities

Experts can legitimately frame issues (i.e. climate change) through their *cognitive authority* (Antoniades 2003) over certain topics of interest. The source of their influence is the expertise they have about the topic and the knowledge

they own. Thus, experts can add or neglect, give more or less priority to some aspects, influence the agenda and define the lawmaker's interests. Likewise, governments and other actors can use a certain community of experts to legitimize their own policy selection using their cognitive authority as a legitimization tool (Adger et al. 2001).

Moreover, the general acceptance of expert knowledge advice by those involved in the issue-area influences the others concerned about the topic. Likewise, the acceptance contributes to the diffusion of the validity of advice, spreading particular ideas about a certain policy or issue in all kinds of venues. These ideas are exchanged formally and informally creating knowledge-orientated work communities (Haas 1992).

Peter Haas introduced³ the term epistemic community to permit the analysis of these knowledge-oriented work communities as "*independent variables in patterns of cooperation and policy change in world politics*" (Antoniades 2003: 24). This argument is based on that experts and expert advice form an integral part of the knowledge/power equation. By having an authoritative claim based on the knowledge they own, they exercise decisive power in the construction of world politics (ibid).

Haas (1992) defines epistemic communities as: "*a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy relevant knowledge within that domain or issue-area*" (ibid. 3). According to Haas, in these knowledge-oriented work communities the cultural standards and social arrangements interpenetrate around a primary commitment to epistemic criteria in knowledge production and application (ibid). Following this definition by Haas, epistemic communities are characterized by the following:

³The term epistemic community (and other similar concepts) has been used before by for example, John Ruggie (1972) and Burkart Holzner (1968). However, the majority of authors referred to in this research use Peter Haas' modern conceptualization of the term.

- A shared set of normative principles and beliefs, which provide a value-based rationale for the social action of community members.
- Shared causal beliefs which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which then serve as the basis for elucidating the multiple linkages between possible policy actions and desired outcomes.
- Shared notions of validity that is, intersubjective⁴, internally defined criteria for weighing and validating knowledge in the domain of their expertise.
- A common policy enterprise or a set of common practices associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence (ibid: 4)

According to Haas' conceptualization of the term, what distinguish epistemic communities to other important agents of change (i.e. interest groups, advocacy coalitions and networks, think-tanks and transnational networks) are the causal beliefs that they share, giving a *positivist* position to the meaning of *epistemic* (Antoniades 2003: 25). In that sense, in topics like human rights where positive science is not a relevant tool, Haas claims that an epistemic community would withdraw from the debate. In contrast, in environmental policy, where positive science is very important the advice of an epistemic community is more meaningful (ibid: 25-26). Based on that conceptualization the authority of science and its methods to understand and wage advice are what distinguish epistemic communities from other groups, because epistemic communities operate only in fields where science matters (Haas 1992).

Haas' conceptualization has been criticized for focusing too much on the method (science) and treating power and knowledge as competing concepts, and not as bound together (Antoniades 2003: 25-27). Thus, in climate change politics this conceptualization becomes problematic when the members of epistemic communities are also the decision makers who are to be advised. In this case, to treat knowledge and power as separate concepts would not be valid in the

⁴ This term is explained later in this chapter.

analysis of epistemic communities as an independent variable in the dynamics of politics of climate change. In addition, when science is the preferred method to know the world implies a particular way to frame the problems and solutions to an issue like climate change.

To avoid these conflicts, Antoniadou (2003) suggests an alternative approach focusing on the *purpose* rather than the *method* to conceptualize epistemic communities. In this conceptualization epistemic communities are defined as: “*thought communities made up by socially recognized knowledge-based networks, that share a common understanding or world view and seek to translate their belief into dominant social discourse and social practice*” (ibid: 26-27). Antoniadou (2003) conceives epistemic communities instead of as a *network of professionals*, as a *thought community* that can use more than a *unitary science* as a source of knowledge or *unique methodology* to base and test that knowledge (ibid.25-27). Moreover, it is not the use of a unitary science or method what binds together the community, but the common enterprise to turn their shared understandings or worldviews about a certain issue into hegemonic discourse and social practice.

Unlike Haas’ conceptualization, in which it is the causal beliefs and the use of science what differentiates epistemic communities from other influential groups (i.e. interest groups, advocacy coalitions and networks, think-tanks and transnational networks), Antoniadou highlights social recognition of the knowledge authority of the epistemic communities as the distinctive characteristic. Following that argument, the knowledge owned by the epistemic communities is introduced into its social context by affirming that the authoritative claim is only valid because there are social structures that recognize it as such. Once this is considered, power and knowledge are bound together, permitting to historicize and take into account the historical/cultural knowledge structures upon which an epistemic community’s cognitive authority has been constructed (ibid: 26-27).

The *purpose orientated* concept of epistemic communities is more useful in the analysis of epistemic communities as independent variables and agents of change in climate change politics, especially in cooperation mechanisms like CDM. For instance, the suggested approach by Antoniadou (2003), permits including a more diverse spectrum of actors (i.e. scientist, private actors, policymakers, etcetera) into the analysis that originally were not considered in the equation of epistemic communities (i.e. private actors). Furthermore, it demands considering the purpose of the epistemic communities by pointing out that they have a shared and common enterprise of turning their views into the hegemonic perspective. In the case of climate change politics and CDM, the epistemic communities in general have market-orientated views about climate change mitigation.

This conceptualization is especially helpful to critically analyze the dynamics of climate change politics in CDM, by arguing that it is the social recognition of the knowledge owned by the epistemic community and not knowledge alone what grants them a cognitive authority to influence politics. Thus, the members of an epistemic community should not necessarily need to be scientists or highly skilled technicians. It is possible to find among the members accountants acquainted with the bureaucracy of the UN and CDM, entrepreneurs introducing new market approaches to climate change mitigation or members the actual decision makers. These actors are considered to have an authoritative claim for other causes but science alone.

The cognitive authority of an epistemic community is dependent on social recognition, regardless of the source of knowledge and methodology to base and test the knowledge that the community members possess. In this conceptualization it is recognized that knowledge and power form the same structure. Furthermore, highlighting social recognition of the authoritative claim as the distinctive characteristic of an epistemic community, allows binding the concepts of knowledge and power in the analysis.

In addition, one should consider that in climate change politics (and CDM), when an environmental problem is treated as a highly technical issue it entails that it has already been *subjected to normative judgments* (Antoniades 2003: 26) on its construction. The proposed approach of epistemic communities offers the possibility to look at these normative and scientific beliefs upon which climate change action has been constructed. In the case of the epistemic communities involved in CDM, one can study their shared worldview about the environment and the ways in which they carry on their common enterprise to impose their views about climate change action and social progress, and critically analyze its consequences.

2.2 The influence of epistemic communities

As explained, epistemic communities are often-indiscernible institutions or complex of people who are on the same *epistemological wavelength* (Bukhari 2004). These experts or professionals do not necessarily have to belong or be employed by the same organization, but gain access to organizations through advisory positions, contract-based consultancies and other informal networks.

They meet their peers in international forums, where they exchange their views about the problems and possible solutions of a given issue. After constant exchange the experts assimilate the views of their international counterparts, incorporate these views into the advice given to national policy-makers and aggregate the view of the international community. Then, key actors in climate change policy from one country meet their fellows from another country and they share many views on the matter incentivizing cooperation among the parts.

The conceptualization by Antoniades presents a more ample analytical spectrum without stripping the concept from the original characteristics brought about by Haas. It can provide a deeper understanding about the critical causes and consequences of the influence on political change exercised by epistemic communities. To facilitate the analysis, Antoniades suggests distinguishing two

different levels upon which epistemic communities influence politics: the *cognitive level* and the *operational level* of the policy process.

At the cognitive level, the knowledge owned by an epistemic community is above all power to produce and reproduce social reality. In that sense, to be recognized as the owner of knowledge permits the epistemic community to dominate and impose a certain reality (ibid: 29). One should consider this ability as an important part of the analysis, because epistemic communities actively pursue the enterprise to influence social reality within their own terms in order to continue to exist through their socially recognized cognitive authority. At the same time that an epistemic community is a product of the reality it inhabits, its existence depends on the social recognition of its cognitive authority over the issue/area. In this respect, epistemic communities serve as important sources of social construction. The members of the epistemic community can exercise power through the knowledge they own by influencing state actors, imposing a certain discourse and worldview about an issue, widely determining the social facts, social structure and identities (ibid.). These shared patterns of reasoning that produce and apply knowledge in a particular manner constitute the patterns of their intersubjective knowledge (Finnemore & Sikkink 2001, Antoniadis 2003) that enables the epistemic community to create new understandings and influence the evolution of the *intersubjective understanding* (ibid.).

It is at the cognitive level where the epistemic communities frame the constitutive rules and fundamentals on how to address a certain issue. They often distribute new norms and technical expertise providing a specific understanding of an issue. This understanding is set up according to the community's own shared values, causal beliefs and discursive practices. As Antoniadis describes it: "the (epistemic community's) ability of imposing a discourse includes the ability to influence on the collective self-understanding and identity formation and the collectivity's wants and interests" (Antoniadis 2003: 29). To be able to determine the alternatives is the ultimate form of power and, during the policy process the epistemic community can shape the conceptual framework by

building and constraining it widely influencing the way states interpret their environments and define their interests. Thus, the ideas and visions of the epistemic community are integrated in the policy process.

The involvement of the epistemic community in the policy process sometimes makes the limits between experts and advisors and the actual policymakers undistinguishable (Finnemore & Sikkink 2001). That is why epistemic communities, as Antoniadis (2003) suggests, should be studied as they operate on another level besides the cognitive. As said before, their cognitive authority over a topic grants them entrance to the political system where they participate formally and informally in the dynamics of policy-making. At this operational level, “the epistemic communities function as catalyst for structural change or continuity in (climate change) politics” (Antoniades 2003: 34). Their ability to describe and depict reality through *language power* (ibid. 31), allows the community to play an important role in the way states and other decisive actors interpret their environment and define their interests. In the same way members of epistemic communities with cognitive authority can influence the social reality and the conceptual framework of the policy process, by determining how an issue is conceived, defining *the roles of actors* and what is *possible/impossible* or *acceptable/unacceptable* (Antoniades 2003: 31).

Their role as advisors or sources of information permits the epistemic community to influence the state actors in the agenda setting in both domestic and world politics. They become stronger at the national and transnational level as decision makers request them for information and delegates them responsibility (Haas 1992: 8). They influence the actor’s interests either by directly identifying them for the decision-makers or by illuminating the salient dimensions of an issue from which the decision makers may then deduce their interest (Haas 1992: 2). In the operation of policymaking, one can find the members of epistemic communities directly involved in the process and infusing their views as representatives of governments, members of international organizations, or as the decision makers (ibid.). Nonetheless, they can also participate indirectly as

advisors sources of information. Having agenda setting functions permits the community adding new issues to the agenda or change the way in which issues are approached and conceptualized.

2.3 Studying the critical consequences of the influence of epistemic communities

The conceptualization of epistemic communities by Antoniadou presents a more ample analytical spectrum without stripping the concept from the original characteristics brought about by Haas. It can provide a deeper understanding on the critical causes and consequences of the influence exercised by epistemic communities in political change by pointing out power relations, discourses, and social structures and so on.

Many expect that the epistemic community members, who are advising policy makers, will provide a more rational, objective and legitimate advice about a certain issue (i.e. climate change action). Nonetheless, even when problems are regarded as highly technical, policymaking involves the weighting of a number of a complex and nontechnical issues centering around who is to get what in society and at what cost (Haas1992). Therefore policy choices remain highly political in their expectation, despite the attempt to make them treated as scientific, neutral and objective (technocratic). However, it could be the case that members of the epistemic community simply have it wrong or have ulterior motives to offer certain recommendations.

Furthermore, there is a problematic regarding the exercise of influence and legitimacy of the advice of epistemic communities, which should not be overseen. First, in many cases the advice given to political actors is agreed upon by scientific, political and economic elites, who are in general the owners of knowledge. This opens the possibility that the elites end up monopolizing policymaking, pushing only their own interests, beliefs and ideas and not the majorities'. The second is the ontological nature of their advice and the way

epistemic communities define the natural world, environmental problems and their possible solutions. Knowledge is only accepted belief, not correct belief, and even correct beliefs may evolve over time as progressively more accurate characterizations of the world are consensually formulated (Haas 1992: 23). Hence, the economic understanding of the hegemonic global environmental discourses carries on characterizations of the natural world and environmental problems that can lead to economically sound recommendations or interventions. Although these interventions or recommendations can carry on positive economic outcomes, they are not necessarily the most adequate to achieve environmental positive outcomes or protect the interest of the people.

As Haas claims, the definition of the alternatives is the supreme instrument of power (ibid: 16)⁵. The control over knowledge and information is an important dimension of power and the diffusion of new ideas can lead to new patterns of behavior of political actors (i.e. policy-makers, interest groups, civil society). Epistemic communities aim towards imposing their particular views and discourses constructing what can be seen as a truth system. The definition of what is truth cannot be detached from dominant ways of thinking, which carry on ideas that define and transform the organization of world politics.

Furthermore, knowledge is valid in a determined space and time and depends on a social structure that supports and recognizes its validity. The conceptualization of epistemic communities as knowledge-based networks allows to see how the knowledge and the epistemic communities were formed and transformed through time, having implications on what is the preferred discourse about the climate change issue.

The concept of epistemic communities will help me generate a deeper understanding on how the world is made and remade through human action under the premise that ideas and not material forces largely define the social

⁵ Quote belongs to E.E. Stattschneider (Haas, 1992 p.16)

structure. At the same time, it will permit to bind power and knowledge, unveiling how knowledge structures shape identities, interests and foreign policies of states and non-state actors. These actors reproduce that structure and at times also transform it.

Ideas and discourses influence and shape institutions and when socially recognized epistemic communities provide convincing ideas, strong institutions draw their attention and resources may follow. In the case of CDM CUIDEMOS, identities and interests of states and non-state actors have been contended by global discourses that frame the issue of climate change in technocratic and market based terms. Furthermore, the views of the epistemic community, the way they depict reality and the discursive practice influence the definition of what counts as legitimate action or what is a successful project.

3. Methodology

My research strategy consists of a multi-methodological approach, using critical text analysis as the main methodological tool. Instead of doing extensive field research, I relied on qualitative analytical tools such as open-ended non-structured interviews with experts involved at different stages of the CDM CUIDEMOS. Furthermore, I took part in three CDM events where I observed the interaction between members of epistemic communities from the field of climate change and CDM.

3.1 Literature Review

A literature review consists of a critical analysis of previous research, theories and methodological approaches related to the topic of interest. As Bryman (2008) claims, a literature review allows the researcher to know what is already known about the topic, and at cases learn from the mistakes of other researchers and avoid them. A literature review also permits the researcher to see a variety of theoretical and methodological approaches, when formulating the theoretical approach.

It is possible to find a robust literature about the theories regarding the central topic of the thesis: epistemic communities, environmental protection and environmental action related to climate change, discourses about the environment, modernization theory and the environment, the ideas of ecological modernization and sustainable development. These are key concepts central to understanding the views of experts who belong to an epistemic community around CDM.

I rely on the work of two authors, Peter Haas and Andrea Antoniadis, to frame the theoretical approach of epistemic communities. I also refer to the work on environmental discourse analysis of John Dryzek to look at the salient ramifications of the adoption of a discourse and discursive practice of the

epistemic communities around CDM and climate change action. Thus, I also review the historical process of the development of the ideas of modernization. I am critically looking at the extensive work done in establishing the different theories of the modernization process of society. This without obviating the context and the historical process of the development of the ideas that constitute today's social and knowledge structure upon which epistemic communities depend.

3.2 Text Analysis

Discourses can be considered hegemonic if the ideas embedded are institutionalized into political structure (Adger et al. 2001: 685). This is the case of the global environmental discourse, in which the ideas of ecological modernization and sustainable development have influenced the general perception of the issue of climate change and are permeating the political structure of the UN and other international bodies, national governments and private actors. These ideas about environmental protection and climate change action carry on a market-orientated perspective portrayed in UN's official communication, national governments' development plans, treaties, protocols and cooperation mechanisms like CDM

In order to gain a general view of the perspectives of epistemic communities that treat the issue climate change and CDM, I will critically analyze the content of official information provided by national ministries, international bodies like the UNFCCC, information from official websites etc. These policies have arguably been influenced by the advice of expert members of epistemic communities.

3.2.1 Mexico and Climate Change

An advantage for my research is that Mexico is very active in reporting and releasing guidelines and policy plans about climate change action. The climate change policy and laws in Mexico can be seen as a product of the views and beliefs of those taking the decisions. These decision makers, I argue, are

influenced by people they consider experts in the policy area. This is why I am looking at the climate Change Policy plans, the laws surrounding climate policy, national climate change communication issued to the UNFCCC by the Mexican government and the National Development Plan, that steers the political route of the nation.

As a second source of information, I used releases by the ministries involved in CDM and related sources like speeches in official events, like the presentation of the follow-up project of CUIDEMOS. The speech by the Mexican President was recorded and it is available online on YouTube.

3.2.2 The CDM CUIDEMOS

CDM projects require a high level of transparency, at least to the extent that the official documentation is uploaded to the UNFCCC's webpage and is available to the general public to download. It is possible to find a detailed description of the project in the Project Design Document (PDD) (UNFCCC 2009). In the same document the main goals of emission reductions and sustainability profits are presented as well as general information regarding the implementation of the project and the actors who are involved in CDM. The Gold Standard certification requires more stringent transparency, stakeholder consultations and external third party audits. Det Norske Veritas⁶, was the auditor in charge to follow up the two stakeholder consultations and presented a report available online.

3.3 In-depth Interviews

In depth interviews are a qualitative tool that allows a certain level of intimacy between the interviewer and the interviewee. I used almost unstructured interviews in order to increase flexibility and freedom to respond, creating an atmosphere of conversation between the interviewee and me. The intention is to allow the interviewee to freely show how he or she interprets the world. They are

⁶ Norwegian certifying company that is a big player in CDM certification.

suitable as a tandem with another methodological tools (Byrman 2008).

Moreover, interviews are also helpful in the reconstruction of events. During the interview I asked the interviewees their version about how the project developed and what was their role in the different stages.

I handpicked people who were directly or indirectly involved in the CDM CUIDEMOS. When conducting an interview, one should focus on how the interviewee frames and understands issues and events. This is important in explaining and understanding events, patterns, and forms of behavior (ibid: 438). Arguably, the interviewees are members of the climate change / epistemic community around CDM that advises decision makers in Mexico and around the world about relevant topics. All of them are experts on the fields of climate change, energy and CDM.

The interviews were held after the initial research, so that I could cross-reference the answers of the interviewees with the information from the text analysis (i.e. the negotiation process, punctual information about the implementation of CDM CUIDEMOS and the overall context of climate change politics in Mexico). I conducted three in-depth open-ended interviews via telephone with my informants. Ideally, interviews are better performed in person however my experience in conducting presentations by phone allowed me to overcome the shortcomings of a telephone interview. Moreover, I used software to record the information, which facilitated the in-depth analysis. The three interviewees agreed on having their names and statements published in this thesis, as well as the interviews recorded. The following are the key informants interviewed:

Ing. Alejandro Alcaide, FIDE⁷ regional manager: Educated in electrical engineering and administration, he has been the regional manager FIDE for a couple of years. He began his career at the national utility and managed his way

⁷ FIDE is a non-for-profit state company dependent of the CONUEE. Among other services, FIDE provides financing to end-users to acquire energy efficient domestic appliances. The role of FIDE in the CDM CUIDEMOS is explained in chapter 6 and 7.

to top-regional management. He also teaches at the State's Technical University about energy efficiency.

He is very well acquainted with the methodologies of measuring electricity consumption, took part in the major modernization of the utility and was involved in the project ILUMEX⁸ preceding the CDM CUIDEMOS, in which CFLs were sold at discounted prices and payable in the utility bill.

Iván Hernández, Gold Standard Director Latin-America: Educated as an industrial and system engineer, he has been working as the Latin-American manager for Gold Standard for nearly three years.

He has expertise in environmental monitoring (i.e. GHG emissions) and CDM procedures and has been active in advising the Mexican government in these topics. His status as Gold Standard representative and expertise in relevant topics to CDM and climate change actions grants the governmental access to forums, where he has been able to share his perspectives with decision-makers involved in CDM.

Andrés Rivera Pesquera, Country Manager CDM project developer:

Educated in business in the prestigious private university Instituto Tecnológico Autónomo de Mexico, he has arranged a media campaign for social responsibility to increase political participation of the youth – “Tu Rock es Votar” (Your rock is to vote). This campaign awarded him the Social Entrepreneur Award in 2007 given by the Mexican Business Council.

He was directly participating in the design of the CDM CUIDEMOS, carrying on the negotiations with the different entities involved i.e. the government, as well as with the TV network and two companies that take part in the implementation of the project. Moreover, he has participated in different forums aiming to increase the institutional capacity of Mexico and Latin American countries, arranged by the Inter-American Bank of Development.

⁸ A project involving CFLs that I argue is a predecessor of the CDM CUIDEMOS. More information regarding this project is presented in subsequent chapters.

As mentioned before, I conducted unstructured interviews for the three experts. The ad memoire that I used was based on punctual questions regarding the topic of interest of each interviewee. My intention was to offer a conversational interview, in which the interviewee had an increased freedom to express his thoughts and visions about climate change, CDM, the government and the other actors involved. It was very important for analyzing the purpose of the epistemic community around CDM community to hear their normative opinions of what was right or wrong, acceptable or unacceptable about the structure of the political system. I invited them to give their opinion regarding how the political structure or CDM ought to change in order to be more efficient or optimal. Furthermore, I pay attention to the language the used when referring to topics such as energy efficiency and sustainability in search of common discursive practices.

3.4 Observation

Another source of information was my participation in the CDM Breakfasts arranged by SN Power. This type of observation can be related to the method of participant observation, because I regarded the people attending the events as actors being members of the epistemic community around CDM. This type of observation allows having extensive contact with a social setting, allowing mapping people's behavior in the context (Byrman 2008: 465-466).

The Norwegian company is in the business of hydroelectric power plants infrastructure building and has been widely involved in CDM. Every quarter they organize a breakfast inviting main key players of the CDM industry in Norway. Within the participants one can find businessmen and women working in CDM related industries (i.e. oil and gas), or being mainly involved in the financial aspects. Key entrepreneurs are for example the funders of Point-Carbon a world player in CDM risk analysis and Det Norske Veritas the largest CDM certifier and auditing company.

Notably, members of the CDM Executive Board and bureaucrats working in Norwegian Ministries are also constant participants and hold presentations about key developments of the CDM. During these informal meetings, I was able to observe the interactions between the different actors, arguably members of a CDM/climate change epistemic community.

4. Discourses about environmental protection

In this chapter I will trace the genealogy of the global managerial discourse about the environment, by looking back to the process of the modernization of society. Social change has taken place according to modernization's shared beliefs about the environment and social progress. The ideals of modernization constitute the global environmental discourse that dictates the appropriate way to tackle the current environmental crisis. A glance to the history of progress and how these ideas have evolved through time, should allow to critically observe the implications on what is the preferred discourse and actors with power.

4.1 Modernization

“Modernization theory is the belief that industrialization and economic development lead directly to positive social and political change” (Berman: 2009).

The current environmental crisis is a long-delayed ‘boomerang effect’ of the North's exploitation of the South, which began with Christopher Columbus (Haila 2005). It is possible to draw a line from the past to connect the development of western civilization as the hegemonic agent of culture to today's contemporary global modern society. The process initiated in the 17th century with the beginning of capitalism, colonialism and industrialization. During this time the structure and dynamics of society developed into “a ‘market society’ in which not only economy but all aspects of human existence were to be governed by the principles of a self-regulating system of markets” (Thomas, Meaning and Views of development 2000: 25). Those values, ideals and perspectives created an understanding of the world that configured today's global society, a society immerse in a social and environmental crisis. These reflected in the widespread global poverty, ozone layer depletion, bio-diversity loss and the human induced climatic changes to mention some.

Modernization has roots in the ideals of the ‘Enlightenment’, which permeated the minds of that time causing a rupture with religious beliefs through methodical intellectuality. As consequence of the Enlightenment project, modernization encompassed certain values, ideals and perspectives of a desirable society, having science as the principal method to apprehend and explain reality. The ultimate goal of the modernization was the Enlightenment of progress and development. As Deb (2009) a post-modernization academic explains, development was regarded as the improvement of the economic status of the society, widening of the individual’s life opportunities and betterment of the quality of life.

The values, ideals and discourses of modernization were transmitted and widespread by using metaphors coming from scientific explanations about the natural world, like the evolution of species. Modernization ideology used these explanations to tell stories that regarded the evolution of society as linear. For example, Deb (2009) argues, some of the central ideas of modernization came from misinterpretation of Darwinian biological views of evolution (natural selection and survival of the fittest) to render explanations about social evolution. This type of metaphors describes the historical evolution of society as a series of linear connected economic stages (Deb 2009: 17): hunting – gathering, pastoral, agricultural and commercial or industrial. In many ways, this representation of history put the European society of the time at the highest form of social configuration, meanwhile the non-industrialized rest of the world (pre-capitalistic societies) were lagging in the civilizing evolution.

The concepts of progress and development, central in the modernization ideal, became the drivers of society, and instrumental reason and science the means to achieve it. Modernization thought claims “no sane person could be opposed to development in the sense of economic uplifting of the nation, betterment of the standard of life or improvement of the quality of life” (ibid: 15). Thus, modernization brought about normative burdens, with which society and individuals should fulfill their potential, steering the direction of social change

towards development and progress. This meant to evolve based on the model of the industrial society that is considered by modernization thought as the highest form of social configuration.

However how promising this normative principle can sound, it does not offer any indication about the practical means to achieve it, except for economic growth and technology development. Hence, modernization turned economics as the main rhetorical tool and expressive mean providing as well a language, with which progress and development should be framed, conceived and evaluated. All this elements form the modernization paradigm, in which economics determine the social, political and ethical implication of progress and development.

Modernization became a 'truth system' with the central belief in economic growth and material prosperity as society's ultimate goal. Moreover, as the scientific method became the main predominant way to inquire about the world modern science became a substitute of religion. Notwithstanding, many aspects of Judeo-Christian ethics regarding the natural world remained in modernization thought. These ethics offer a biblical perspective, in which humans are the center of creation (anthropocentrism) and nature has only material value. Using narratives and metaphors from the Book of Genesis, modernization also epitomized the dominion of men over nature, reducing the value of nature to only instrumental.

Modernization and all the social constructions and ideational factors are still the hegemonic paradigm. They justify the role of industrial society in the North as exporter of development and progress to the rest of the world. Furthermore, it legitimized the change from natural wealth to natural capital, where the wilderness stage of the habitats of those regarded as savages or underdeveloped required intervention to give place to progress and civilization.

These views carried on a motivation and justification of action for free-market competition by regarding it as a state natural to man. This motivation and justification, as Polanyi argues, were rarely acknowledged as valid in the history

of human societies and certainly never before raised to the level of justification of action and behavior in everyday life (Thomas, Meaning and Views of development 2000: 25). It also avoided moral inquiries about the validity of this argumentation, by arguing that the free market system would allow for an unconstrained operation of the ‘law of the fittest’, the natural universal law. Through this conception fitter individuals amassed more wealth and had a greater store of economic virtues. The ethos of modernization thought is indeed capitalism.

4.1.1 The modern society

The modernization process is historically connected with the commoditization of the systems of production and consumption. This was a process of total transformation in society’s structure with new notions of ownership and economic power, which substituted the feudal social organization. Becoming a market society with a system of self-regulating markets required more than what is produced to be bought and sold, but for the factors of production natural resources, land, labor power and production organization itself to become commodities (ibid: 25-26).

Smelser (1968), summarizes these major transformations in four element of society:

1. **Technology:** the change from simple and traditionalized techniques towards scientific knowledge.
2. **Agriculture:** changing from subsistence farming towards commercial production of agricultural goods (i.e. specialization in cash crops, purchase of non-agricultural products and agricultural wage labor).
3. **Industry:** transformation from the use of manual and animal power towards men aggregated at power-driven machines, who worked for monetary return entering into a market based on a network of exchange.
4. **Ecological:** the movement from farm and village towards urban centers (Thomas, Meaning and Views of development 2000: 30-31).

Several authors consider the industrial revolution in Britain as a good example of this process of total transformation in several aspects of life, brought about by modernization. In this time, Britain saw the movement of rural population to the

cities because as technological changes yielded higher numbers of crops and the number of farmers was reduced. At the same time, factories in the city demanded a higher number of manpower, in order to maintain a higher scale in the production. This changes fostered economic development in some sectors of the British society but also divided the society in the ones who possessed the capital and means of production and the ones who received remuneration for they productive work.

The transformations translated into a quick increase in the scale of production and consumption as well as in the whole production-consumption process creating unseen economic development and growth. However, the generalized movement towards commodification of the factors of production that created social dynamics brought about as well very negative consequences for man, nature and the productive organization itself. Polanyi, an important modernization academic, sees the events of the first half of the 20th century two world wars, the great Depression, the growth of Fascism and Authoritarian communism as a direct consequence of the generalized commodification and the social dynamics of modernization (Thomas, Meaning and Views of development 2000: 26).

In the period after the Second World War there was a need for a restructuration. The Marshall plan for the reconstruction of Europe and Asia institutionalized “The Bretton Woods” system, creating the International Monetary Fund (IMF) and what is now the World Bank (WB). Both institutions were set up essentially to regulate the global economy under the sponsorship and direction of the US, initially to repair the damages in Europe (Thomas & Allen, Agencies of development 2000).

In theory, both institutions are included in the UN system (with a “country-a-vote” basis). However, in the case of the WB and IMF the power density is on “dollar-a-vote” basis, granting hegemony to the North when taking decisions (the voting weight of the North as a whole is over 60 %). Moreover, there is still a

non-written rule that the executive of the WB and IMF must be European and American. As it is suggested these system compromises the legitimacy of the institutions, in terms on whose interests ought to be prioritized. It has been the world's most advanced capitalistic states that furthered modernization in a global basis, promoting all aspects of the modern industrial society to the level of ideal (Thomas, Meaning and Views of development: 2000).

From a discourse perspective, the idea of development can be linked to modernization in three main aspects, as explained by Alan Thomas: “a vision or measure of a desirable society; an historical process of social change; deliberate effort at improvement by development agencies”. The establishment of both the WB and IMF institutionalized the development discourse, which carried on a dichotomy between the industrialized modern societies and non-industrialized world. The former (self-regarded by the European about their nation states) as scientifically and technologically advanced societies, democratic, civilized and capitalistic; the latter, as uncivilized, underdeveloped, allegedly undemocratic states which lagged in scientific advancement and technology, but were rich in natural resources that can be exploited (as could be seen in Africa, Asia and Latin-America). The latter countries have to develop into what the former countries were if they wanted to achieve the higher level of civilization of the ‘Western’ world. It was not only the hegemonies in the ‘North’, which pushed forward the development agenda. Governments in the ‘South’ embraced the ideals of modernization and eased the process of modernization.

Moreover, modernization brought about a greater role to the state to lead modernization. Rich industrialized countries used their development agencies (i.e. US AID) for instauration of development policies in the Global South, in alliance with local governments. It was assumed that the state would take the lead in directing planned development as they represented the interest o the citizens they governed. But in reality the governments of the developing countries aligned their interests with the development agencies of industrialized countries, the WB, the IMF and the local elites (Thomas & Allen, Agencies of

development 2000), because modernization puts economical elites at the top of the social configuration. This situation deepened the poverty in the developing world and increased the stress on the environment.

Democratization and development started to be part of the discourse, as a response to the failure of the state led development, which favored the elites of the developing countries. The WB and other aid agencies attached liberal democratic conditions to aid package and supporting initiatives to encourage good governance (Potter 2000) and create a more inclusive development that would not only benefit the economic elites. However, these conditions to get access to funds obliged many countries of the South to open almost completely to overseas ownership of enterprises through foreign investment (Thomas, Meaning and Views of development 2000).

Today's global environmental decay at global scale should be enough evidence that capitalism is indeed self-destructive. Despite the evidence, capitalism has further been strengthened and become a more fully global system. The negative consequences of the modernization process in the environment are seen as fixable structural flaws. One of this views or discourses is the ecological modernization, in which technology is widely regarded as the main remedial tool for some of the structural flaws of modernization.

4.2 The origins of the global environmental discourse

Some authors consider ecological modernization as a product of the second wave of environmental concern. The first wave initiated in the 19th century, mainly in the USA, and was characterized by the concept of 'Conservation' as wilderness preservation i.e.: the creation of 'National Parks'. Conservationism has its main representative on the figures of John Muir founder of the 'Sierra Club' and Aldo Leopold who wrote "A sand county almanac" one of the most influential books on conservation.

The 60s, a decade characterized by social movements and environmental crisis, saw the birth of new perspectives on environmental protection and initiated the second wave of environmental concern. Scientific writers like Rachel Carson in “Silent Spring” (published in 1962) created public awareness of the risks of industrial activity. In her book she presents the case that pesticides (like DDT) can create disruptions in the environment and affect human health directly and indirectly. The scientific data presented by Carson raised awareness in the general public about the risks that were carried out by the industrial activity, questioning the role of private and public actors in the protection of the environment.

The subsequent years saw a growing interest in environmental protection. When looking for a valid view on the environment interest groups, companies, governments and civil society looked for scientific advice regarding ecosystems and the possibly devastating consequences of industrialization. This pushed the agenda for environmental protection in a different direction than conservationism and the “standard view” of mainstream neo-classical economics (Sachs 2005), in which the environmental problems and solutions are possible by keeping “business as usual” and reacting “after the fact” (Harvey 2005). Thus, in the 70s the first civil institutions for environmental protection were funded like the first environmental NGOs (Green Peace) and the first green political parties emerged in Europe. The transformation from curative and reactive to prevention is based on the “*Vorsorgeprinzip*”⁹, where the key to effective action is to anticipate and prevent unwanted environmental events. Thus, the environmental crisis that has prevailed since the industrialization of society inspired the social mobilization for environmental protection.

The advancement in scientific knowledge of the interrelated systems within the environment warned that environmental problems trespass national borders and many are in fact of global nature, demanding wide-ranging environmental action

⁹ German: precautionary principle.

beyond nation-state borders. The problematic of a limited environment and the conflict between developed and non-developed were seen encompassed. Hence, cooperation among countries began to be seen as a key factor for proactive environmental initiatives and to tackle poverty in developing countries.

In addition to these new ideas, influential deliverances from think tanks like the 'Club of Rome' in the 'Limits to Growth' furthered the notion of limited amount of natural resources. These arguments steered the discourse towards another direction by including in the debate the evident inequalities between the wealthy and industrialized North and developing poor countries in the South, highlighting the North/South conflicts for natural resources. Thus, the agenda of environmental protection was enhanced to the grounds of 'sustainability' and distributive justice.

The UN as the main transnational body reacted to the global concern, and the first environmental summit took place in Stockholm (1972) under the name "Conference on the Human Environment". This conference gave birth to the United Nations Environmental Program¹⁰ (UNEP), the first international organization to provide leadership in caring for the environment. The creation of the UNEP institutionalized the ideas of the time about both environment protection and poverty reduction and furthered the principle that environmental and social change can only happen by global cooperation. These ideas brought about change not only in the international fore of the UN, but in nation-states, which institutionalized domestically the discourse carried on by the UNEP.

The conference and its policy had a modernization ethos, which carries on the belief that science is the most valid way to interpret the world. Furthermore, it pushed forward the idea that industrial society is the ideal stage of society. A discourse that has consequences on how the world's problems are framed, the

¹⁰ "To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations"

identities constructed and power relations in the global society. Both poverty and environmental decay were framed as a problem to be solved, and the tools provided by capitalistic thought, technology and economics as the legitimate means to achieve it. This conceptualization launched the global managerial discourse about the environment. As line of thought inside modernization and its theoretical framework, the ethos of this discourse is capitalistic, meaning that improvement and progress of society are conceived only through economic growth and technology innovation.

In the following sections I will present what I considered the two hegemonic discourses that frame the world's environmental and social justice crisis in particular ways. Firstly, I will comment on the ecological modernization discourse that argues that is on the self-interest of the global industry society to fix structural failures of capitalism, like environmental depletion, to further even more economic growth. The second discourse is about sustainable development in which the social justice between countries and generation are the premises to fix capitalism. Both belong to the managerial perspective that premises the need to further capitalism and technology to tackle global issues.

4.3 The ecological modernization discourse

Ecological modernization is better analyzed as a perspective or discourse rather than a robust theory, because it lacks of clear codification (Buttel 2000: 58). According to Hajer¹¹, it was in the eighties when Ecological Modernization thought was presented as an alternative view on environmental protection. He described an international environment conference of the OECD (Organization for Economic Co-operation and Development) in 1984 as a key moment in the development of ecological modernization. The conclusions reached in this conference can be seen as the cornerstone of ecological modernization, in which “the environment and the economy, if properly managed, are mutually

¹¹ Quoted from Buttel 2000: 58

reinforcing; and are supportive of and supported by technological innovation” (ibid.)

This position carried on a discursive shift characterized by an *establishment* attitude (Seippel 2000), prioritizing economic interests as the ideological background and catalyst for ecological modernization. At the same time it worked as a contestation of ‘radical and anti-modern’ moral postures of environmental protection that urged to put an end to the capitalist society.

Ecological modernization has a diversity of meaning and usages and is at least used in four different ways. Buttel (2000) enlist the following uses and who are the main representats of these claims:

- As an identifiable school of ecological/modernization/sociological thought (Arthur Mol and Gert Spaargar).
- As a depiction of prevailing discourses of environmental policy (Hajer)
- As a synonym of strategic environmental management.
- A way to pertain to almost any environmental policy innovation or environmental improvement (Buttel 2000: 57-59)

Ecological modernization as a discourse to address environmental problems and risks has its roots in the German and Dutch academia, where the first environmental policy was developed in concordance with this nascent ideology (Langhelle 2000). The main characteristic of this new type of environmental policy was the overarching recognition of technological innovation, within the modernization scheme of capitalism, as the best way to safeguard ecological sustainability (Fisher & Freudenburg 2001: 202).

This argument derived from the assumption that as economic activity systematically produces environmental harm, the society should establish a set of policies institutional arrangements and regulatory practices to further the advancement of industrialization and technology innovation in a way that does not harm the environment (ibid.). Thus, rather than inevitably continuing to

degrade the environment, the *ecological industrialization*¹² intends to offer the best option for escaping from the global ecological challenge (York & Rosa 2003). It promotes compatibility among economics and ecology, the possibility to detach from the industrialization process from the trade-off between environmental concerns and economic growth in zero-sum terms (Harvey 2005). It is a pragmatic theory of change and regards any other forms of radical approaches to environmental protection as unrealistic (i.e. that urge to stop capitalism and/or the process of industrialization to deal with the ecological crisis (York & Rosa 2003).

The economic feasibility of ecological modernization endeavors is based on the capitalistic idea that ecological sustainability is profitable and thus emphasizing that the political and economic feasibility of environmental protection can lead to financial gains. Private actors have an overarching role by promoting ecologically protective measures, that can increase efficiency and reduce costs (i.e. efficient engines and fuels), sustain accessibility to resources (i.e. environmental friendly forest management) and thus protect, for example, the valuable carrying capacity of the environment in order to continuing monetary accumulation. At the same time, there is a promise of continued economic development, which is an incentive for state actors to opt for an ecological modernization enabling the necessary changes in society and making them politically feasibility.

The discourse of ecological modernization indicates that facilitating change is not only a task of the state but of the whole society. Thus, the potential for improved ecological outcomes is dependent on changes in the institutional structure of society (state actors, civil society, pressure groups) as well. The changes in the performance of an environmentally conscious state are seen as coming along with increased activism and a growing importance of the roles of

¹² Ecological modernization is usually used as a synonym of strategic environmental management, industrial ecology, eco-restructuring (Buttel 2000: 59).

non-governmental organizations (York & Rosa 2003: 722). The main driver for the political feasibility of environmental change is believed to be the continuing economic development. Based on that, a society can build new and different coalitions to make environmental protection politically feasible.

Mol (cited in Buttel's (2000) work about ecological modernization as a social theory, identifies two ways to enable ecological modernization:

- Transformation of state environmental policy from curative and reactive to preventive, from exclusive to participatory, from centralized to decentralized and from domineering, over regulated environmental policy to a policy, which creates favorable conditions and context for environmental friendly practices and behaviors including producers and consumers.
- The state should focus on 'steering via economic mechanisms' and 'collective self-regulation' via mediation with society.
- Transfer of responsibilities, incentives and tasks from the state to the market with the intention to accelerate the ecological transformation process (Buttel 2000: 59).

Mol adds that the transfer of responsibilities is based on the idea that the market is more efficient and effective in tackling environmental problems than the state. Notwithstanding, he warns that the transfer should not mean *withering away from the state* but to emphasize the *steering role of the state* in providing stimulating conditions and self-regulation. This is achievable through economic mechanisms or via the public sphere like stakeholder consultations with citizen groups, environmental NGO's and consumer organizations (ibid: 59). Nevertheless, the predominant role is given to private actors as carriers of environmental protection.

From the discourse perspective ecological modernization brings about a new 'template' for thinking about the problems, their solutions, and which of them should be more urgently addressed. This has consequences on how states frame and prioritize environmental policy-making.

Ecological modernization discourse entails a system approach that takes into account the complexity and interrelations between consumption, production, resource depletion and pollution (Dryzek 2005: 169). It proposes a different perspective from the classic modernization perspective, which is yet limited as it portrays natural systems in finite terms or mere adjuncts to human economy. In this way, nature is treated as a source of resources and recycler of waste, a provider of environmental services or as Dryzek (2005: 170) describes it “a giant waste treatment plant whose capacities and balance should not be overburdened”.

Concerning the language used in the ecological modernization discourse, modernization and ecology are coined together in one term as an attempt to return both ecology and economics to their household root¹³ and to reestablish their commonality. Through metaphors like the ‘Tidy Household’, the discourse offers an ideological representation of what is desirable. In the ‘Tidy Household’ wellbeing is maximized, by realizing that minimizing waste is reaching that goal efficiently and that tidy surroundings contribute to the sense of wellbeing (Dryzek 2005:171-172). Furthermore, as the idea of modernization is attached to the narratives of social progress and development, it is very popular to push it as an issue in governmental agendas and political action. These are narratives of ‘win-win’ scenarios, in which economic development and environmental positive outcomes are possible through scientific/technological advancement.

Scientific knowledge about the interrelated complex ecological systems is a very important part of ecological modernization thought, because scientific rationality and its language are the regular way to communicate and frame environmental problems. Furthermore, it was scientific knowledge, which initiated the awareness of environmental problems that goes beyond political borders and requires international cooperation. The use of scientific language in the political arena for (ecological) modernization also enacted new forms of interaction and multisided coalitions between public, private, pressure groups and civil society to

¹³ Ecology and Economy have common Greek roots: *oikos*, which means household.

tackle environmental concerns. Science legitimized the claims of those interest groups and carried on public concern and political action. Thus, ‘scientific rationality’, which in earlier days of the environmental movement was seen with distrust, was crucial support to many ‘environmentalist pressure groups’ (Harvey 2005: 167). Likewise, businesses (as the major transgressors of ecological stability) found a common language to negotiate with pressure groups in scientific rationality, by detaching the morality of radical views on environmental protection.

Dryzek (2005) identifies two currents in the discourse of ecological modernization, one with a weaker sense – weaker ecological modernization – and another one with a stronger sense – reflexive ecological modernization – which calls into question the very foundations of modern society (ibid: 175).

Ecological modernization, in the limited technical sense –weaker ecological modernization- , looks like a discourse for engineers and accountants (Dryzek, 2005). The codification of the discourse, which is highly technological and economical, leaves little room to ‘alternative epistemologies’ on how to tackle environmental challenges (Cohen 1998), as the implicit belief in science, technology and progress prevails one of the well-known characteristics of modernity (Seippel 2000).

The narratives of win-win scenarios and metaphors show that ecological modernization is a discourse of reassurance, in which no tough choices ought to be taken (Dryzek 2005). The discourse premises that there is no trade off, which would compromise environmental protection or economic growth. As there are no compromises or tough choices, the message of discourse of ecological modernization has been transmitted successfully because it is optimistic to the possibility of change in which everybody shall benefit. Furthermore, the discourse serves as a contestation to the doomsday scenarios that radical ecologists present in their theories about environmental depletion. The discourse

express hope and make it more readily possible to identify and appreciate the significance of environmental success stories.

The emphasis on technological solutions to environmental problems requires the use of a highly complex language of technical terms and economic indicators. The use of the economic/technological language in ecological modernization to elaborate narratives and metaphors has proven to be a useful tool, as it empowers the dialogue among the private and public sector and society in general. Thus in the ecological modernization discourse the complex relations in nature are understood in scientific – economic – terms that are quantified and reduced to statistical description for facilitating the management. Ecological modernization discourse is then constructed by and for engineers and accountants (weak ecological modernization), treating issues in technical terms and seeking a managerial structure for their implementation (Dryzek 2005: 172-173). This is a language only accessible to very few, a situation that risks rendering the monopoly of policy-making to scientific, economic and political elites. Furthermore, the economic approach to nature's forests, lands and waters creates a global society that strives to re-engineer the production and consumption systems and resource/risk/recreationist managers to administrate this process (Luke 2005: 169).

In many ways, the reason why ecological modernization discourse has attracted a wide range of supporters from different academic disciplines is its views of the malleability of the institutions and technological capabilities of industrial capitalism. But also it is because its observations from environmental science and engineering (Buttel 2000: 63) are regarded as epistemologically valid.

Finally, in the weaker sense of ecological modernization it is the developed countries with the scientific and political strength, which enables them to push their agendas forward. These countries can lead the analysis and can use ecological modernization to consolidate their economic advantage. This factor distances them even further from the miserable economic and environmental

conditions of the poorer nations of the world (Dryzek 2005:173). Those nations' capacities of meeting the challenge of ecological modernization depend on certain preconditions for developing technological solutions. These preconditions include both political and industrial infrastructures, for example the advanced economies in Europe (i.e. Germany, Netherlands and the Scandinavian countries). In these technologically advanced countries, the first policy innovations in the spirit of ecological modernization took place and were able to influence their environmental policies.

National capacities differ a lot and the countries that are in an earlier stage of industrialization can have more difficulties to follow the principles of ecological modernization to achieve positive environmental outcomes. There are various reasons that vary from country to; for example: a country can be economically unable to meet the goals of the global environmental agenda, or there can be a lack of political willingness of the state institutions that make changes politically unfeasible.

The stronger sense of ecological modernization discourse, or reflexive ecological modernization implies self-awareness of the actors involved in policy about the quality and trajectory of the modernization process should be continuously monitored and controlled. In this process of a growing self-awareness experts and governments cannot be trusted anymore to know what is best for the rest of the population, and no longer should economic affairs and organization of the economic system be placed off-limits to public scrutiny and democratic control. Experts and elites would have to justify their policies in front of the citizens, in comprehensive language, and with no recourse to the privilege of rank or expertise. In this sense, ecological modernization would be for everybody (Dryzek 2005: 174). The ecological modernization policies and not only taking place on the national but also on the international level, in which institutions are open to civil scrutiny and the interest of poorer nations not left unseen by the ecological modernization process.

However, as Dryzek (2005) asserts, achieving this sort of reflexive ecological modernization is a difficult task. Meanwhile environmental affairs are treated in terms of pollution control and management of material and economic flows. These aspects are so embedded in the discourse about ecological modernization that it seems inescapable (ibid: 175) for one to assume that this kind of environmental action on these terms can still contribute to reflexive modernity. Furthermore, reflexive ecological modernization should be for everybody, it forces the debate towards distributive justice in the modernization process. This means that the interest of distant people in time and space shall also be taken into account. This has several implications: For example, the limits to growth, which are ignored by ecological modernization, have to be taken into account (Dryzek 2005: 175). For all these faults, Dryzek (2005) thinks that sustainable development discourse can offer a more radical approach for a reflexive modernity.

4.4 The discourse of sustainable development

The potential for a more radical approach as commented above can mainly be seen in the emphasis of social justice and the environmental crisis through the concept of 'Sustainable Development'. As Sachs (2005) argues: "Environmental action and environmental discourse when carried on in the name of sustainable development, implicitly or explicitly position themselves with respect to the crisis of justice and the crisis of nature". Here, justice does not only refer to an equal distribution within the present generation, but also across future generations (Dryzek 2005: 153). Sustainable development recognizes the legitimate needs of the poor to develop (economic growth). At the same time it brings about the idea that such development cannot follow the same path as the one industrialized countries took, as it would signify an overexploitation of the earth's capacities and an environmental debacle.

The term sustainable development was forged ten years after the creation of the UNEP, as the UN established the World Commission on Development and the

Environment (WCDE) in 1983. The WCDE through the Brundtland commission issued the report 'Our common Future', which coined the anchor statement of sustainable development: "a development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

The commission enlarged the environmental discourse to meet issues of distributive justice between North and South and carried on the concept of sustainability, which at the same time consolidated the ecological modernization discourse. The nascent idea received the support from corporations, supranational organizations like the World Bank and national states. The concept forged development and the ecological sustainability into the idea of sustainable development (Langhelle 2000: 306) by linking development in the South with the environmental agenda of ecological modernization.

However, sustainable development seems more ambitious than ecological modernization when framing the environmental and social crises. It encompasses:

"...The ensemble of life support systems, and seeks perpetual growth in the sum of human need that might be satisfied not through simple resource garnering, but rather through intelligent operation of natural systems and human systems in combination" (Dryzek 2005:147).

Moreover, sustainable development is a discourse that has a global perspective, but the applications and solutions are to be applied on the local and regional level. Thus, it is furthering the recognition of actors at many levels and a consistent basic notion about the existence of nested social and biological systems (ibid.). Another fundamental principle of the sustainable development discourse is the recognition of the difference in the roles of North and South when tackling the global environmental crisis. This is the principle of common but differentiated responsibilities, which is key to the global adoption of the discourse.

As a global discourse, the idea of sustainable development has been raised to the status of ideal. Dryzek (2005) compares the discourse about sustainable development with the discourse about democracy. Both have in common that everybody seems to believe that democracy and sustainable development are desirable and/or necessary. Furthermore, similar to the term democracy, the concept of sustainable development is about social learning and involving, decentralized, exploratory approaches to its pursuit. All efforts and action in pursuit of the ideal of democracy or sustainable development are legitimate because they mean progress, a movement towards a higher step in civilization. This idea of “progress” is embedded in sustainable development, which is one of the most powerful notions in the modern world (ibid: 158).

Similarly to ecological modernization, the ideas of sustainable development have permeated the way the environment is idealized and treated by nation states, civil organizations, international organizations like the World Bank, corporations, etc. Arguably, one of the main accomplishments of the discourse is that it has called into question diverse issues that were treated as isolated i.e. human development, global environmental issues, overpopulation, peace and security and distributional equity in today’s world and for coming generations (Dryzek 2005). However, sustainable development has different meanings depending on the actor who is adhering to the discourse. Hence, the scrutiny of the usages and interpretations of sustainable development should be based on what they can mean in practice, because “(...) how attention is focused, what implicit assumptions are cultivated, which hopes are entertained and what agents are privileged depend on the way sustainability is framed” (Sachs 2005). The point of departure here, as Langhelle (2000) argues, is that how challenges are framed also has implications for what is seen as necessary changes. Defining sustainable development is not a difficult issue; the problem is to determine what has to be done to achieve it (ibid: 307).

Sachs (2005) identifies three perspectives within the sustainable development discourse that imply particular political and cultural assumptions: the contest

perspective, the astronaut's perspective and the home perspective. When analyzing the sustainable development discourse, Dryzek (2005) argues for two kind of sustainable development. The 'weak' perspective denies the limits of economic growth and aims towards its perpetuation as the ultimate goal. On the other hand, the 'strong' sustainable development discourse recognizes the limits of growth and in its more radical narratives it even includes arguments based on biocentrism when debating sustainable development. This is a critical perspective that in its most radical views calls the concept of sustainable development an oxymoron (Sachs 2005).

The contest perspective (the weaker sustainable development discourse) coincides largely with the shallow version of ecological modernization that was described earlier. It is used in neoliberal doctrines, which attempt to assert distributive equity in the world, but failing in practice because they carry out policies that clearly undermine this goal by prioritizing economic interest over environmental and social earnings. The storyline is based on the conception of the environmental crisis as a problem of efficient allocation, in which natural resources are undervalued and technology underutilized (Sachs 2005: 31). Therefore, the weaker version of sustainable development, based on neoliberalism puts governments (local and national, North and South, East and West) in competition against each other to attract and hold capital investment. This permits a regulatory race to the bottom, legitimizing inadequate policies and actions by regarding them as key to achieve sustainable development.

The arena for global change largely takes place in the developing Global South. Sachs (2005) argues that plans like the UN's 'Agenda 21', are good examples on how this perspective is drafted into policy. There are no binding commitments, only plans that are not enforceable but should steer the efforts towards achieving the goals of sustainability and at the same time always aiming at economic profitability. Both nature and society are described in utilitarian terms (like in ecological modernization) and thus, financial gain is prioritized over environmental protection and social equity. This has proven to be a hollow

promise for social justice as inequalities between rich and poor have expanded in the 1990s (and keep expanding) within and across nations. Likewise, environmental problems have become more severe and the vulnerability of certain groups is more acute. The fundamental ecological and economical problem of negative externalities is not tackled, and the status quo prevails.

The astronaut's perspective in which the earth is perceived as an object of management (Sachs 2005: 36) considers a more reflexive modernization process, similar to the stronger version of ecological modernization. Sustainability is conceived as a challenge for global management and cooperation instead of a competition. The epistemic communities (Haas 1992) for environmental concern play a very important role in developing this perspective. It frames the planet as a scientific and political object, like an astronaut seeing earth from above the skies (Sachs 2005). Furthermore, it recognizes the degree to which the range of harmful effects produced by the North now cover the entire planet and seize the need for global adjustment. Hence, the entire globe is considered an arena for environmental protective efforts, not mainly the South. Consequently, there is a new balance between the North and the South.

Narratives like those of Al Gore and multilateral organizations (UN) are constructed as "a noble vision to make ecology the centerpiece of a domestic world politics which would carry out the rational organization of global affairs" (Sachs 2005: 37). However, there are some problems with this sort of narratives, because it loses the earth as setting for real human life-worlds. As Haila (2005: 37) argues: "The world emerges in terms of abstractions concerned with rarified networks of interconnections and human history is reduced to a unilinear progression to an inevitable catastrophe". Nonetheless, it indicates a new balance between North and South entertaining the thought that at least some expectations of the less privileged parts of the global middle class have to be met if a new global order is to be achieved (Sachs 2005: 37). Therefore the tackling of the ecological and social justice crisis are to be done simultaneously, at least to a certain extent. The astronaut perspective does respect nature by considering the

fragility of the biosphere. The hopes are set on a harmonized change, in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change enhance current and future potential to meet human needs and aspirations. This perspective recognizes the limits of growth but the realization is rather ambiguous.

In contrast, the home perspective accepts the finiteness of growth but questions the astronaut's emphasis on global adjustments. From this angle, the environment suffers in the first place from over-development and not from inefficient allocation of resources or the proliferation of human species. Hence in this perspective sustainable development is an oxymoron (Sachs 2005). It emphasizes the concept of local livelihood, rather than economic growth or bio-spherical stability. It is only in this perspective that the crisis of justice figures prominently in the narratives.

The storyline, according to Sachs (2005), describes the North as conserver societies that are expected to expand the rule to Southern societies so they can flourish. However, nationally sustainable lifestyles for the urban middle classes would leave more control over their resources to peasant and tribal communities. The aim is to protect both, the rights of nature and the rights of people, to halt environmental exploitation and provide a state with village democracy so that people's moral economies are called forth. The home perspective is very critical with the affluent and over-consuming life styles of the North, and it hails for action to stop damage to the environment and claims a historical debt of the North for abusing the biosphere and calls for repayment. Thus, it is the industrialized countries that have to carry the burden of the change.

This perspective (in the contrary to the former two) willingly accepts radical views on the environment such as biocentrism and emphasizes the intrinsic value of the natural world. It focuses more on values, institutional patterns and symbolic universe of society, while the former two perspectives (the contest and

astronauts' perspective) lay their argument on the energetic-material process" or the material world.

However, such a radical perspective, which is not based on materialistic values, is easily discarded. It is regarded as utopian or idealistic by a globalized and capitalistic society with utilitarian ethics about the environment and society. Consequently, in many cases, this perspective means resistance to further globalization and has been used to as an argument to avoid development projects for clean energy like hydroelectric generation mega projects, forestry stewardship, and others.

There are differences in the perspectives presented above on how social and environmental equity are seen, and what actions should be emphasized. Nevertheless, what is common to all these perspectives, as Sachs (2005) argues, is the hunch that the era of infinite development hopes has passed, giving away an era in which finiteness of development and growth are part of the discourse.

4.5 The global environmental agenda and the ideal of Sustainable Development

Ideas and discourses influence and shape institutions, they create ideals and carry on a specific language. The ideas of ecological modernization and the sustainable development discourse (in their weaker or stronger perspectives) have shaped international policy. This has been domesticated in national and international institutions, and set ideals for what is good and legitimate practice. The main drivers of the ideas have been economic goals, and the preferred way to transmit the message of both discourses has been science and scientific language. Both approaches are seen not only as epistemologically valid, but also as legitimate.

It was through science that the nature and scale of environmental problems was discovered so that the awareness of the urgency of the problems could advance and also trespass national borders to exist at a global scale. The scientific consensus achieved by the IPCC (The Intergovernmental Panel on Climate

Change) was a lynchpin in the advancement of the climate change agenda, as we know it. It was fundamental to the creation of the UNFCCC, the key international treaty to reduce global warming and cope with the consequences of climate change (IPCC 2011). Additionally, Brundtland Report, based on scientific data gathered by the World Meteorological Organization, raised awareness of man-induced climatic change in form of an overall global warming caused by the exponential growth of GHG emissions.

The ecological modernization and sustainable development discourses also pushed forward the idea of globally coordinated action. The national governments or the nation state were not only the actor anymore that should take care of its citizens. This role was increasingly given to strong international organizations that set parameters to the national governments about what is legitimate and what is desirable, like it is the case of the UNFCCC.

However, establishing a system of global environmental governance is not an easy task. The first conflicting interests come up when the developed countries, possessors of the technology and financial drive to push the ecological modernization agenda, face the interests and needs of developing countries such as sovereignty and distributive equity. The UN Conference on Environment and Development (UNCED), commonly known as the “Earth Summit”, was an effort unique in its size, scope and level of participation. It was attended by 172 state representatives (108 at the level of head of State or government), around 2,400 NGO representatives and over 17,000 people participated in the parallel NGO forum. The resulting document, the “Agenda 21”, is considered as the blueprint for future actions and regimes with the purpose of achieving sustainable development worldwide. The conference Secretary General called the summit a “historic moment for humanity”.

The Earth Summit initiated significant institutional changes (i.e. The Agenda 21, The Climate Convention), which carried on stronger processes for reporting and facilitated future amendments to the treaties to strengthen the regime over time.

However, in the overall outcome consensus was favored over specific policy commitments (Grubb et al. 1993) and the conflicting interests of the developing countries vis-à-vis the industrialized countries were addressed superficially. The situation was caused by the division “a long axes of relative responsibilities, finance and the control of international financial flows, and the weight given to population or consumptions level as the principle cause of environmental stress” (ibid: 36). The agreements were weakened by compromises and negotiations giving place to voluntary action plans as the opposite of enforceable laws or binding commitments for technological or financial transfer. Nonetheless, the general outcome was still considered the most comprehensive, and if implemented, effective program of action ever adopted by the international community (ibid.).

The sustainable development discourse permitted the agenda to be enhanced towards issues that were not treated in connection with each other. Furthermore, the UNCED confirmed and enhanced the role of the UN family as the legitimate system for advancing sustainable development (Grubb et al: xiv). This is in accordance with the views about environmental change encouraged by ecological modernization, where state actors are enablers of ecological change through market mechanisms that do not increase regulation.

Since the issuance of ‘Our common Future’, the importance of energy and the relation between energy and the limits of growth was emphasized. Furthermore, the principle of ‘common but differentiated responsibilities’ attempted to tackle the issue of state sovereignty, while recognizing the historical responsibility of the industrialized countries without pointing out that developing nations ought to do their best to tackle climate change. The main arguments were related to the access to energy, the carrying capacity of the earth to absorb the byproducts of energy consumption and the capabilities of developing countries to be developed. The argumentation was based on what the commission believed to be rigorous

science provided by the IPCC¹⁴¹⁵. In 1990, through the first Assessment Report the IPCC unveiled the importance of climate change as a topic deserving a political platform among countries to tackle its consequences. The UNFCCC followed up the argument of the Brundtland Commission and recommendations of the IPCC and stressed the important role of GHG (i.e. CO₂) emissions produced by energy consumption as the main contributor of global warming. The convention was the first official document to take this into consideration and to set goals for emission reduction, 50 per cent in 50 years for industrialized countries and 30 percent for developing countries (Langhelle 2000).

Despite the difficulties and, as said before, favoring consensus over commitment, the UNFCCC was signed by 155 countries and entered into force in 1994. It was founded based on a set of principles: precaution, equity, co-operation and sustainability relying on the concept of “common but differentiated responsibilities” among countries (Carter 2008: 255). However, due to the difficulties mentioned above there were no binding commitments (firm targets or deadlines). It was agreed that the developed countries should take the lead in tackling climate change by aiming at the voluntary goal of reducing GHG emission to the level of the 1990s and to transfer financial and technological resources to developing countries for helping them do their part.

Since the beginning of negotiations, there was little disagreement about the principle that developed countries should transfer technology and financial resources to help developing countries to invest in energy-efficient technologies to achieve sustainable development. However, in reality the developed countries and private actors were reluctant to transfer technologies without economic

¹⁴ The IPCC was created by the WMO and the UNEP in 1988 and was assigned with the preparation of a comprehensive review and presentation of policy recommendations regarding the science of Climate Change.

¹⁵: "...to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies." (IPCC 2011).

compensation or access to markets. The negotiations in Kyoto tackled this issue by looking for win-win scenarios that could push forward the agenda for curbing emissions and achieving sustainable development at the same time.

The technological and economic language of ecological modernization and the way it frames the problems and its solutions were a catalyst for agreement. Moreover, there is a focus on energy accessibility for present and future generations, on GHG emissions as the cause of global warming and on the overall the nature of climate change as a global problem. This frames a dominant view on the ecological problem, in which the solution is politically and economically feasible through an ecological modernization process of the world. As Harvey (2005) argues, ecological modernization is a belief in technology's capabilities to overcome all social and environmental problems. These beliefs are embedded in the establishment of a capitalistic system. The search is for cost-effective solutions instead of radical change that could stop or substantially modify the way we produce, consume and the systems embedded in the process. Furthermore, the general view of the UNFCCC about the issue of social justice is in relation to energy access and carrying capacity for current and future generations. This view frames a climate change agenda that is to be seen through scenarios informed and coded by scientific knowledge and cost-benefit analysis.

As it is acknowledged, science has not fully unveiled the causes, consequences and repercussions of climate change. This uncertainty caused a lack of political consensus to provide motivation and means of action the wait-and-see approach. Moreover, the concept of a developing countries vis-à-vis developed countries (North-South) dichotomy does not correspond to the reality of climate change. It generates fundamental tensions among the countries when negotiating. These conflicts have not been completely solved yet and compromise the willingness among developed countries to take firm commitments and the North-South dichotomy are the most striking ones.

For instance, politically and financially powerful states like the USA have criticized the accord claiming that it effectively absolves developing nations from taking action to reduce carbon emissions, meanwhile the major developing countries i.e. China and India, push their own agenda for development, sovereignty and equity (Carter 2008: 252-255). Furthermore, there are clear divisions among the developed countries on what kind of action or commitments to tackle climate change should be carried on, by developing countries as well. There are different interests relative to how climate change can affect the countries (Carter 2008: 255). For example: the Alliance of Small Island states, which are more vulnerable to rising sea-levels caused by climate change, try to push firm targets on the agenda for, while the oil-producing states desire the opposite.

The meeting at Kyoto in 1997¹⁶ was an update of the UNFCCC, only now with binding commitments to curb GHG emissions and new market friendly mechanisms that could create financially viable win-win scenarios. The Ecological Modernization agenda attempts to ensure the continuation of the use of the biosphere and the Sustainable Development agenda comprehends a global society, which is economically and ecologically integrated. Thus, the benefits of the integration are widespread among the nations. The Clean Development Mechanism, the Joint Implementation projects and the market for emission trading belong to the ecological modernization principles of technological fixes to the world's environmental problems.

The arguments of ecological modernization thought were central in the creation of the economic flexible mechanisms that put a price on carbon, i.e.: via the market for emission trading, the Joint implementation program (JI) and the Clean Development Mechanism (CDM).

¹⁶ The Kyoto Protocol was signed in December 1997. It compromised ambition with the flexibility requested mainly by the strongest economies like USA, Japan and the Euro Countries.

However, as Dryzek affirms, it is not ecological modernization, but sustainable development around which the ideas of the protocol and the dominant global discourse of ecological concern pivots (Langhelle 2000: 306). Sustainable development enhances the agenda to the realms of justice and equity and not only to environmental protection. This moral view about climate change enables narratives and marks a predominant view about the actions to take when tackling the problem. The Kyoto protocol can be considered a set of supply-side policies that attempt to circumvent, downplay or avoid issues of social or distributional injustice and inequality among nations (Barry 2005: 311-312). Moreover, it obviates the need to engage regulating demand, or the possibility to a radical adjust to the pattern of the distribution of consumption by focusing policy and public attention on the supply rather than the demand for or distribution of economic goods and services.

The agreement was steered towards the same path of economic development offered by the ecological modernization. In this path the factors of production do not require major structural changes in the economy. It did not engage with consumption issues or attempts to challenge or regulate the demand of goods or services (in this case energy and the right to use the carrying capacity of the earth).

Moreover, the Kyoto Protocol showed that there are overlapping ideas of ecological modernization and sustainable development and seemed to bring together divergent views of environmental sustainability and also of fair economic development that reaches everybody. Thereafter, as the term of sustainable development became embedded in the predominant capitalistic establishment, ecological modernization as a theory of change found a fertile ground to influence the views of technological fixes, economic growth and environmental protection around the world and on different levels of governance: i.e. national, regional and global.

5. Mexico and Climate Change

Mexico is the second largest Latin American economy, top-ten in size within the OECD, but the second lowest in per capita income. According to the World Bank's latest report, 11th largest world economy but 42nd in per-capita income. The purchasing power parity (PPP) in 2010 GDP is estimated at \$1.3 trillion dollars, with a PPP per capita income of over 9,400 dollars. (Rozenal 2007)

The population reached 107 million inhabitants last year, at a growth rate of 0.8 % (2007-2009). 24 % constitutes the work force. In 2009, 72.3 % of the population lived in urban zones and 27.7 in rural areas Mexico is the 7th largest trading power according to the World Trade Organization, with exports representing 28% of Gross Domestic Product (manufactured goods 87.3%, oil and derivatives 9.8% and agricultural products 2.5%). Services constitute 68% of the economy, industry 28% and the primary sector 4%. Mexico's national industry is highly competitive in some areas, like oil and gas, cement, auto-motors production, soft drinks and beer, as well as the telecommunication services (Rozenal, 2007). However, the Climate Change Special Program (PECC) an estimated of 47.4 % of the total population lived in patrimony poverty (SEMARNAT - CICC 2009). The majority lived in rural areas, 60.8 %, while 39.2 lived in urban zones. According to the Human Development Index Mexico is ranked 51st out of 179 countries.

Poverty and injustice are of Mexico the greatest problem, followed by corruption and security. In one hand, Mexico host the richest man in the world Carlos Slim and 10 more people listed by Forbes as billionaires. In the other hand, it is home to 44 million of poor and in the above-mentioned list of the richest people, one can find the name of the notorious drug lord Joaquin "*El Chapo*" Guzman. Simultaneously, with information provided by *Wikileaks*, *La Jornada* (leftist newspaper) reports that the federal government plotted altogether with the opposition parties to hide information about poverty increase in Mexico, arguing it was too sensible to be openly declared. Since the entry of Calderon's

Government Mexico has been withholding a war against the drug cartels that has carried on the death of 28,000 people directly related to drug crimes. With the army and navy deployed at host spots of drug trafficking, accusation of violations of human rights by soldiers have outraged the general population. The war has resulted in massive mobilizations demanding the halt to impunity and corruption, as well as violence and a general political reform to the state. Mexico will withhold presidential elections in 2012.

Mexico is very vulnerable to climatic changes mainly in three aspects: biodiversity, water access and extreme climatic events. These three aspects are highlighted in the adaptations plans issued by the Mexican government.

Mexico is a country with high risk by water scarcity. The National Institute of Technology of Water (IMTA) has carried on several research efforts on this area in order to set scenarios of climatic vulnerability. During a conference of Mexicans living abroad, the climate change national contact person (who belongs to the IMTA) mentioned to me that due to climate change Mexico will experiment, for example, heavier rainfall but with less frequency, putting in risk the availability of agricultural land for rainfall agriculture and stress in highly populated areas with weak urban infrastructure. Mexico City one of the most populated cities in the world constantly suffers of water scarcity that put millions at risk. When it rains, the lack of efficient sewer systems causes the flood of streets and avenues. Furthermore, changes in the variation of rainfall compromise the creation of the cleaner energy by hydroelectric power dams (i.e. in the period 2007-2009 there was lost of 1% of capacity in hydropower system in Mexico due to lack of rainfall).

Mexico's territory is blessed with great biodiversity, several official documents mention that it ranks second place in ecosystem types and fourth in abundance of species worldwide. Mexico is considered a mega-diverse country by international bodies, as it host 12% of the world's biodiversity in its geographical area of nearly 2 million square kilometers (Rozenal 2007). However, the pressure on the

carrying capacity carried out by habitat transformation, has been deteriorating the biodiversity of the country. The PECC highlights that the biodiversity has been impacted by human activity like deforestation, overexploitation, ecosystem contamination and climate change due to the sensibility of the Mexican ecosystems.

Mexico has been praised by international bodies, like the OECD, for setting the example in proactive policies in the area of biodiversity protection. Mexico has increased funding to manage protected areas, which now cover 11.5% of its national territory (compared with 8.6% in 2000). With ecological modernization type policies like 'Ecological land-use planning' Mexico is going further from only protecting areas, as one of the few countries in the world with a national program of payments for hydrological environmental services (OECD 2010). This program incentivizes private and community owners to provide environmental services and protect sensitive ecosystems. However, enforcement and vigilance are compromised as Mexico lacks many times of the resources or personal to meet the ambitious agenda (OECD, 2010).

Mexico's geographical situation in the tropic signifies as well a major exposure to extreme weather conditions: i.e. the phenomena of El Nino and La Nina. In the last years Mexico has experienced severe hydro-meteorological events like droughts, flooding, erosion, landslides, silting and overflowing rivers. In 2009, Tabasco a state by the Gulf Mexico with altitudes under the sea level suffered a flood in its capital city Villahermosa, covering almost the whole city and forcing several thousand of its inhabitants to be displaced.

This is an outlook of the context in which climate change and carbon governance function in Mexico. Although it is presumable that the situations above-mentioned burden and compromise the governability of the country, Mexico is considered quite effective and efficient in environmental policy and climate change action.

5.1 The power sector: Electricity in Mexico

The main actor in the electricity sector is the state-owned company CFE (Comisión Federal de Electricidad). It is the president of Mexico who directly appoints the director of the CFE, because energy security is considered a matter of national security that should be centrally handled by the executive.

Furthermore, electricity in Mexico is seen as a basic need and as a state obligation to provide affordable electricity to its citizens. Hence, the priority of the CFE is not profitability but to keep low-priced electricity and that it reaches everybody, thus realizing the government's commitment towards its citizens.

Mexico is one of the only countries that have not liberalized the energy sector, partly because of the fierce ideological political opposition. The hindering of privatization policies in the sector can be traced back to the history of Mexico's. The Partido Revolucionario Internacional (PRI) was the ruling political party for more than 70 years, until governmental change came around in 2000 with Partido de Acción Nacional (PAN) with Vicente Fox. PRI is a product of the Mexican Revolution and has strong left-wing visions, although the major privatizations i.e. telecommunications¹⁷ (TELMEX) happened when Carlos Salinas de Gortari (PRI) was president.

These leftist views resulted in the full control of the sector, and by the 60's, the government turned to be the sole producer, provider and distributor of electricity. Later, in the subsequent decade, Mexico kept developing the sector based in the principle of affordable energy that reaches everybody, and with the extra income coming from high oil prices of the time, the electricity reach was increased to rural areas. Today 98% of Mexico has access to electricity.

Following the general liberalization of the Mexican economy by Carlos Salinas de Gortari (1988-1994) private participation was finally allowed by a reform to

¹⁷ Telmex (Telefonos de Mexico) is owned by Carlos Slim. Forbes Magazine considers him the richest man of the world by the Forbes magazine.

the Ley de Servicios Públicos de Energía Eléctrica (Law of Public Service of Electric Energy). During Ernesto Zedillo's administration (1994-2000), a complex financial figure was created to allow further private participation in the development of long-term development of productive infrastructure. Through PIDIREGAS¹⁸ (Proyectos de Inversión Diferida En El Registro del Gasto), private actors can participate in the sector. The financial commitments are covered with the revenue generated of the project and the risk is assumed by PEMEX or the CFE, so it cannot be considered a private investment. With complex financial figures the central management of the CFE attempts to surpass the strong opposition to private participation in the sector. However, private actors now participate in the sector through cogeneration and self-supply of energy. The total participation represents 30% of the total energy production.

Subsidizing electricity is a common practice in Mexico. Estimates account that the end residential user in average only pays 40% of the total. Other end users like small business and rural population have received even bigger subsidies. This is very important regarding the case for contributions to sustainable development by the CDM CUIDEMOS, because 26% of the electricity is consumed by the residential sector. Industry accounts for the 59 %, commercial is 7 %, agriculture and services 4 % each (SEMARNAT - CICC 2009).

5.2 Electricity Production in Mexico

The Mexican government faces the challenge of having to provide affordable energy to its citizens and at the same time switch to cleaner renewable energy sources. According to government's plans, 25 % of electricity should be produced by renewables in 2012, by the end of the current presidential term. However, at the current status to further these not very well developed sources is quite expensive, inaccessible. Moreover, the ambition of having diversified electricity productions is compromised by the obligation of providing cheap

¹⁸ Investment Projects with Deferred Expenditure Registration

energy to the end user. Many CFE officials and one of my interviewees from the CDM gold standard, argue that one of the factors contributing to the lagging in renewable energy production is the reluctance to accept private participation on the sector with arguments based in ideology.

Electricity is seen as a basic need pushing the CFE to look for the cheapest source, regarding renewable sources as only a complimentary. The CFE is focusing its efforts mainly towards improving the supply-chain of gas, the most attractive fuel for its price and because it is cleaner than other hydrocarbon sources. It is possible to say that the tendency is to reduce the use of oil and increase the utilization of natural gas and the GHG intensive alternative, coal.

Renewable energy sources, hydroelectric, geothermal and wind to produce energy constitute the 21 % of the installed capacity to generate electricity in Mexico (SEMARNAT - CICC 2009). These sectors have various stages of development. Hydroelectric power sources are quite developed in Mexico, as they are the most productive, by constituting 19% out of total 21% (Mexico has one of the most productive hydroelectric power plants in the world). The biggest potential for development of hydropower is through mini projects that have been currently up taken mostly by private actors and in some cases by CDM.

In the other hand, solar and wind are not very developed despite the potential that Mexico has in solar (3rd biggest potential in the world) and several regions with high potential for Eolic power. Mexico is a big producer of geothermal power in the world, yet this source constitutes only a marginal portion of the total amount of energy production. Finally, Mexico has one nuclear facility (Laguna Verde) in the State of Veracruz that produces 2,4% of the total electricity. The development of renewables is legislated by LAFRE¹⁹ (Ley para el Aprovechamiento de las Fuentes Renovables) and will be explored later in this section.

¹⁹ In English: LAERFTE Renewable Energy Development and Financing for Energy Transition Law

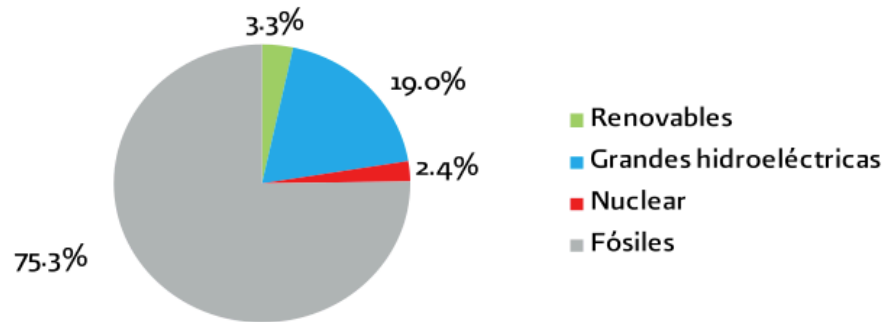


Figure 1: Classification of installed electric production in Mexico. Source: PECC (Semarnat, 2010)

5.3 Mexico's Carbon Profile

Mexico is among the top 15 countries in greenhouse gas emissions. When compared against non-Annex I countries of the United Nations Framework Convention on Climate Change, it is only exceeded by China, India, Brazil, and Indonesia. It is among the first 20 with the highest percentage of emissions per capita. However, its global contribution is smaller than 2% of the world's total (Rozental 2007).

In 2006, emissions in units of carbon dioxide in equivalents (CO₂ eq) for Mexico were 709,005 Gg, showing an increase of GHG emissions of around 40%, a mean annual growth of 2.1%, for the years 1990-2006. It is recognized that Mexico has similar problems to those of both Annex and Non-Annex countries. Due to the volumes of per capita emissions and their carbon intensive sources of production of energy (oil, gas and coal), Mexico is close to the global average (SEMARNAT - CICC 2009: 75). Mexico's positioning can be seen as a bridge between Annex1 and Non-Annex 1 countries.

As mentioned before, Mexico relies heavily in fossil fuels to generate energy; hence it is from the combustion of fossil fuels for energy generation that represent the 88% of CO₂ of the total emissions. According to the Green House Gases Inventory 2002 (GEI), the emissions produced by energy generation have

increased 46% from 1990s levels. According to the National Institute of Ecology (INE), the global emissions of carbon dioxide generated by burning fossil fuels were of 24,221.63 million ton in 2003, leaving Mexico in the 12th place as worldwide emitter of CO² by fossil fuel burning and the 1.5% of global emission. The GHG emissions²⁰ by gas (measured in CO₂ eq) are:

- CO₂, 492,862.2 Gg (69.5%);
- CH₄, 185,390.9 Gg (26.1%);
- N₂O, 20,511.7 Gg (2.9%),
- 1.4% is made up of 9,586.4 Gg of HFCs, and 654.1 Gg of SF₆.

The transport sector is the second biggest contributor with 28% of the total emissions. The total emissions produced by this sector represent an increase of in the amount of emissions of 28% from 1990s levels. The manufacture industry and the construction industry altogether with other sectors (residential, commercial and agriculture), as well as mining contribute altogether with 32 % of the emissions.

The contribution by category in terms of CO₂ eq is as follows:

- Energy uses: 60.7% (430,097 Gg)
- Waste: 14.1% (99,627.5 Gg)
- Land use, land-use change and forestry: 9.9% (70,202.8 Gg)
- Industrial processes: 9% (3,526 Gg)
- Agriculture: 6.4% (45,552.1 Gg).

5.3.1 Energy consumption in the residential sector

The residential consumption has a significant share of the total of energy and the total emissions. According to data gathered by PECC, 15.6% of the energy is consumed by the residential sector, representing emissions close to 75 million tons CO₂ eq or 12% of the total emissions according 2006 estimates. These

²⁰ In 2003, the country stopped producing aluminum, so PFCs emissions are zero since 2004.

numbers are expected to grow due to expected growing demand on housing and population growth.

5.4 Institutional Framework around Climate Change

In 2001, the administration of Vicente Fox presented the National Development plan (PND). This plan aimed towards a clean, environmentally friendly development balancing both human development and the environment. It was the first time that arguments of sustainability including concepts like human development and environmental protection were used in the same narrative line, following the global discourse about sustainable development.

Although climate change has been treated as a transversal policy issue that concerns several Ministries within the Mexican government. The Ministry of the Environment (SEMARNAT) and the Ministry of Energy (SENER) have a predominant role, as the former is in charge of taking care of the environment and the other is concern with energy security. One can also counts other Ministries that have are included when the climate change agenda is about forestry or agriculture (i.e. SAGARPA, SCT). However, for the CDM project relevant to this study the role of SEMERNAT and SENER are highlighted.

The Inter-Ministerial Commission on Climate Change (CICC) was created in 2005 with the aim to coordinate the activities of the Federal Public Administration to take climate action. The commission is in charge of formulating and implementing national policies to prevent and mitigate GHG emission and generate adaptation measures to face climate change impacts. Furthermore, it develops, changes and adapts climate change policies and strategies put forward by other governmental departments, in order to be in accordance and within the National Development Plan and the international commitments as signatory to UNFCCC.

The Ministry that heads the CICC is the SEMARNAT (Environment and Natural Resources Ministry). The CICC has divided their efforts into six working groups.

Each group has different responsibilities, that range from research and publication of official documents²¹ with strategies on how to tackle climate change (Working Group PECC), prepare adaptation strategies (Working Group Adaptation), analyze and introduce climate change mitigation strategic paths for the short, mid and long-term (Working Group Mitigation), and harmonize with coordination of the ministry of Foreign Affairs the position of the CICC when Mexico is to assist to a climate conference or COP (Conference of the Parties).

After the COP 16 in Cancun there was another group responsible of the strategic planning on reducing emissions from deforestation and forest degradation (Working Group REDD+) and the Mexico's position in the REDD+ program. Many ministries and agencies²² at the national and local level are involved in this working group for its characteristics.

The last group, the Working Group COMEGEI (Comité Mexicano para Proyectos de Reducción de Emisiones y Captura de Gases de Efecto Invernadero²³), is the one involved directly with CDM at the operational level. It was a predecessor of the CICC and was in charge of emitting Letters of Approval for CDM projects. The COMEGEI has been involved in other projects of emission reductions, specifically the Joint Implementation (JI) project Ilumex for energy efficient lightning in the domestic sector. It is as well coordinated by the Undersecretary of Environmental Policy Planning (SEMARNAT) and is in charge of guiding policies, promoting CDMs and assessment of CDM projects. This working group remains to be the emitter of the Letter of Approval of CDM projects, as one of their tasks is to establish the voluntary participation on the project and to validate CDM contributions to sustainable development. The

²¹ HENAC (Hacia una Estrategia de Acción Climática), ENAC (Estrategia de Acción Climática) and the PECC (Programa Especial sobre Cambio Climático).

²² SEMARNAT, SAGARPA, SEDESOL, SCT, SE, SRE, INE, PROFEPA.

²³ Mexican Committee for Emission Reduction Projects and Green-House-Gas Capture

COMGEI gathers the first day working day of every month to review CDM requests.

By presidential decree, the CICC has to report to a consultative body (Consejo Consultivo). This body is of permanent nature and is formed by 23 specialists from the academia, civil society and private actors, each appointed for a term of four years. The Consejo Consultivo is a good example of an epistemic community in Mexico, in the issue-area of climate change.

The president of the Consejo Consultivo is the Nobel Prize awardee Dr. Mario Molina, who has his own research institute The Molina Center for Energy and the Environment. Dr. Molina is close to the Executive. He is constantly seen sit next to him in important press acts, like the presentation of Luz Sustentable, the follow-up project of the CDM CUIDEMOS. Furthermore, the research institute that he leads has made several contributions to Climate Change policy. The other important actor is Dr. Carlos Gay, who acts like secretary of the Consejo Consultivo. He is the director of the Centre of Atmospheric Science of the UNAM²⁴ (Universidad Nacional Autónoma de México).

The Consejo Consultivo also presents an Annual assessment report of the CICC's performance. Through this assessment, which has always been positive, the CICC and the Executive legitimize their actions and policies.

5.5 Mexican National Policy about Climate Change

As mentioned before, the CICC is in charge of formulating official releases about climate change policy. The first official document presented by the CICC (in that time it was still the COMEGEI), was the HENACC in 2002. Through this document Mexico formally presented itself as non-Annex frontrunner in climatic action, by formally committing to an in-depth analysis of the vulnerability, local-national response to adaptation, and to identify opportunities for mitigation and

²⁴ Mexico's National University.

implementation of mitigation projects. Furthermore, it presented the first update of the GHG national inventories.

In 2007, as a follow-up of, the ENACC was published as an inter-ministerial and broad-based approach to climate change. The language of the plan uses a highly technological language, for financially sound technological fixes vis-à-vis climate change mitigation in Mexico. The ENACC represents Mexico's adherence to the global discourse of sustainable development and ecological modernization.

One year before the COP 16 in Cancun (2010), the PECC was presented as an ambitious plan with short, medium²⁵ and long-term²⁶ goals for climate action. The PECC's main story line is that it is possible to mitigate climate change without jeopardizing progress, and even deriving some economic benefits. This is a typical metaphor of the ecological modernization discourse, in which climate change carries opportunities of progress.

The PECC also presents commitments of the federal government to meet national mitigation plans in the time-scope 2009-2012, considering them as part of the national strategy towards sustainable development, energy security and clean development. The focus on energy security to achieve sustainable development is also another sign of Mexican policies subscribed to the global discourse about sustainability.

Furthermore, one should consider the timing of the issuance of this policy plan, one year before the COP 16. The present policy plan is evidence of the ability of Mexican diplomats to present the right image to the international community.

²⁵ The medium-term strategies (2013 – 2030) focus on strengthening the adaptation capacities, because Mexico is very vulnerable to extreme weather events. Furthermore, it highlights strategies related to reforestation and deforestation, sustainable agriculture, human settlement displacement and high-risk infrastructure

²⁶ The long-term strategies (2030-2050) focus on minimizing vulnerability and consolidation of adaptive capacities, and to further the de-carbonization of the economy.

Sandra Guzmán²⁷ from CEMDA²⁸ (Centro Mexicano de Derecho Ambiental) argues Mexico is a skilled demagogue, they play a very active role in the international scene but the climate change is in reality very thin.

5.5.1 National Communications

Mexico has presented four National Communications to the UNFCCC. It was the first country to present a second national communication (2002) and the first non-Annex 1 country to present a third national communication in 2006. Furthermore, the First National Communication released in 1997, included the first Mexico Greenhouse Gas Emission Inventory 1990 and the results of the first studies of Mexico's vulnerability to climate change. The Second National Communication brought about an update of the emissions inventory for the period 1994-1998 and scenarios for future emissions. Meanwhile the First and Second National Communications were funded by the Mexican government entirely, the third

The last national communication was presented in 2009. The National Institute of Ecology is the coordinator of the research, with participation with all relevant segments of government levels and society, including the private sector, academia and civil society. The last communication was partly funded by the Government of the United Kingdom, the Inter- American Development Bank (IDB), and the United Nations Economic Commission for Latin America and the Caribbean (CEPAL)

Mexico notable active participation in the preparation of the National Communications can be seen as an attempt to present the country as a non-Annex frontrunner²⁹ in technical aspects of reporting climate change or as a ecological

²⁷ Mexico has been a skilled demagogue. It has played an active role on the international scene, but it has not taken a principled and consistent stand in its national policies," Sandra Guzmán, international affairs coordinator for the Air and Energy Program of the Mexican Centre for Environmental Law (CEMDA).

²⁸ CEMDA is one of the very few civil organizations actively participating on climate agenda.

²⁹ As it is portrayed in the webpage of the COP 16 that took place in Cancun Mexico: the document itself will be a valuable tool to design domestic climate change policies, as well as a means to disseminate these policies.

modernization champion (as it is portrayed in the webpage of the COP 16 that took place in Cancun Mexico: the document itself will be a valuable tool to design domestic climate change policies, as well as a means to disseminate these policies).

5.5.2 Legislation about climate change and energy efficiency

Mexico has shown proactivity regarding climate change policy. However, the initiatives turn to plans of action and programs that are binding only for the commission or governmental institutions concerned, instead of enforceable laws. This reinforces the argument that Mexico is a very skilled demagogue in climate change issues. However, Mexico has put into force some legislation³⁰ attempting to “...draw a broad framework for action and request the establishment of multiple bodies and funding mechanisms. In this sense, they represent the very first step, to a binding commitment of future action” (The Global Legislators Organization 2011: 3).

The flagship climate legislation is the Law for the use of Renewable Energies and for the Finance of Energy Transition (LAERFTE). It was put into action in 2008, and the main goal is the reduction of the dependence on hydrocarbons for energy generation. The SENER is the Ministry in charge of the implementation of the law by regulating and promoting the use of renewables and clean technologies. It also enforces the creation of an Energy Transition Fund, which as in September 2009 was of 3 billion MXN (The Global Legislators Organization 2011).

Energy efficiency has been also legislated as the Law of Sustainable Energy Use³¹ (LASE), which entered into force on 2008. The law dictates the creation of

³⁰ I will focus on the legislation that concerns the CDM CUIDEMOS, which is legislation on energy efficiency. For a general overview of Mexican Legislation visit the portal of The Global Legislators Organization.

³¹ Programa Nacional para el Aprovechamiento Sustentable de la Energía.

an institute to carry on energy efficiency efforts. The CONUEE³² (National Commission for the Efficient Use of Energy) is the implementation body of the law. It was formed as a body with technical and operational autonomy from the Ministry of Energy (SENER), to which the CONUEE belongs.

There are four areas that the LASE, through the CONUEE, covers in relation to energy efficiency. The first one is the establishment of norms and standards for energy efficiency in products and services, the NOM³³s (Official Mexican Norms). The CONUEE is also in charge of the establishment of methodologies and accounting of GHG generated throughout the energy process: exploitation, production, transformation, distributions and consumption, as well as avoided emissions. All this methodologies are carried on to facilitate the economic analysis for the decision making process of energy policy. This information is also crucial for the preparation of the plans and programs presented to the international climate community. The information about GHG emission is also entered into National Information Subsystem (Subsistema Nacional de Información) that provides the Federal Statistics Bureau with information on energy consumption and national and international energy efficiency indicators.

The CONUEE also brings about research and divulgation of energy efficiency. They publish 'best practice' manuals, articles and technical reports about the programs carried on by the commission. Furthermore, it promotes energy efficiency through informative media campaigns and organizes meetings and conferences relevant to energy efficiency that facilitate networking among the energy efficiency epistemic community.

The other function is the promotion of energy efficiency use to all the sectors of society. The concept of "best practice" in energy efficiency is thus promoted to industries, local governments, and civil society.

³² The CONUEE was formerly known as the CONAE Comisión Nacional para el Ahorro de Energía (National Commission for Energy Saving).

³³ Normas Oficiales Mexicanas.

Finally, the CONUEE is in charge of carry on demand-side policy. It implements programs addressing different sectors, i.e. the domestic sector. Some of these programs include the renewal of domestic appliances (fridges) by providing the end user with financing schemes. These schemes allow the end user to pay for the energy efficient appliance through installments in their utility bill, at very convenient rate. The user prorates the investment on the efficient appliance with the savings achieved in the consumption of the energy bill.

With respect to electric energy efficiency, there is a trust that uses revolving funds to finance the projects mentioned above known as FIDE³⁴ (Electric Energy Efficiency Trust). The FIDE works like a not-for-profit company. It was created in the early 90s and has a history of success in implementing such projects of energy efficiency in the domestic and other sectors, for example: the ILUMEX project that I consider as a predecessor of the CDM CUIDEMOS. It holds very active communication with industry chambers and some of the management staff works as well as university professors at public technological institutions. Furthermore, the CONUEE is in charge of the implementation of the CDM CUIDEMOS's follow-up Luz Sustentable. The role of the FIDE in the development of the CDM CUIDEMOS will be explored later, when I comment on the implementation of the CDM.

The CONUEE has also a consultative body formed by group of experts. The former Ministry of Energy, Georgina Kessel, heads the Consejo Consultivo. Dr. Kessel has been working in the Mexican energy sector for many years (CFE, PEMEX) and also in the Ministry of Taxation (SHCP) and currently in charge of BANOBRAS, the state owned development bank. The secretary of the Consejo Consultivo is the director of the CONUEE, Emiliano Pedroza Hinojosa, also with a background in economics. On the academy side, there are various members of

³⁴ Fideicomiso para el Ahorro de Energía Eléctrica

the Mexican National Research Council (CONACYT) from diverse fields, but mostly from economics and engineering, that contribute to the activities of the Consejo Consultivo.

Similarly to the case of CICC, this epistemic community conformed by public servants and scientist members of the national research council offer their expertise and scientific knowledge to formulate the agenda of the CONUEE. Furthermore, they also evaluate the performance and publish an assessment of the performance of the commission.

5.6 The role of Mexico in international climate change negotiations

Some of the most notable participations of the country in climate negotiations are as part of the Environmental Integrity Group (EIG) since 1999 (Mexico participates together with South Korea, Monaco and Switzerland in the negotiation block). It also participates as an observer in the group of experts of Annex 1 countries arranged by the OECD. Likewise, it participates in diverse global forum like the G-8. At a regional level, Mexico has been leading in the creation of Mesoamerican Strategy On Environmental Sustainability (EMSA). As a member of the Asia-Pacific Economic Cooperation Forum, Mexico accorded with the declaration over Energy Security, Climate Change and Clean Development. In the declaration it is stated general lines of action towards a low carbon development and to increase adaptive capacities to climate change in a region that contains 41% of the world's population.

The Ministry of Foreign Affairs also participates in climate change as it has appointed a Special Ambassador for Climate Change who actively participates in negotiation meetings.

Mexico has supported the Kyoto's principle of 'common but differentiated responsibilities'. It has presented three national communications and country studies about climate change like "Anthropogenic Emissions Inventory by source

and by sinks; the Greenhouse Gas Emissions Inventory; future emission scenarios; climate scenarios; and studies related to potential vulnerability of the country to climate change in agriculture, forests, hydrology, coastal zones, desertification and drought, human settlements, and the energy and industrial sectors” (Rozental 2007). In this way, it has fulfilled all the commitments of the UNFCCC convention.

Mexico supports the continuity of the Kyoto protocol post-2012 and is committed to participate on the exploration of alternatives for a second commitment period under the Bali’s Action Plan. However, as many developing countries, they highlight the responsibilities of the developed countries to take the first steps. Accordingly to Bali’s Action Plan, Mexico is willing to promote global limits to emissions equal to 50% from 2000 standards, meanwhile the limits imposed do not compromise the growth and development of Mexico or other developing countries.

Carbon trading is seen as an important part of the international effort vis-à-vis climate change. Thus, Mexico supports the strengthening of a carbon global trade market. As many other similar countries, they see the carbon trading as a useful tool to promote climate action and financial transfer. Likewise, Mexico stands for the creation of the Green Fund that supports local mitigation of Non-Annex countries, which is seen as complimentary to the Kyoto’s instruments.

Moreover, Mexico has been prized by its general environmental performance. The Environmental Performance Index³⁵, issued by the collaboration of the Yale University and Columbia University in joint-venture with the World Economic Forum and the Joint Centre Research of the European Union ranks Mexico 43 out of 163 countries.

³⁵ The Environmental Performance Index (EPI) looks at performance indicators tracked across ten policy categories, covering both environmental public health and ecosystem vitality. These indicators provide a gauge at a national government scale of how close countries are to established environmental policy goals.

5.7 Characteristics of the CDM market in Mexico

Mexico is placed 4th in the number of CDM projects registered (126) only behind China, India and Brazil. Until 2009, most of the projects under the CDM umbrella were addressing emission reduction in mass livestock farming. There is a high potential for more projects in the electricity, oil and gas sector due to energy production is very carbon intensive. Furthermore, the law on renewable energy sources (LAERFTE) enacts the different governmental institutions in promoting CDMs in this sector.

CDM is seen as a tool to carry on investment in the energy sector, subject to rigid legal provisions and reluctant to foreign intervention, but short in investment capital. In that matter according to the German Development Bank there are more than 100 large-scale projects identified and awaiting implementation. Furthermore, in a country where industrial energy prices are quite high (prices rank 4th in the OECD) and energy shortages are common, CDMs in the cogeneration sector are also attractive (Deutsche Investitions- und Entwicklungsgesellschaft mbH 2009).

The Designated National Authority has been recognized by its efficiency and speedy operations (Deutsche Investitions- und Entwicklungsgesellschaft mbH 2009), as a decision usually takes no more than 30 days. It takes maximum three working days to the confirmation of the application to register the program to the CICC, ten working days to get the opinion of the COMGEI (although this can be also done de facto). The final assessment is delivered in no more than 20 days and one could expect 10 days to get the letter of approval released.

Another important part of Mexico's strategy to attract CDM project is the set-up of the FOMECAR³⁶ (Mexican Carbon Fund) in 2006. Coordinated by BANCOMEXT³⁷ (Bank of International Commerce), the Mario Molina Center

³⁶ Fondo Mexicano de Carbono.

³⁷ Banco Mexicano de Comercio Exterior.

and SEMARNAT. It provides financing for sustainable projects by contracting lines of credit with multilateral agencies and development banks like the one in Germany, Japan and European Investment Bank.

The Fund is a nonprofit trust that provides technical and financial support to CDM projects in Mexico. Some of the activities are to provide training on CDM projects, workshops and seminars, technical assistance for projects feasibility, financial support to prepare Project Design Document (PDD), validation and registration expenses for projects that could potentially generate emission reductions. The project developer receives the financial support with the condition to return it back to the FOMECCAR plus a success commission, once the project begin to generate Certified Emission Reductions (CERs).

FOMECCAR provides the project developer with information about consultants, local Designated Authorities (DOEs). Moreover, it has signed liaisons with independent governmental agencies at the local-national level, and a network of private business and civil associations facilitating local implementation of a CDM project.

The Fund emphasizes the priority interest of Mexico in programmatic CDMs (like CUIDEMOS) that can be of a small scale but easily replicable nation or sector-wide, because they can be effective and of a high impact.

<i>Project Category</i>	<i>Number of Projects</i>	<i>Estimated annual emission reductions (1 000 t CO_{2e})</i>
Decomposition of HFC23	1	2 155
Emission reduction, methane gas extraction and use in intensive livestock farming	143	3 490
Landfill gas extraction and use	14	1 968
Power/Heat cogeneration and energy efficiency	11	696
Wind-power	8	2 264
Hydropower	5	191
Other	7	828
Total	189	11 592

Table 1: CDM projects in Mexico approved by CICC (letter of approval issued) as at June 2009. Source: First monitoring report (UNFCCC 2010).

6. The CDM CUIDEMOS

The project CUIDEMOS³⁸ (Smart Use of Energy in Mexico) was a first of-a-kind CDM project approved by the CDM Executive Board (EB). The project was designed as a “Small Scale Program of Activities³⁹” (PoA). What is special about this kind of CDM is that the PoA allow that small size measures to abate GHG emission, geographically dispersed, with high transactions costs and possibly with different owners, to enter the project pipeline as a single project. This kind of projects is seen as less risky by both buyers, sellers and project developers, because in case one activity of the project fails the PoA can still continue. Furthermore, it is possible to add new activities to the project, if there is the possibility for abating additional climate change gases. Besides this kind of project is considered less risky, the contributions to sustainable development are more evident, as a member of the CDM Executive Board appointed when I asked him his opinion about CDM PoA and the contributions to sustainable development.

The aim of the PoA CUIDEMOS is to substitute conventional lightening devices for domestic use (incandescent light bulbs) with energy efficient lamps or CFLs (Compact Fluorescent Lamp) in middle/low-income households of urban populations. The first phase of the CDM CUIDEMOS, Luz Verde, was implemented in the State of Puebla in central Mexico (south of Mexico City). During this phase 1 million CFLs were successfully distributed. Supported by a mass media campaign and distribution points in key geographical locations (i.e. neighborhoods characterized by having a low/middle income households), Luz

³⁸ Campana De Uso Inteligente De Energia Mexico

³⁹ A Program of Activities (PoA) is a voluntary coordinated action by a private or public entity which coordinates and implements any policy/measure or stated goal (i.e. incentive schemes and voluntary program), which leads to anthropogenic GHG emission reductions or net anthropogenic greenhouse gas removals by sinks that are additional to any that would occur in the absence of the PoA, via an unlimited number of CDM program activities (CPAs) (EB 47, Annex 29, paragraph 3).

Verde encouraged individual households to exchange their conventional incandescent light bulbs with CFLs, free of charge. The Program of Activities states the crediting period of the CDM project Luz Verde is for ten years, starting the 31st of July 2009 and concluding the 30 Jul 2019. The total amount of reductions is 24, 283 metric tons CO₂ equivalent per annum (UNFCCC 2010). The follow-up of the project plans to exchange 30-50 million CFLs by the end of 2012.

There are two fundamental aspects of the CDM CUIDEMOS. The first is the exchange that ensures the saving lamps will be used (Clapp, Lesur, Sartor, Brner, & Corfee-Morlot, 2010). The second aspect is that in order to achieve the greatest results of the project, it should be addressed to low/mid-income urban populations. In Mexico, it is estimated that the domestic sector consumes around 25 % of all electricity generated in Mexico, 40% of that electricity is used in illumination⁴⁰ (UNFCCC 2009). Puebla has the right demographics, a big urban population of low/mid income households.

The Mexican government supported politically and financially the implementation of this project. They supported the project based on that the implementation of an energy efficiency project in the domestic sector, like CUIDEMOS, could carry on savings in the highly subsidized electricity. Furthermore, the Mexican state can avoid infrastructure investments in an area closed to foreign investment. Another reason to push forward CUIDEMOS is that the beneficiaries of the exchange (low-income household owners) would also profit from a reduced utility bill. The Mexican government financially support was a grant to cover the up-front costs of the project.

At the state level where implementation took place, there was also governmental support (although it was more political than financial). As revealed by the regional manager of FIDE in an interview, Alejandro Alcaide, the local office of

⁴⁰ The same rationale was used in both the Project Design Document (CDM-PDD) CUIDEMOS and in the project ILUMEX.

SEDESOL (Development Ministry) sent missions to distribute and sell for a portion of its supermarket value CFLs (5 pesos⁴¹) in low/mid-income households in the city. Thus, proving that Puebla was a suitable place to implement the project. The support of the local government was not seen as fundamental to the development of the project, but still aided in the process of selecting the right place to carry on the project.

6.1 CUIDEMOS: designed to meet the Mexican Climate Agenda.

The CDM CUIDEMOS was designed aiming to meet some goals stated in the climate change policy documents (ENACC, PECC), as well as to accomplish some of the goals of the National Development Plan 2007 – 2012. The goals of the National Development Plan are appointed directly by the president's office. Particularly, PECC the short-term road map of action (2008-2012) subscribed as one of its goals (M37) the substitution of domestic appliances (i.e. fridges, air-conditioned) and also of incandescent bulbs with the energy efficient saving lamps (CFLs).

Below there are the main goals of Mexico's climate change policy that the CDM CUIDEMOS brings about (SEMARNAT, 2010):

- a. Identify opportunities for mitigation measures and emission reductions:*
Demand side energy efficiency has been highlighted by the Mexican government as one of the key adaptation and mitigation strategies in their National Strategy for Climate Change (SEMARNAT 2010).
- b. Real and measurable reductions of GHG:* The program shall be monitored accordingly to the highest standards to assure that any emission reduction claimed is measureable and real. The approved methodology used for this project is the AMS II.C for "Demand-side energy efficiency programs for

⁴¹ 5 NOK.

specific technologies”. According to the project description, this methodology ensures that the measurements of GHG emission reductions are “robust, conservative and verifiable” (Det Norske Veritas 2010).

- c. *Acknowledgment of social, economic and geographic regions vulnerabilities to climate change:* The design of the project recognizes the vulnerability of low-income and the need for projects to assist with adaptation. It adheres to national and local programs for energy efficiency CONAE (National Commission for energy savings) and the FIDE (Trust fund of electrical energy).
- d. *Development of national and local capacities for response and adaptation to climatic changes:* in the article 26 section 3, the energy efficiency law (LASE) impulses the development of training programs for energy related audits.

Furthermore, the CUIDEMOS project also addresses directly and indirectly the Law for the Efficient Energy Use (LASE). Likewise, this law gives energy efficiency the legal and institutional framework for carrying the project. In that respect, energy efficiency policy is defined in Article 2 of LASE⁴² as economic sound actions that produce economically viable reduction of the consumptions of energy. The Ministry of Energy is in charge of the enforcement of the law through the independent body CONUEE. Supported by this law, specifically in the Article 7 section 10, which gives the responsibility to the CONUEE to formulate a strategy for the substitution of incandescent lamps with saving lamps or CFLs.

The design document of CUIDEMOS points out two main economic benefits: First, the program utilizes more efficient technology than common practice (i.e. energy efficient, resource efficient), which carries on energy savings in “both individual household and federal levels” contributing to economic efficiency and

⁴²The Article 2 defines all actions that produce an economically viable reduction in the consumption of energy to satisfy the energy need of the society for goods and services. The actions ensure that good and services are of the same or improved quality. It frames also those actions that represent a reduction of the environmental negative impacts product of the generation, distribution, and consumption of energy, including the substitution of non-renewable energy sources with renewables (my own translation).

sustainability (UNFCCC 2009). Second, Mexico's national government forecast a need to build energy capacity infrastructure for approx. US\$ 69 billion (US\$800,000 per megawatt capacity) over a decade. Downsizing consumption by demand side energy efficiency improvements represents a highly cost effective approach to providing this capacity.

In Mexico, it is estimated that households use 25 % of all electricity generated in Mexico. The 40% of the electricity is used in illumination. The project "will directly reduce pressure on energy infrastructure during peak loads (approx. savings US\$19.5 million in deferred generation infrastructure investment) (UNFCCC 2009). As said before, the Mexican government subsidizes low-income households and improvements on the energy efficiency will save money to the federal government. The approximate savings in the Puebla achieved by the installation of 1 million CFLs are of US\$12.2. The households will also directly benefit of reduced utility bills of approximately US\$5.6million, and the Mexican government in avoided electricity subsidies for around US\$ 6.6 million (ibid.).

The project carried on a technology transfer and capacity building in greenhouse gas emission reduction technologies. Certainly the technology is not new, but residential use has been relatively low due to the prohibitive cost for low-income families. The program will address these barriers by providing CFLs for free, resulting in mass consumer uptake and shifting residential efficiency and electricity demand (UNFCCC 2009: 3).

CONCEPT	UNIT	VALUE
Number of Incandescent Bulbs (IB) to be exchanged with CFL		98 7142
Average potency of the IB	Watts	68.9
Usage time	Hours	4
Annual energy consumption by IB	KWh/year	81 029 259
Total consumption of the IB in relation to the CFL's life span	KWh	810 292 589
Average potency of the CFLs	Watts	15.60
Usage time	Hours	3
Annual energy consumption by CFL	KWh/year	18 346 247
Total consumption during the CFL's whole lifespan	KWh	183 462 473
Avoided subsidies (during the CFL's lifespan)	Millions MXN	135
Total saving on electricity (during the CFL's lifespan)	MWh	626 830
Emission Factor	TCO2/MWh	0.514
Annual emission reductions	TCO2/year	32 219

Table 2: Expected savings in USD and emission reduction projected in the design of the CDM CUIDEMOS. Elaborated with information of the First audit by Det Norske Veritas (DNV 2010).

Regarding to the contributions to the sustainable development of the country, the program helps to improve quality of life by creating opportunities for jobs, job enhancement and an overall increase in the income of families through the savings in the utility bill. In order to execute, implement and control the project there is a need of a large workforce directly from the CDM operator and its partners. Likewise in the short-medium term a workforce will be needed, engaging directly and through partnerships a large workforce over the short to medium term. Moreover, Cool Nrg will maintain a core team involved in customer relations, finance, project management and monitoring over the longer term. This team of employees will be trained in CDM project requirements,

energy efficiency and consumer engagement (UNFCCC 2009), improving the capacities of Mexico to carry on similar projects. Cool Nrg Mexico will create a team of experts able to act as a center of knowledge and experience within the country, and the region. The company will train employees in CDM project requirements with environmental goals. This is a contribution of knowledge transfer from the Australian company to its counterpart in Mexico both in the private and public sector.

Finally, there are other “less tangible social outcomes in education, awareness and collateral energy saving measures. This energy efficiency campaign will create an opportunity for collective action on climate change, enhancing a sense of community, and empowering individual households” (UNFCCC 2009: 4).

6.2 Implementation of the project

As it is typical with CDM projects the private sector poses the overarching role in the implementation of the project. Cool NRG was the main actor as the project developer, project entity and implementer of the project. The Australian company was the promoter of the project and made the negotiations to get the letter of approval from the CICC. They also procured alliances with other companies like COMEX⁴³ and COPPEL⁴⁴, two retailers with high foot-traffic, which were key during the exchange as they offer their outlets as distribution points of the CFLs. Both companies have plenty of outlets widespread in zones of the city of different socio-economic conditions but mainly in middle/low income neighborhoods. Likewise, the companies provided the logistical support by hiring 2-3 employees to attend a front desk of each distribution boot and the IT systems to register, change and control the distribution of the light bulbs. The support to the project was given in-kind as a part of the corporate social

⁴³ COMEX is a paint manufacturer and distributor

⁴⁴ COPPEL is an electric appliance retailer that has many outlets next to markets and popular neighborhoods.

responsibility strategies of both companies. Moreover, the companies recognized an increase in the sales during the time of the implementation of the project. However, there is no hard data that can prove a direct relationship, as Andres Rivera from Cool NRG asserted during an interview. The companies also benefited of direct governmental interaction, important to create networks for other projects.

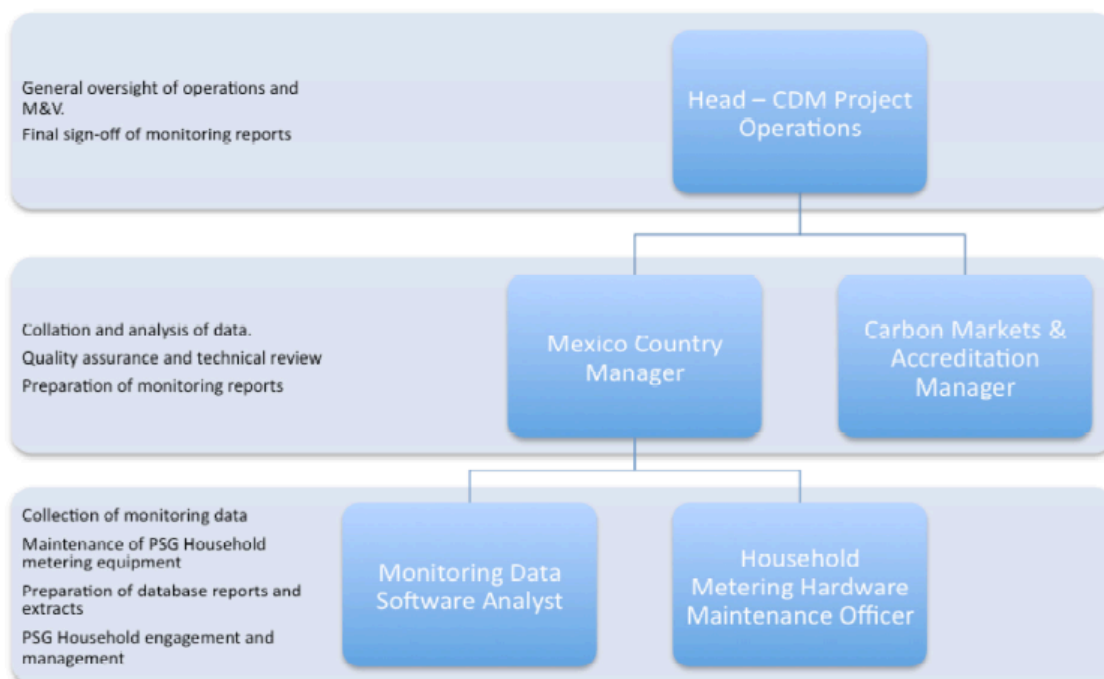


Figure 2: Project proponent roles and responsibilities. Source: First monitoring report (DNV 2010)

Cool Nrg is a very well known project developer of demand-side energy efficiency projects for the domestic sector. They have successfully carried on several projects of a similar nature as CUIDEMOS in the UK and Australia, distributing saving lamps to urban households. Based on their expertise on demand-side energy efficiency projects, Cool Nrg invested in developing a specific methodology for carry on this project as a CDM, and be credited for certified emissions. Developing large-scale projects of this nature enabled networks with CFLs producers, like Philips, and with financial entities mainly in the Netherlands. Their previous experiences working together facilitated

partnerships with Philips, ensuring better prices for the CFLs. Furthermore, the networks helped finding CERs (Certified Emission Reductions) buyers and financing. Eneco Energy guaranteed the purchase of CERs for the pilot project of CUIDEMOS (Luz Verde), expecting that the project will get CDM Gold Standard. ING Wholesale Banking provided a credit line to cover the initial costs. The three Dutch companies mentioned the CDM project to be part of their social-environmental responsibilities policies, and also as win-win scenarios to combat climate change (Philips Electronics N.V. 2009).

Andrés Rivera, manager at Cool NRG Mexico, has experience in launching big scale media campaigns. During the last presidential elections he promoted with media companies like Televisa (the biggest media company in Mexico) a citizenship awareness campaign “Tu Rock es Votar” (Your rock is to vote) promoting among the young population participation in the elections. These previous experiences facilitated the support of the project by Televisa, which adhere the promotion Luz Verde to their media campaigns of its environmental foundation “Televisa Verde”. The TV broadcaster launched a national media campaign of awareness of the project by using celebrities as spokesmen. The advertisements were broadcasted on TV and radio transmissions. Through the national media campaign of Televisa the potential beneficiaries of ‘Luz Verde’ got to know about the project and increased their awareness about climate change and energy efficiency. The celebrity spokesmen described the Luz Verde as a national project that would commence in the city of Puebla. Comex and Coppel also were featured as implementers of the project and benefited from free publicity, as well as higher traffic in their outlets. Flyers were distributed to the general public in central public squares.

The beneficiary headed to the most convenient location of a Comex or Coppel retail outlets⁴⁵ (a total of 86 in the city), where there was a front desk set-up with the specific purpose of registering that the traditional light bulbs were still

⁴⁵ COMEX has more than 100 outlets widespread in the state of Puebla and COPPEL more than 40.

working so the exchange could take place. In order to effectuate the exchange, the user had to bring their electricity bill and two functioning standard incandescent bulbs. The employees at the boot registered a reference number of the electricity bill to avoid duplication, controlled that the incandescent bulbs were functional before giving up the CFLs. Thereby the bulbs were distributed by household. In order to prevent the incandescent bulbs to be used ever again, they were collected and destroyed to ensure they can no longer be used. The materials were handed out for recycling; being in charge of the monitoring of this process a company specialized in waste management.

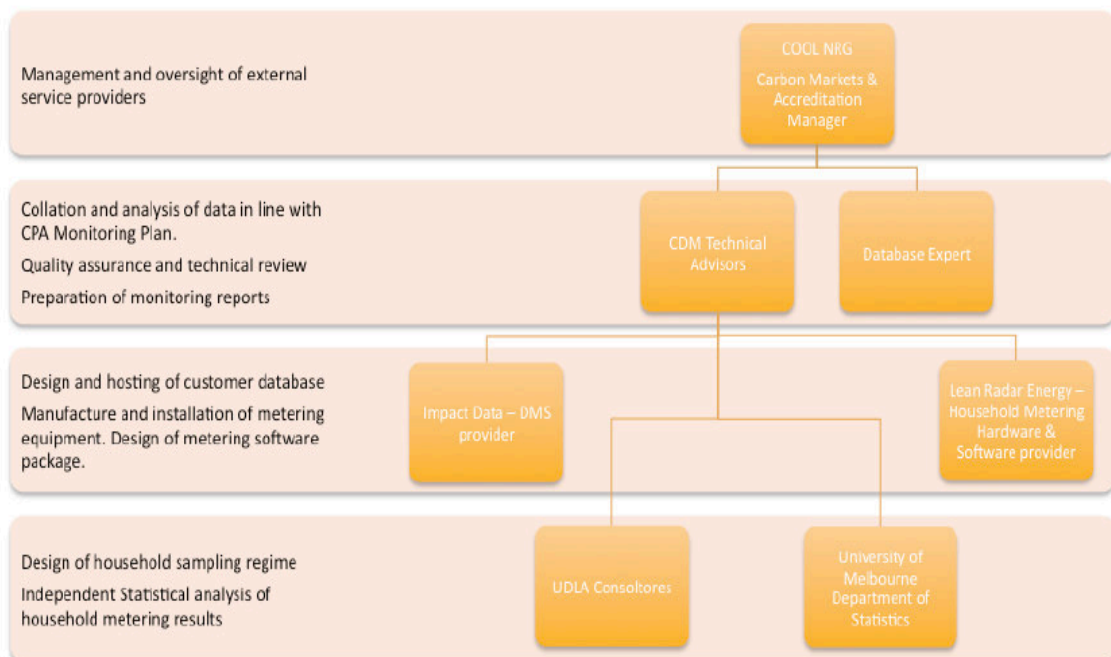


Figure 3: External expert roles and responsibilities. Source: First monitoring report (UNFCC 2010).

6.3 A successful project and the Gold Standard Certification

The project was successful as it achieved both the environmental goals in terms of achieving certifiable emissions reductions, while contributing to the sustainable development by bringing about a reduction in electricity consumption. In fact, the project over-performed and carried on more energy savings than its original design.

The project was prized worldwide and became a case study by several organizations involved in CDM. The Mexican government also used this project to gain legitimization as a progressive a benevolent state, in the avant-garde of climate change policy. This project was portrayed as landmark of climate change policy in Mexico during the COP 16 that took place Mexico hosted in the resort city of Cancun. Furthermore, it was also the first CDM project in Latin-America to be granted the Gold Standard, which is a certification that is given to CDM projects with high level of environmental and sustainability integrity.

This standard was a response to the criticism towards CDM regarding the quality of the emission reductions and contributions to sustainable development for the host country. The Gold Standard uses a more stringent methodology to determine that the certified emission reductions are real and measureable, and also that the projects are involved in achieving wider sustainability profits. It also corroborated the additionality⁴⁶ of the project, determining that without CDM revenue the project (the exchange to CFLs technology by low-income households) would not be plausible.

Gold Standard uses stakeholder consultations open to all public to analyze some aspects of the sustainability achievements. The requirement is to have at least

⁴⁶ To ensure the project reduces emissions more than would have occurred in the absence of the project and that the only profit achieved by the project comes from CERs. DNV analyzed the alternatives on how the project could happen: The exchange of the bulbs with CFLs through private or governmental support, individual or collaborative efforts by retailers or that the exchange did not happen at all.

two public stakeholder consultations, an initial consultation during the design of the project and a follow-up in later stages of the implementation process. It also requires independent third party audits in the form of verifications and validation for all Gold Standard certified projects. The stakeholder feedback round goes in parallel with the validation of the CDM.

Variable	Ex-ante Estimation	Ex-post Monitoring	+/- % Impact
ILB Wattage	66.66	74.59	16.0%
Hours of use	3	3.234	7.8%
CFLs Distributed	1,000,000	987,146	-1.3%
Proportion of Distributed CFLs Operating	99%	97.82%	-1.2%
TOTAL			21.9%

Table 3: Comparison between expected results and actual results of emission reductions. Source: Monitoring report version 01 (UNFCCC 2010)

Cool Nrg faced some problems to achieve the GS due to the lack of local DOEs experienced in this certification. The language barrier was an obstacle; since GS guidelines are in English and it was the first time that GS certification was issued in Latin America. It was through a very close collaboration among all the parties involved that it was possible to overcome the issues resulting of this first-of-a-kind project. The Norwegian company DNV ⁴⁷ was the auditor that made the third party assessment of the project. DNV confirm that as documented since the design the project was sound, reasonable and meets the GS identified criteria of sustainability (Det Norske Veritas 2010)

For the first public consultation Cool Nrg published in the national newspaper “El Universal” (7.10.2008) an open invitation to whom would be interested. The public consultation took place three days later in a hotel downtown Mexico City (Det Norske Veritas 2010). Among the participants, there were several NGOs (Green Peace, Unión de Grupos Ambientalistas and industry representatives (CESPEDES – La Comisión de Estudios del Sector Privado para el Desarrollo

⁴⁷ Det Norske Veritas (DNV) was also the DOE of the project.

Sustentable, Consejo de la Comunicación, COMEX, DNV, CONIEGO – Consejo Nacional de Industriales Ecológicos) and The Ministry of the Environment (CECADESU Centro de Educación y Capacitación para el Desarrollo Sustentable). The majority of participants to the public consultation come from the public sector. Other NGOs and Ministries were invited but did not assisted (SENER, SEMARNAT, FIDE, Centro Mario Molina, Secretaría del Medio Ambiente GDF, Greepeace International, WWF International, MERCI Corps International, REEP and Gold Standard Foundation.

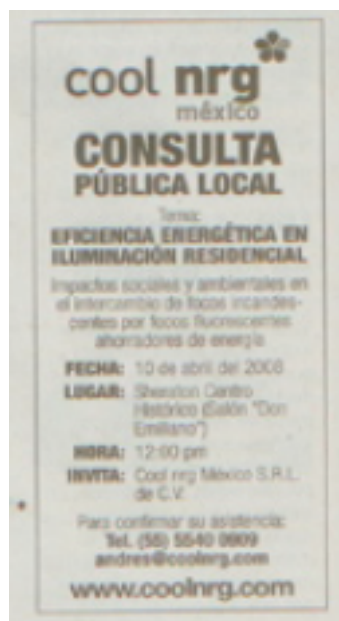


Figure 4: The open invitation published in the newspaper El Universal on April 7th, 2008. It was a small banner and was not featured on the main pages

The first public consultations with stakeholders brought to light three main topics. The first one referred to the illumination and power factor of the CFLs. Cool Nrg responded to the assistants that the standards of the CFLs guarantee a satisfactory level of illumination, like a 60-Watts bulb. (Det Norske Veritas 2010). Likewise, Cool Nrg responded promptly to further questions regarding the sampling size for savings reductions calculation. Det Norske Veritas corroborated that the sampling was based on robust, rigorous and conservative methodology to calculate regulations (ibid.). The issue that raised the higher level of skepticism was the content of mercury in the CFLs devices and their

recycling. CFLs contain mercury, which is a highly toxic pollutant. It requires special handling to be recycled. Currently there are no facilities in Mexico to handle this kind of waste and needs to be sent to the US.

The second consultation or ‘main stakeholder consultation’ took place in a downtown Puebla on August 28th, 2008. There were no additional questions or comments regarding the environmental or social impacts of the project (Det Norske Veritas 2010). The only participants were COMEX and COPPEL.

This issue was brought about directly to the CONUEEE, the federal body governing energy efficiency, which initiated a regulatory policy aiming to ensure that all CFLs are environmentally safe and of the highest standard. Hence, another outcome brought about by the CDM CUIDEMOS was the creation of a regulation that will enforce higher environmental standards in CFLs, and most importantly a national transition towards energy efficient lightening technology. This regulation (NOM-028-ENER-2010) will also stop the commercialization of incandescent lamps of 100 or more Watts will be prohibited from 2012 on, the lamps of 75 Watts in 2013 and 60 and 40 Watts in 2014.

The table below shows the three criteria considered by the GS to certify contributions to the sustainable development of the country:

Component	Indicator	RESULT
Local/Regional /Global Environment <i>(Supported by information provided by INE, United States Environmental Protection Agency and Energy Star.)</i>	Air quality/ emissions other than GHG: It is calculated by multiplying the emission factor and the electricity saved by the project. A sample of 240 lights will be monitored to estimate the average.	
	Other pollutants: CFLs contain mercury, which is a highly toxic pollutant. It requires special handling to be recycled. Currently there are no facilities in Mexico to handle this kind of waste and needs to be sent to the US.	CoolNrg proposed a partnership for the recollection and recycling of CFLs with Comex and Coppel and asked the company in charge of managing the bulbs to handle the process of CFL recycling in the US.
Social Sustainability & development <i>(Supported by information provided by SENER, FIDE, CONUEE)</i>	Access to energy services: The indicator is based in the energy demand, new energy generation.	CFE can use the electricity savings to give access to electricity in peak hours.
	Employment: The indicators are the project areas, number of employees, duration of employment, and description of task. Cool nrg The Federal government will benefit through savings in subsidized electricity will report the number of employees and contractors and the work they are performing for each monitoring period.	The implementation of the project will need a workforce over the short/mid –term period, and keep a core team. GS will monitor the employment to maintain the accreditation for the CUIDEMOS.
	Livelihood of the Poor/Poverty alleviation: The utility bill considers only the active power consumed by the user.	The household owners of low-mid income enjoy direct savings in their utility bill with the use of CFL technology.
Economic - Technology development <i>(Supported with information reported in Mexico's President Annual Report 2007)</i>	Replicability and contribution to self-reliance.	The Mexican Federal government will benefit through savings in subsidized electricity.
		Mexico will save in avoided further electricity generation infrastructure investments.

Table 4: Components, indicators and results after the assessment of contributions to sustainable development carried on by CUIDEMOS.
 Source: Gold Standard Validation report (Det Norske Veritas 2010)

7. Analysis: Why the CDM CUIDEMOS is successful

This chapter is divided into two parts. In the first part I present the more evident reasons that can to a certain dimension explain the success of the CDM CUIDEMOS. In that way, it is possible to account several aspects. For instance, one should look at the Mexican institutions surrounding climate change action. Most decisions regarding climate policy, especially about the CDM CUIDEMOS, were taken at the top governmental levels. This situation permitted efficient negotiations among the actors involved and enabled the successful implementation of the project. There are also experienced public servants, highly qualified in the technical and bureaucratic aspects of the CDM. Moreover, the Mexican policy plans and laws and regulations not only are suitable for this kind of projects, they also encourage this type of market solutions to climate change mitigation. Thus, there is a sound institutional structure around climate change policy and CDM for this kind of projects. Within those institutions and social structures the entry of private actors is not new, as precedents of this type of cooperation and other similar projects have been implemented in Mexico before.

Another important aspect to consider is the way CUIDEMOS was designed and implemented. The project design complied with Mexican expectations for demand-side energy efficiency measures in the domestic sector. The design document was carefully worded to meet Mexican requirements of what should be CDM contributions to the domestic version of sustainable development and to achieve certified emission reductions. Moreover, the low-income urban population directly benefiting from CUIDEMOS was eager to carry out the exchange of normal bulbs with CFLs. They were acquainted to the technology and aware of the benefits that the exchange would bring about savings in the electricity bill. In addition, the CDM CUIDEMOS would save money for Mexico in the highly subsidized electricity in this population tier while also avoiding further investments in infrastructure energy capacity.

Furthermore, the project was economically viable, a win-win scenario where a constellation of actors involved at different stages of the project would bring about their own interests, while doing the right thing for Mexico and contributing in the global fight against climate change. There was an overall political willingness to make all the actors (national, international, local) involved in cooperating and carrying on this project, as technological solutions and market approaches are seen as legitimate ways to tackle climate change mitigation.

Likewise, the context of Mexican climate change policy, the energy profile of the country, the technical expertise of its ministries, the urban population and that previous projects of the same type were essential elements in the success of the CDM CUIDEMOS. There were preexisting conditions in Mexico that supported the design of the project and enabled a successful implementation.

The organizational form of climate change policy-making in Mexico is a factor of the success of the project as well. Normally, energy related decisions are highly political. Decisions are taken at the Executive level of the government. It is directly the presidency mainly through the Ministry of the Environment and the Ministry of Energy, who mandates and integrates in the National Development plan policies related to adaptation and mitigation of climate change. The decision to approving CDM projects is within these ministries, keeping negotiations at elite level.

The aspects mentioned above, to a certain extent, provide an explanation about why the CDM CUIDEMOS was successful. In general terms, it is possible to say that there are some preconditions, like energy accessibility, in the country to implement this kind of projects. Moreover, there is a political willingness to carry on projects to mitigate climate change based on technological solutions and market approaches. In those kinds of projects the actors act in constellation pursuing their self-interest in the win-win scenario set up by the CDM CUIDEMOS. All these aspects are thoroughly commented in Chapter five and six.

I think that try explaining the success of CUIDEMOS based only on these aspects would be reductionist and lead to a superficial argument to explain the success of the project. In that sense, in the second part of this chapter, I present the argument that there is an epistemic community around CDM, which is a fundamental variable in making the project CDM CUIDEMOS successful.

The argument is that epistemic communities decisively influence the conceptual framework in which a policy process takes place and play a significant role in the day-to-day operation of a project or policy process. As they deal with the uncertainties involved in CDM, the members of the community can define the problems, possible solutions, identities and interests around the project. The epistemic community involved in CDM has power to produce and reproduce social reality. This power emerges from the social recognition of them as knowledge owners, where there are uncertainties and complexities around an issue. They influence social reality and the conceptual framework of policy making and specifically of the CDM CUIDEMOS. The members of the community do not only influence the conceptual framework, but the operation of CDM, enabling the cooperation among the actors to make sure that the project reaches its goals.

7.1 The reasons behind the success of the CDM CUIDEMOS

Cool Nrg is an Australian company well known for its energy efficiency demand-side projects specializing in CFLs. The company previously conducted projects in the Australia, UK and Ireland exchanging CFLs. Throughout those projects Cool Nrg built relationships with CFLs producers, especially Philips, which provided the CFLs for the CDM CUIDEMOS. The good reputation and network helped also to get financing from ING Wholesale Banking and the Dutch utility Eneco Energy Trade.

Furthermore, the project is very well aligned with Mexico's energy priorities. The energy profile of Mexico is very carbon intensive, even though natural gas (a 'cleaner' energy source) has gained relevance in the fields of coal and oil production. As seen in Chapter five, energy production in Mexico remains highly dependent on oil, with little chance of this situation to change in the short/mid-term, as renewable sources remain unavailable and underdeveloped. Hydropower is perhaps the most developed renewable energy source and within the short-term goals (2008-2012) stated by the PECC, the development of hydropower is emphasized. However, furthering the development of this source is not without compromise. Large-scale hydropower plants create many local environmental problems, stressing the Mexican mega-diverse fauna and flora with sensible ecosystems and complex habitats and unique species. Moreover, there is also water scarcity in Mexico. The IMTA and other research institutes warn about the problematic of disturbing hydric systems (i.e. changing the course of a river), compromising water accessibility and opening to the possibility of scarcity and unavailability for large urban populations like Mexico City. In addition, the current effects of climate change have changed the frequency and intensity of rainfall, making hydropower unreliable to become a principal source of power. Large-scale infrastructure projects like hydropower plants require rural communities to be displaced, a clear social justice issue that carries on social conflict. Other renewables are lagging in its development (eolic, solar) or are currently too small to be significant (geo-thermal).

For all said, energy efficiency through CFLs is the low hanging fruit, especially in the specific case of the demand-side policies in the domestic sector. Mexico has adequate institutions like FIDE that successfully and consistently have implemented programs for the use of energy efficient domestic appliances. Perhaps the most informing experience is the project Ilumex, a Joint Implementation (JI) program promoted by the World Bank and financed by Norway in the 90s. It was a similar project with CFLs involved that left the basis for CUIDEMOS and promoted the benefits of CFLs by creating awareness of the economic benefits in terms of savings in the utility bill carried on by the energy

efficiency qualities and larger lifespan vis-à-vis conventional bulbs. Furthermore, it also created the rationale and the base-line scenario⁴⁸ for the CDM project to happen.

In the project Ilumex, a household would acquire the CFLs for a lower price to be paid in installments directly on the utility bill. The idea was that the savings achieved by CFLs use cover the initial investment. After a few months of using the CFLs the savings will be noticeable. This is how many households on the mid/ high economic tiers opted for CFLs technology. However, even that the larger urban lower economic tiers understood well the benefits of CFLs, the investment was still too high for this tier of the population, avoiding a general adoption of the technology. One of the reasons is that the argument of Ilumex about the savings covering the investment is not entirely truth, as Alejandro Alcaide from FIDE told me during an interview. He said that the user is expected to cover less than half of the cost of the CFL⁴⁹. It is true that it is still a very low price compared to the retailer value. However, that prize still can be a heavy burden for a low-income household. For them, the discount rate of such investment is too high, when valuating an investment on energy efficient devices or paying for the everyday supper.

The experience of Ilumex demonstrated that middle-income households were well aware of the benefits of the CFLs. It was on their budget to acquire the lamps by their own financial means through the leasing programs, which allowed them to pay for the CFLs in small installments. Nevertheless, selling CFLs to poor households represented a different kind of problem. In the case of Ilumex, the severe economic crisis in 1995 dissuaded even more the low-income dwellings to invest in CFLs, essentially because, as said before, they have very high discounts rates (Kumar et al. 2003). This represent a big obstacle that

⁴⁸ The baseline for a CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity (3/CMP.1, Annex, paragraph 44).

⁴⁹ The market value of a CFL is between 75 and 100 MXN (30-50 NOK).

needed to be overcome, given that the highest benefits (highest return over investment and environmental benefits) come when the exchange takes place in low-income households, whose electricity consumption is largely spent in lighting and whose utility bill receives the highest subsidies from the Mexican government. The project CUIDEMOS by exchanging the CFLs for free addresses this issue and also carries on the benefit of a smaller utility bill for low-income families, reducing their cost of living without compromising the access to lighting.

It is possible to link Ilumex and CUIDEMOS not only because of the nature of both programs, residential savings of energy through energy-efficient technologies for lighting and that it was a project making an investment to get in exchange earnings on certified emissions reductions. When analyzing the PDD of CUIDEMOS it is noticeable that many of the main assumptions of CUIDEMOS are based on the project Ilumex, like the energy consumption in the domestic sector data (i.e. 25% of the energy consumed in an average household is spent in lighting). Furthermore, the priority issues of Mexico regarding its energy profile are still the same: to reduce electricity consumption in peak hours, to avoid further investment on installation of more capacity, to downsize the amount of subsidies in electricity and to diversify the energy sources while achieving a cleaner profile.

Furthermore, Ilumex was a Joint Implementation (JI) project sanctioned by the UNFCCC. It was also a pioneering project that enabled the creation of institutional frameworks between the Mexican Ministries and actors in the international arena that were not present before (Birner & Martinot, 2005). These new governmental configurations enhanced the inter-ministerial interaction, permitted cooperation between state and private actors (national and foreign), new relationships with international bodies like the World Bank and other states like Norway. The outcome was the institutionalization of climate change related inter-ministerial cooperation like the COMEGEI, which gave the basis to the CICC, facilitating political support for the project.

At the political level the CDM CUIDEMOS met a very positive environment for projects of this nature. For example, Odon de Buen former director of the CONAE (Commission for energy saving) was involved in the whole process of Ilumex, he even authored a chapter about Ilumex in the book issued by the Ministry of Ecology about Mexico's vision on Climate Change. He was also presiding the CICC, the DNA that signed the approval letter for the project to be viable. Furthermore, the Mexican government also saw an opportunity to pioneer again in energy efficiency in the domestic sector with large-scale projects for emission mitigation. This could be used not only internally as political tool, but to show face in the 2010 COP to take place in Cancun.

For the implementation of the CDM CUIDEMOS, the project developers used the technical capabilities of the state-owned utility. The CFE is technically capable to conduct surveys to estimate carbon reductions accurately since the first emissions census in the 1990s and experienced in similar projects like the process in Ilumex. The emphasis in energy efficiency institutionalized in independent governmental bodies like the CONUEE⁵⁰, gave to the project developers access to experienced and qualified technicians in taking the punctual measurements required by the methodologies to define the base line scenario for evaluating the carbon reductions and calculate the carbon credits that CUIDEMOS would produce. These methods were tested during the project cycle of Ilumex. Additionally, the technology did not need to be introduced in the market. The utility's promotion of energy efficient domestic devices through FIDE and the previous awareness campaigns reduced the complexities that a project like CUIDEMOS normally would face if there was no previous experience.

⁵⁰ It was know as CONAE when ILUMEX took place.

7.2 The epistemic community around CDM

Climate Change policy-making presents uncanny challenges, with high political stakes to meet current needs like poverty alleviation, while aiming to sustain the future generation's access to vital resources. These sorts of challenges, full of complexities and uncertainties, put political actors in an uncomfortable position.

There is a diverse level of action that is involved in the mitigation of climate change. While the problem is global the implementation of measures is done at the national or local level. That is why a CDM is a very complex project to uptake. The process of registering a CDM project is highly bureaucratic and requires patience and endurance from the side of the project developers in waiting for the CDM Executive board to respond. It involves highly technical methodologies, like calculating the base-line emission scenario upon which reductions are accounted and certified. In large-scale projects like a hydroelectric power plant, it can imply mobilization of entire communities and destruction of habitats. There are also international negotiations between actors at different sectors and at different levels, from the people who are hosting the project to the high spheres of UN bureaucracy.

In order to ameliorate this situation the political actors and other decision makers consult experts on the field, to get a grasp of reality so that they can manage and act accordingly. However, when an expert offers advice he inflows his or her worldviews, beliefs, discourse and language, he or she largely influences the debate and the decision makers view about a given issue. In the case of CDM (and CUIDEMOS) these experts exercise influence in the vacuum of authority left by the complexity of the climate change science, the uncertainty of a post-Kyoto future and also at the micro-level activity of the everyday operation of CDM (Friberg 2007). Their specific knowledge and expertise in highly technical scientific methodologies and in the CDM project-cycle is socially recognized as key for the success of a CDM project and even necessary. The social recognition

of their knowledge grants them authoritative claim about issues related to CDM and climate change policy.

When a group of experts is recognized as the *owners of knowledge*, they can dominate and impose their views about a certain issue. I argue this group of experts around CDM conform an epistemic community. They can be identified as a thought community and a knowledge-based network socially recognized for the knowledge they own.

7.2.1 Identifying the members of the epistemic community around CDM

Epistemic communities are sometimes indiscernible institutions or complexes of people. They can be identified, as Haas (1992: 3) argues, as a network of professional characterized by shared causal beliefs and the use of science as a cultural standard and method to test and proof their knowledge. This conceptualization is useful in pointing out some actors having a role and a stake in some aspects of the CDM CUIDEMOS. However, due to the characteristics of CDM and climate change politics, such conceptualization will leave out of the equation actors that had a definitive role in the design, implementation and success of the CUIDEMOS.

Having that in mind, Antoniades' (2003) broader conceptualization of epistemic communities helps to point out the actors who can be considered as members of it. Within the epistemic community around CDM there are some members who have an advanced scientific knowledge, so their advice is heard and can influence the decision making process. There are also other members that do not have a particular method as science to base and test their advice on, but still their recommendations influence the debate and the decision-making process in climate change politics and CDM. In this case what distinguishes a member of the epistemic community is not science per se or the method to produce, test and proof knowledge on which the members of an epistemic community base their advice. The main characteristic is that the knowledge owned by that member of

an epistemic community, regardless of the type of knowledge, is socially recognized as valid for those asking for advice. Thus, the epistemic community around CDM does not only work as a network of professionals who can offer scientific advice of one sort, but as a thought community whose members can use more than a unitary science as a source of knowledge or unique methodology to base and test that knowledge on.

Moreover, Antoniadou's conceptualization is more accurate in the description of the dynamic of CDM politics. In his conceptualization what glues the epistemic community together is not only science (method) to produce, test and proof knowledge; it is the common enterprise (purpose) to establish their worldviews about an issue as hegemonic. This conceptualization portrays the members of the epistemic community around CDM as active agents of change, involved in the common enterprise (purpose) to establish their worldviews about technological fixes and flexible financial mechanisms of climate change mitigation. They are constantly seeking to translate their beliefs, worldviews and intersubjective knowledge about climate change and CDM into social discourse and social practice, because the subsistence of the community depends profoundly on achieving this enterprise.

7.2.2 Indiscernible institutions or complexes of people with a shared and common enterprise

In Mexico, the more discernible members of the epistemic community around CDM conform institutionalized bodies within the government. That is the case of the two key governmental institutions involved in CUIDEMOS the CICC and the CONUEE. Both the CONUEE (the Commission in charge of energy efficiency strategy in the country) and the CICC (the Inter-Ministerial commission in charge of climate change policy) have their own Consultative Bodies that steer and assess the performance of each of the Commissions. The Consultative Bodies were established by presidential decree and constitute advising bodies of permanent nature.

The Consultative Body of the CICC is a good example of an epistemic community member in Mexico in the issue-area of climate change and CDM. 23 specialists from academia, civil society and private actors form the CICC Consultative Body, each appointed for a term of four years. Dr. Mario Molina, a Nobel Prize Awardee, is at the head of CICC's Consultative Body in charge of steering climate change policy and the commission in charge of the letter of approval so a CDM can be carried on. Dr. Molina, (and the research center he presides) is an influential member of the epistemic community around CDM. He gives direct advice to the president as he has a direct communication channel to the Executive. The research institute named after him carries on a great amount of climate change research to inform policy-making, participating largely in the publication of policy plans like the ENACC or the PECC. Moreover, the Mario Molina Institute altogether with the Bancomext (the national development bank) decides on which projects should be provided with funding and grants from the Mexican Carbon Fund. It was through this funding mechanism that Cool Nrg received the funding to begin with the CDM CUIDEMOS.

In words of the Mr. Pedraza, the head of CONUEE's Consultative Body, these groups of experts are key in defining policy in Mexico towards "a more rational and efficient use of the energy, and a crucial part of the sustainable development agenda" (SEMARNAT 2010). The Consultative Bodies that advice the commissions are formed by scientists from private institutions and the national research council. There are also veteran public servants with expertise in the field. All of them have, to a certain extent, power to decide and steer policy and action of both commissions largely involved in climate change policy. This situation makes the limits of policy makers unclear. The same person who heads the CONUEE or CICC heads the Consultative Bodies binding by law the members of the epistemic community with actual political power.

The Consultative Bodies of the CONUEE and the CICC are easy to distinguish as members of the epistemic community around CDM. They have been established to offer advice and steer climate change / energy efficiency policy by

presidential decreed. In addition, the members have socially recognizable credentials as either scientists or highly ranked experts accredit their advice as valid. For example, Dr. Molina is a Nobel Prize awardee in chemistry for his research on the Ozone layer depletion; Carlos Gay is the director of UNAM's atmospheric research institute and Dr. Kessel is a veteran public servant who has been part of the main Mexican energy bodies like the CFE and PEMEX at high managerial positions.

In the epistemic community around CDM not all members have this type of credentials, as scientific knowledge should not be considered a pre-requisite to be considered a member of an epistemic community. Instead, it is better to approach epistemic communities as glued in a thought community sharing a purpose (Antoniades 2003) of making their views hegemonic, rather than only the method (i.e. science) to base and test their knowledge (Haas 1992). That is the case of private actors, that have an authoritative claim in the operation of CDM, because the advice these actors is socially recognized as valid. The social recognition can be based on the belief that private actors have a higher efficiency and efficacy when involved in such projects, or that they know the pathways of the bureaucratic process of CDM.

All my interviewees, experts who can be considered members of the epistemic community around CDM, claimed being active in international forums, meeting with peers from other parts of the world and also influencing national decision makers by suggesting or giving advice. Mr. Alcaide, an expert in energy efficiency from FIDE and a university professor, has travelled several times to Central-America to hold presentations about energy efficiency policy developments in Mexico. He claims that energy efficiency policy is a landmark in Mexico and many countries wish to follow that path. Mr. Hernández, from the CDM Gold Standard certification, claimed to be committed to increase participation of CDM developers so they opt to certificate their emission reductions with the Gold Standard. He also told me about his close relationship with the DNA and head of the CICC Antonio Urriaga, with whom he exchanges

his experience and whom he offers advice. Furthermore, the CDM gold standard has designed a program for establishing a formal relationship between Gold Standard and the DNA for evaluating projects in terms of sustainable development gains. In addition, Andrés Rivera the country manager of Cool Nrg has participated in conventions in Mexico and other international forums, like a forum about CDM organized by the Inter-American Bank. The project CUIDEMOS has been proclaimed as best-practice model and Andrés Rivera has been holding presentations about programmatic CDMs and CUIDEMOS. Moreover, he mentioned during the interview that the media campaign arranged by Cool Nrg to promote the exchange tried to make the project look like a social movement. By using celebrity spokesmen they tried to send the message that if you don't change your bulbs you are missing out on something really important and not taking care of the environment.

Other members on the fringe of the epistemic community around CDM are not as discernible as the ones mentioned above. It is possible to identify them as members because of the common enterprise to influence policy using the power granted by social recognition. These experts meet and exchange ideas, travel to international venues or have informal meetings, where they transmit their knowledge about an issue and integrate the views of the international community into their knowledge. These members can influence the debate and act in constellation to further their views.

It is possible to see that the epistemic community around CDM is not a “single, coherent, knowledge-base community, sharing normative and principled beliefs and a common vision for the future” (Antoniades 2003: 36). The knowledge elite around CDM and climate change consists of other epistemic communities that have different ideas and beliefs about how to construct society and politics, sometimes these ideas are opposite and polarized. Epistemic communities and epistemes struggle with one another to define the ideas of which social structure consists (ibid.). The outcome of these competing ideas and struggles is the establishment of a specific social discourse with specific cognitive orders

forming cognitive frameworks. These are assumed in everyday social interactions, as facts and practices take meaning and are interpreted through these frameworks (ibid.).

The knowledge owned by the epistemic communities is introduced into its social context by affirming that the authoritative claim is only valid, because there are social structures that recognize it as such. Thus the epistemic community around CDM, like any other, is a product of this reality. The same discursive social practices and knowledge structures that the community tries to impose are what grant them social recognition of their cognitive authority to have a claim in CDM and climate change politics. The socially recognized authoritative claim of an epistemic community is translated into power when it is able to reproduce social reality. It brings about the community's social discourses and worldviews about the issue at stake, influencing the evolution or continuation of common sense (intersubjective understanding) of the issue.

7.2.3 The shared views of the epistemic community around CDM

The resulting discourse, the global environmental discourse⁵¹, proves the hegemony of its worldviews through the institutionalization of CDM. It is in this common epistemic common ground where the epistemic community around CDM appears. At the same time as the members share the discourse, worldviews and a language to conceptualize climate change and possible ways to tackle it, they try to transform the discourse to make it fit to their particular views.

As I have argued in previous chapters, the global environmental discourse has embedded the ideas that dictate a commonsense that technology is the solution to climate change, and that through technological innovation economy and ecology are compatible. This conceptualization has consequences on how states frame and prioritize environmental policy-making. In this discourse there are no

⁵¹ The historical roots and the main version of the discourse have been discussed in Chapter four.

thought choices that ought to be taken, because solutions to the climate change problems are designed as win-win scenarios. In that case none of the parties involved needs to compromise.

The current version of the global environmental discourse, represented by the CDM institutions, is the outcome of the struggle of diverting worldviews, beliefs, values and principles. In particular, CDM is a mechanism that was constructed aiming to create compatibility among economic interests and ecological goals of climate change mitigation. It attempts to steer development in poor countries to a greener path, emphasizing that the main driver for the political feasibility of environmental change is believed to be the continued economic development. Moreover, it implies a partnership between governments, moderate environmentalists and scientist to co-operate in the restructuring of the capitalistic economy (Dryzek, 2005). These partnerships are constructed on market perspectives and capitalistic thought, which prioritize values of economic growth over alternative values to tackle, in this case, climate change.

Nevertheless, CDM is not only about environmental protection through technological advancement. The market mechanism has been constituted with a two-fold goal: to reduce emissions in the most cost effective way while contributing to sustainable development in the country hosting the project or program. The first goal represents the institutionalization of the belief that technology development is the main remedy for environmental problems and that it is possible to detach environmental depletion from economic development and industrialization process. Likewise, it hints that global cooperation is needed to achieve the common good of a stable climate.

The second goal has implications that ample the discourse to the grounds of sustainable development, which has been raised to the status of ideal. Similarly to democracy, everybody seems to believe that sustainable development is desirable and or necessary (Dryzek 2005). Furthermore, sustainable development is attached to the idea of progress, a concept that is one of the most powerful

notions in the modern world (ibid: 158). As it is set as an ideal all efforts and actions that pursue the ideal of sustainable development (as it is the case with democracy) are considered as legitimate.

Sustainable development has embedded notions of social justice and responsibility that other technocratic discourses (i.e. ecological modernization) ignore or suppress. It implies that the rich countries should support the poorer countries to develop in a greener way through financial and technological transfers. This responsibility is based on the historical environmental debt for the emissions they produced during their own industrialization process. The discourse also intends a normative claim that poorer countries ought to develop in a greener way through global cooperation mechanism like CDM and through domestic policy and action. This is the principle of common but differentiated responsibilities.

CDM combines both the view of ecological modernization and sustainable development to try to demonstrate the compatibility between economics and ecological protection and emphasizing that the political feasibility of environmental climate change mitigations is further economic gains. With CDM it is profitable to mitigate climate change, as the CDM developer is supposed to only earn money from the CERs credited and sold on the carbon market. From this discourse perspective, CDM bring about a new 'template' for thinking about the problems, their solutions, and which of them should be more urgently addressed. Technocratic rationality is the preferred method of conceptualizing the issues, and methodological approaches from economics like cost-benefit assessment and statistical analysis are the preferred tools to frame the climate change issue and wage the alternatives of action. Hence, positive science is very important, as the discourse bases many of its claims on observations from environmental science, economics and engineering. There are knowledge structures built up through time that support these claims and make them socially recognized as valid.

Nevertheless, sustainable development has different meanings depending on the actor who is adhering to the discourse. Hence, the scrutiny of the usages and interpretations of sustainable development should be based on what they can mean in practice, because “(...) how attention is focused, what implicit assumptions are cultivated, which hopes are entertained and what agents are privileged depend on the way sustainability is framed” (Sachs 2005).

The global environmental discourse (and the epistemic community who adheres to it) approaches sustainable development and climate change in general from a market perspective. The companies buying CERs in the Netherlands, the company implementing the project and the Consultative Bodies in Mexico, among other members, all have shared beliefs on economics and technology, common perspectives and discourses about sustainable development that they want to make hegemonic.

Friberg (2007) describes the ideas of an epistemic community around CDM:

“(Members of the epistemic community around CDM)... share a common belief that climate change is a problem that needs to be addressed, a belief that reduced GHG emission in one country can be quantified and allow more emissions in another country through a regulated process such as CDM. Market based mechanisms are a valid approach if done in accordance to the developed methods to address the problem and share a common enterprise in the successful development of a global market where certified emissions reductions can be freely traded” (ibid: 15).

It is possible to see this message in the same way as some of the actors directly involved and members of the epistemic community around CDM referring to their goals and reasons to take part in CUIDEMOS. For example: Eneco Energy Trade⁵² when interviewed about CUIDEMOS said through their representatives that their decision to participate in the CDM CUIDEMOS is a promising instrument for fighting climate change. Meanwhile Philips is supporting this

⁵² Guido Dubbeld, Managing Director at Eneco Energy Trade.

project as a response to the global trends of the environmental challenge and the sustainability opportunity. The company has consistently called for a switch to energy efficient lighting bulbs, since it provides a win-win scenario to accelerate sustainable development and adds to the difference in climate change we all can make with a simple switch⁵³. The manager of⁵⁴ ING Wholesale Banking was delighted to represent the first bank to fund a project under the United Nations' programmatic CDM, because social and environmental responsibility is one of their core business principles (Philips Electronics NV 2009).

The Mexican political actors also participate in the recreation of the narrative. The President of Mexico, Felipe Calderón, reproduced the same narrative during the press conference to present the follow-up project of CUIDEMOS called Luz Sustentable. The win-win scenario, the technology fixes and economic development figured prominently in his speech. Notably, he also crudely described climate change and related the project of exchanging bulbs with CFLs as one of many actions Mexico is taking to tackle climate change.

7.2.4 Influence of the epistemic community around CDM

To be recognized as the owner of knowledge allows the epistemic community to dominate and impose a certain reality. The social recognition of the knowledge they own is translated into power to reproduce social reality, bringing about the community's social discourses and worldviews about the issue at stake. Thus, the members of the community can influence the evolution of the commonsense (intersubjective understanding) of the issue.

The global environmental discourse is, as Luke (2005) observes, a discourse constructed by and for engineers and accountants. In the operation of CDM it is possible to see armies of auditors, bureaucrats and technicians exercising influence in the way climate change mitigation is conceptualized, and not only

⁵³ Mahesh Iyer, VP & General Manager for CFLi at Philips Lighting.

⁵⁴ Stephen Hibbert, Global Head of Emissions Products at ING Wholesale Banking.

scientists. The members of an epistemic community around CDM serve as important sources of social construction. It is within the hegemonic discourse about climate change that their power to influence emerges, as socially recognized experts or knowledge-owners. Moreover, their observations are regarded as epistemologically valid to describe climate change issues as they are based on positive science or correspond to reaching the ideal of achieving sustainable development from a market perspective.

Friberg's (2009) study about CDM in Brazil brings about the case on how by combining of business interests and aligned politicians, the DNA changed a decision on how the emissions in the Brazilian electricity grid were to be calculated (ibid: 414). The voices of the project developers were heard and supported by congress representatives and industry associations, using arguments of experts to bring about their case and present it as a legitimate view. Although a methodology to calculate the emissions from the electricity grid is a complex technical issue, there are clear political and financial implications. The use of expert advice allows introducing some actor's interest through the cognitive authority of the epistemic communities

There is similar interaction in the CDM CUIDEMOS for the establishment of the standards banning the sale of incandescent light bulbs by 2014. The norm 028-ENER-2010 not only enforces the transition from conventional bulbs to more efficient technology, but also set standards about saving lamps, specifically CFLs. These norms or standards are elaborated through cooperation between academia, companies and policy makers; an epistemic community that gives advice to the policy makers on how to set a standard. In this case, Philips participated in the establishment of the standards, gaining access to the rule setting process as expert advisor.

As mentioned before, decision makers also look for the epistemic communities to increase the legitimacy of their decisions. In the case of CUIDEMOS, the Executive, through its Ministries, can be seen approaching members of the CDM

epistemic community to increase the legitimacy of their decisions. The Consultative Bodies are headed by highly respected academics like Dr. Gay and Dr. Molina who serve as epistemic authorities to legitimize the policy decisions taken at the executive level.

7.2.5 Influence at the cognitive level

The centrality in the study of discourses in politics is the study of the power relations enabled by its practice. Epistemic communities actively influence the way constitutive rules and fundamentals are framed. They do so according to their own shared values, causal beliefs and discursive practices. In the case of CDM, the rules and norms are based on the social reality constructed within the accepted beliefs and ideals of the global environmental discourse. In both cases described above, it is possible to see how experts influence the way states took actions regarding climate change policies.

At the cognitive level, the influence of the epistemic community around CDM is the power to produce and reproduce social reality. The practice of the global environmental discourse permits the thought community to have an upper hand in the construction of climate change politics. Epistemic community members around CDM influence the global agenda of international organisms like the UNFCCC and the CDM Executive Board. In CUIDEMOS, for example, Cool Nrg managed to impose a new methodology to conduct CDM and calculate emission reductions caused by a project.

Cool Nrg issued and got accepted a new methodology with which they influenced the global structure of CDM changing the rules and how projects are approached. The programmatic approach is constructed to reduce possibility of failure, because they are less risky for both buyers and sellers. The programmatic CDM methodology is clearly constructed with a market perspective that minimizes risk and increases potential profits. It ensures the success of the project, because if one project activity fails the project can still continue with other activities. Likewise, if there are new additional activities, these can be

added to the PoA, and the project developer can register the emission reductions and get CERs for them as well. Through the follow-up project of CUIDEMOS (Luz Sustentable) Cool Nrg uses the possibility to add new activities to try to get credited for additional emission reduction activities.

CUIDEMOS was a first of a kind project and it was supported by the CDM structure because they follow the ideal and guidelines of the market approach for sustainable development, the hegemonic perspective. As a member of the CDM Executive Board mentioned during the CDM Breakfast at SN Power, in programmatic CDM the sustainability gains are more evident. Furthermore, even that CDM methodology is considered a highly technical issue; there are political implications in its implementation, like in the case of the Brazilian electricity grid.

7.2.6 Influence at the operational level

At the domestic level, there are two consultative bodies in Mexico, mandated by law, involved in climate change policy. These bodies at a time approved and supported by the CDM CUIDEMOS. As an epistemic community around the project, the Consultative Bodies reproduce social reality according to the knowledge they own, forming conceptual frameworks on how to tackle the issue of climate change and influencing the way states interpret their environments and define their interests. Their cognitive authority on the issues around CDM and climate change permits them influence in the creation, operation and implementation of Mexican climate change policy. The ideas and visions of the Consultative Body are integrated in the policy process, imposing a particular discourse and worldviews about how to tackle energy efficiency, new energy, and broader climate change mitigation goals.

The influence at the cognitive level is to a great extent the power of the members of the epistemic community to define social reality and discursive practice. As said before, these ideas and visions shape individual and group understanding of the issue. However, there is a second level of influence of the epistemic

communities at the operation level. The influence of the epistemic community at the operational level happens in a reality, where members of the epistemic community around CDM “struggle and cease to exist in relation with the specific policy issue or problem” (Antoniades 2003: 36). At the operational level, members of the epistemic community around CDM have *language power* (Antoniades 2003).

This language power permits the members to further constrain and construct the conceptual framework in which the policy process is taking place, influencing the collective understandings, the identities, the wants and needs of the decision makers. Furthermore, the use of a certain language means power to depict reality and functions as a catalyst of structural change or continuity (ibid). Thus, members of the epistemic community around CDM can influence the way a policy or project are conceived and operated, define the roles of the different actors, influence the way the situation is defined, what is possible or impossible, acceptable and unacceptable (Antoniades 2003: 36-37). Language for the epistemic communities “not only enables knowledge, but is knowledge of world politics” (ibid: 37). The discourse as well as the cognitive authority of the members of the epistemic community around CDM is reinforced by the use of a particular language. The information is communicated in economic technological language, quantifying the issues and reducing it to statistical description to facilitate its management. This language is also technical, full of acronyms and specific terms to CDM that can only be learned by being involved in the everyday practice of CDM.

To facilitate the analysis of the influence of epistemic communities, Antoniades (2003) suggests looking at the members of the community having a direct and indirect agency in the policy or project. The members who have positions as representatives of governments, international organizations or are the decision makers themselves can influence the policy or project with their ideas, beliefs or worldviews directly through their political power.

In the case of Mexico, climate experts have been delegated with political power through the form of the Consultative Body, from both the CICC and CONUEE. From their position as decision makers, representatives of the government and/or international organizations like the COP or the CDM Executive Board and members of the epistemic community around CDM can influence Mexican climate politics directly. It is the CDM Executive Board that decides the approval of projects and the methodologies to measure emission reductions, as it is the body in charge of granting emission reduction certificates. The COP and the CDM Executive Board are international bodies that pressure host countries to establish and exercise standardized means of framing the issue of climate change mitigation, while steering towards uniformity in methodologies with globally agreed rules. Furthermore, there are nation states pushing forward their interests through UN forums, where there is a clear authority fully accountable in the form of the Conference of the Parties (COP) of the Kyoto Protocol.

In the examples above it is provided that the members of the epistemic community around CDM influence the operation of CDM CUIDEMOS and climate policy directly. From their position as representatives of governments, international organizations and as decision makers the members of the epistemic community influence directly the conceptualization of CDM and climate change. Their power depends on the position they have and the level of influence (Antoniades 2003: 31). Sometimes, due to their epistemic authority the members become political leaders, a fact that makes the case to study epistemic communities as agents of change more evident (i.e. the Consultative Bodies of the CICC and CONUEE).

However, the members of the community can also influence indirectly from their positions as advisors or sources of information, auditors and certifiers. From those positions they can decisively influence the decision makers in the formation of the agenda, “adding new issues or by changing the way in which existing issues are approached or conceptualized” (Antoniades 2003: 33). These members of the epistemic community around CDM influence the social reality of

climate change by indirectly pointing out the interests for decision makers or by illuminating the salient dimension of a certain issue so the politicians can deduce their interests.

The CDM operation at the micro-level also depends on a constellation of actors with an agenda of their own. The COP also exercises indirect influence, because it is during the conference of the parties where the negotiations for changes or improvements in the CDM take place. Furthermore, the private sector (i.e. project developers and verification agents) that operates in different markets, pressures the host country to establish benchmarks and norms of conducts (Newell, 2009). Other key actors such as the World Bank exercise a mode of power when creating markets and the capacity building efforts that function as well as authority mechanisms. In the CDM CUIDEMOS one can observe these power dynamics developing during the project cycle. Likewise, there is the UN and its family institutions that provide a framework and enable interaction and negotiation between states, meanwhile pushing the agenda of global environmental protection.

It is the private actors who are implementing the projects in the field, validating and certifying emission reductions. These private certifiers, project developers and consultants interact with governmental actors and cooperate to make projects successful. Other non-state national or global interest groups and NGOs can also influence the debate by inflowing their views. Finally, there are the local communities that host the CDM projects, of which the interests are not always aligned to those of their own governments and whose livelihoods have many times been deterred by CDM projects (i.e. the building of a large hydropower plant that requires rural communities to be displaced).

The members of the epistemic community around CDM influence indirectly both the policy process and the operation of CUIDEMOS by getting the upper hand in the formation of the agenda. By acting as advisors or sources of information members of the epistemic community can decisively influence agents' policy and interests (Antoniades 2003: 32-33). Thus, they can add new issues to the agenda,

and change the way in which existing issues are approached and conceptualized or defined.

The CDM Breakfasts organized by the Norwegian company SN Power was a good opportunity to have a glance on the fringe members of the epistemic community, even though none of them was involved in CUIDEMOS. These informal meetings gather main actors of the CDM industry, public servants from Norway involved in development aid and climate policy and even members of the CDM Executive Board. They exchange business cards, speak informally about their concerns regarding the uncertainty of a post-Kyoto agreement, best practices models, the behavior of the carbon market and venture opportunities.

There are undeniable differences between Norway and Mexico. For instance, Mexico is host of CDM projects, while Norway is a country in search of CERs to reach emission reduction goals investing in CDM in developing countries. However, it is possible to affirm that when members of the epistemic community around CDM meet their peers from another country, they leap these sorts of differences to meet in a common epistemic ground. In this space they speak the same language, have the same concerns about CDM projects and can offer each other advice and help.

Material capabilities and institutions are instrumental in the agency of the diverse members of the CDM epistemic community around CDM. The best example in the success of CUIDEMOS is perhaps The Gold Standard Certification. As a body member of the epistemic community around CDM it uses its institutional structure to integrate their views about how to achieve sustainable development in the agenda of CUIDEMOS. The Gold Standard attempts to overcome the deficits on civil society participation by requiring at least two stakeholder consultations to be open to the general public. The consultations are useful on giving voice to communities hosting CDM projects, whose interest are sometimes compromised by the implementation of the project. In the case of CUIDEMOS the urban population is so dispersed that it is difficult to present all

specific concerns at a time. However, the first stakeholder consultation allowed expressing the public concern regarding the mercury contained in the CFLs, a dangerous cancer-inducing substance. It also allowed environmental NGOs to demand more information about how the incandescent bulbs would be disposed and about how the recycling process would be handled for both the conventional bulbs and the CFLs. The latter was especially important, as there are no recycling facilities that can properly handle CFLs disposal, so they have to be sent to the US.

The Gold Standard, through a third party audit (DNV), takes into their deliverance procedure the public's concerns, before taking the decision of issuing gold standard certification for the CERs achieved by the CDM project. Thus, the Gold Standard induces the project developer to uptake measures to meet public concern and find suitable solutions to the specific issues. To meet gold standard requirements, Cool Nrg presented a plan for the recycling of the conventional bulbs and also about how the CFLs would be sent to suitable recycling facilities in the US. Furthermore, Cool Nrg makes sure that the CFLs had the proper security standards and also offers an instruction booklet to the beneficiaries of the exchange, explaining the correct handling of the mercury in case of accidentally breaking one of the CFLs. Iván Hernandez, told me that the NOM regulation was set by the standards establish during CUIDEMOS.

The difference between direct and indirect influence blur as experts are bestowed with actual political power to decide over a certain issue. The CICC and the CONUEE, with their respective Consultative Bodies, are examples on when policy makers are also members of the epistemic community. The Consultative Bodies are mandated by law and are directly involved in climate change policy and approved and supported the CDM CUIDEMOS.

The CICC, the inter-ministerial council in charge of issuing the letters of approval, is presided by Dr. Mario Molina, who has a close relationship with the president accompanying him during important events related to climate change

policy developments. The consultative body meets before important climate negotiations to give suggestion on the stance that Mexico should have vis-à-vis their counterparts. Likewise, the commission in charge of energy efficiency policy, the CONUEE, has to respond to a consultative body conformed by public servants and scientist members of the national research council. The consultative body helps to formulate the agenda, evaluate the outcome of implemented policy and offer feedback to the commission. The commission involved in energy efficiency policy and is responsible of the implementation of the follow-up project “Luz Sustentable”.

As Antoniades (2003: 36) explains:

“The two levels of influence of epistemic community should be conceptualized in concentric terms. The world views, values that are in competition at cognitive level inform the various struggles taking place at the operational level. These two levels overlap as members of the epistemic community participate both in the conceptualization at the cognitive level and operate in the everyday lifecycle (of the CDM project)”.

The status as experts grants that the members of the Consultative Body have political power to change the agenda or approve a project like CUIDEMOS. The Consultative Body assesses the performance of the CICC in relation to the current agenda and offers recommendations to widen the agenda with the intention to improve and strengthen climate action. The consultative body helps to formulate the agenda, evaluate the outcome of implemented policy and offer feedback to the commission.

8. Conclusion

The goal of this thesis was to find out why the CDM CUIDEMOS was a success in the larger national and international agenda of climate change mitigation. To answer these questions I have focused on the following variables: the organizational form in Mexico around the project and climate change policy, the design of the CDM project CUIDEMOS, the political will to make this project successful, and the role of the epistemic community around CDM in the production and reproduction of social reality and the everyday operation of the CDM CUIDEMOS. These variables should be seen as independent of each other but it should also be looked at how they can be connected. In the following section I present a recapitulation of the findings of this research.

8.1 Recapitulation of findings

Mexico is considered in many ways a frontrunner non-Annex nation in climate change policy. There are long-standing institutions with highly qualified personnel that offer a sound surrounding and organizational context to carry on a project like the CDM CUIDEMOS. These institutions formed by experienced public servants have carried on similar projects to the CDM CUIDEMOS, like ILUMEX.

The ILUMEX project was a Joint Implementation (JI) project, one of the cooperation mechanisms for climate change cooperation institutionalized in the UNFCCC. It also included the introduction of CFLs to reduce consumption of electricity through energy efficient domestic appliances components. Based largely on that experience the CDM project developer, Cool Nrg, designed the project with the idea to overcome the obstacle that ILUMEX missed to overcome: the acquisition of CFL technology by low-income urban households. Thus, Cool Nrg designed the CUIDEMOS as a free exchange of incandescent bulbs with saving lamps allowing the low-income urban households to benefit of this exchange.

It is important to not overlook those previous efforts, like ILUMEX, because they enabled the success of CUIDEMOS and facilitated the implementation of the CDM. Once CUIDEMOS was launched the population embraced the exchange, as they were well aware of the benefits of the technology, were acquainted with the lightning qualities of CFLs and knew about the achievable savings in the utility bill. It is from this socio-economic sector, on which a project involving CFL offers the greatest opportunities of energy savings. It is at this segment of society that electricity is highly subsidized. Furthermore, urban low-income population represents an important part of the Mexican population and saving energy at this sector means to save in subsidies and in the construction of more infrastructure capacity to meet the ever-growing demand of electricity.

Energy is a politically sensitive topic in Mexico. Any talk about foreign participation in the energy sector faces severe resistance. Even though Mexico has neoliberal governments that follow such doctrines of development and is eager to sign free trade agreements, the energy sector is not open to international intervention. This protectionism is an inheritance of former left-winged, populist and nationalist PRI presidencies. Likewise, Mexico inherited from these governments a political structure based on the figure of the president (presidentialism).

Mexico has a presidential system, in which the president has the power to impose and remove ministers. Furthermore, it is the Executive altogether with the different ministries who prepare the National Development Plan that establishes the strategic plan for the country and the ways to achieve them. For some years, climate change has been considered one of the priority issues regarding energy security, resource availability and prevention of catastrophes caused by extreme meteorological events.

The creation of the CICC, and inter-ministerial commission on climate change, institutionalized policymaking about climate change by presidential decree. One

of the characteristics of climate change policy-making is that this endeavor is carried on at the top level of the government. Policy plans and punctual decision making, like approving the CDM CUIDEMOS, lies within the capabilities of the Executive and his ministers.

Climate Change is a transnational complex problem full of uncertainties, with many salients and moral considerations regarding its ramifications and causes. In such complexity, the Mexican government, through bodies like the CICC, has looked for experts who can offer advice to ameliorate the uncertainties and get some handle on the reality or truth. However, in the process of translating the information allows the experts to influence the decision-maker's policy choices, introduce the expert's views about the issue and widely determine how it should be interpreted. Thus, when articulating the cause-effect relationship of complex problems, the experts influence the political actors by helping them identifying their interests, framing the issues for collective debate and offering policy recommendations setting up the agenda for negotiation.

I used the term epistemic community to conceptualize the influence of the experts as a variable in the success of the CDM CUIDEMOS. The epistemic community around CDM is a thought community formed by a socially recognized knowledge-based networks. As a thought community, it shares a common understanding or worldview about climate change and seeks to translate its beliefs into dominant social discourse and social practice. Originally, this conceptualization recognized as members only the experts with scientific credentials. However, the reality of climate change in CDM politics and decision-making, as it shown in this thesis, must include in the equation a wider range of actors like members of international organizations, representatives of governments, advisors, project developers, CDM advisors, accountants, bureaucrats etc.

In this case what distinguishes a member of the epistemic community is not science per se or the method to produce, test and proof knowledge on which the

members of an epistemic community base their advice. The main characteristic is that the knowledge owned by that member of an epistemic community, regardless of the type of knowledge, is socially recognized as valid for those seeking for advice. Thus, the epistemic community around CDM work not only as a network of professionals who can offer scientific advice of one sort, but as a thought community whose members can use more than a unitary science as a source of knowledge or unique methodology to base and test that knowledge.

Furthermore, the epistemic community around CDM is not a unitary, easily identifiable, knowledge base community, which shares normative visions and ideals for the construction of the future. It is rather formed by actors with an epistemic authority who can have different ideas and beliefs about how to construct society and politics. These ideas can be opposite and the beliefs polarized. Thus, the knowledge owners and epistemes struggle with one another to define the ideas of which social structure consists (Antoniades 2003). The result of the struggles is the global environmental discourse with its specific cognitive orders and frameworks. These are assumed in the everyday interaction of politics as a common sense, from which the actions take meaning and are interpreted.

The social recognition of the epistemic authority of the member of the thought community is not granted by accident. It has been constructed under the hegemonic paradigms of scientific rationality, the technocratization of politics and throughout the historical process of the modernization of society. Thus, the epistemic community around CDM is a product of the reality it inhabits. The same discursive and social practices and knowledge structures that the community tries to impose are what grant them social recognition of their cognitive authority to have a claim in CDM and climate change politics.

CDM itself is the epitome of the prevailing discourse about climate change, the global environmental discourse. CDM combines both the view of ecological modernization and sustainable development to try to demonstrate the

compatibility between economics and ecological protection. It emphasizes that the political feasibility of environmental climate change mitigations is achievable through further economic gains. As it is exemplified in CDM, the discourse brings about a new 'template' for thinking about the problems, their solutions, and which of them should be more urgently addressed. Technocratic rationality is the preferred method of conceptualizing the issues, and methodological approaches from economics like cost-benefit assessment and statistical analysis are the preferred tools to frame the climate change issue and wage the alternatives of action.

Furthermore, for the epistemic community around CDM climate change is a manageable problem that can (and for what it matters needs to) be solved through international cooperation. Emissions of GHG reduced in a given country can be quantified, through methodologies accepted by an organism of global governance like the UNFCCC, and allow more emissions in other countries. Thus, these emission reductions can be certified and become marketable commodities to be bought and sold in a global market.

Nevertheless, the ideals of the global environmental discourse, to which the epistemic community around CDM is adhered to, are not only about technological solutions to achieve the mitigation of climate change. The lynchpin of the discourse is sustainable development, elevated to the ranks of ideal. Sustainable development has embedded notions of social justice and responsibility that other technocratic ideas (i.e. ecological modernization) ignore or suppress. However, the concept has a wide diversity of interpretations and usages. In order to really see what it conveys it is necessary to see what it means in practice. For the thought community around CDM sustainable development is seen widely from a market perspective, meaning in practice to a great extent the continuation of economic growth.

The epistemic community around CDM influence policy making based on these shared worldviews, common beliefs and intersubjective understandings about

climate change and sustainable development. The community influence can be seen at two levels: cognitive and operational. At the cognitive level, the epistemic community has above all; the power to produce and reproduce social reality, shaping the conceptual framework of climate change policy and CDM. This allows the community to have an agency in the formation of constitutive rules and fundamentals of institutions and policies. At the operational level, the agency of the epistemic community around CDM is mainly based on language power.

Language for the epistemic communities around CDM is not only enabling knowledge, but is knowledge about the politics of CDM and climate change. Hence, through the use of the economic-scientific language, typical of the global environmental discourse, the community has power to depict reality. Likewise, the language functions as a catalyst of structural change or continuity. Thus, members of the epistemic community around CDM can influence the way a policy or project are conceived and operated, define the roles of the different actors, have an important influence on the forms and paths in which different situations are defined, what is possible or impossible, acceptable and unacceptable. Yet, these two levels of influence should not be seen as mutually exclusive. The discursive practices of the epistemic community around CDM at the cognitive level, including their worldviews, values and ideals, inform the dynamics of politics at the operational level. In the same way, the language used at the operational level reinforces the discourse and demonstrate the prevalence of the dominant market perspective about climate change mitigation in the operation of climate institutions and CDM.

According to the information presented in this research, I claim that the members of the epistemic community around CDM should be considered an independent variable in making of CDM CUIDEMOS a successful project. The diverse members of the *thought community* have shared technocratic perspectives on how to solve climate change through market orientated mechanisms while proposing social and political structures that propitiate appropriate conditions for

their resulting version of what should be sustainable development. These views belong to the prevailing global environmental discourse.

In Mexico the epistemic community around CDM has had a broad influence at the cognitive level of climate change policy and CDM itself, inflowing their views about how to go around with climate action and decisively framing the conceptualization of the policy process. This is reflected in the constitutive rules and norms like the Mexican “National Development Plan”, the laws about energy efficiency and the energy greening strategies for diversification. The institutionalization of the CICC and CONUEE, the main governmental commission intervening in CUIDEMOS, can be consider as well as evidence of the influence of thought communities. This is even clearer when one consider the Consultative Bodies of both commissions that have been bestowed with effective political power. Furthermore, at global scale the members of the epistemic community have influenced the CDM structure by introducing the CDM programmatic methodology. This methodology is widely based on their market perspective about climate change mitigation, reducing risk and potentiating economic profits by certified emission reductions.

The members of the epistemic community have a significant role in the daily operation of CDM, based mainly in language power. As said before this language is highly technical and economical. In a CDM like CUIDEMOS, there are armies of accountants, certifiers and consultants that use the typical language of the global environmental discourse to inform about the project and its expectations, as well as on developments in the implementation and assessment on the outcome of the project. Thus, from their positions as consultants, advisors, and certifiers, the members of the community can influence the agenda setting process. That was the case of the CDM Gold Standard, which introduced in the agenda of the CDM sustainability achievements other issues that were not considered initially in the design of the project, i.e. the recycling of the incandescent bulbs.

The CDM project was successful due to the material capabilities and institutions around CDM and climate change politics. The organizational form of elite decision in climate change policy allowed a swift decision making process in the energy sector, otherwise highly resistant to any kind of foreign intervention. The CDM CUIDEMOS success generated a wider political willingness by all those involved in this project because it was designed to become a win-win scenario. In that sense, the contention of my thesis set ground on that the described material capabilities and institutions are instrumental in the agency of the diverse members of the epistemic community around CDM. In different ways and at different levels, its members played a substantial influence in the construction of the Mexican climate change institutions. They compelled the introduction of new methodologies at the global structure of CDM. They even conveyed the agenda of CUIDEMOS introducing new goals. They imposed, or at least reinforced, the hegemony of the particular technocratic language and to depict according to their own views what sustainable development should be and how to approach it in both local and global scales.

To leave out of the equation the role of the thought community means to obviate the role of experts and expert knowledge in the making of political and social structures. It is to obviate the historical process upon which the members of the epistemic community have gained social recognition to have an authoritative claim in solving problems like climate change. It is also to take for granted and accept the truth system enabled by the global environmental discourse. This market-orientated discourse is upon which the epistemic community widely base their worldviews and ideals for climate change mitigation. To this point in 2012, 20 years after the conference in Rio, these worldviews, ideals, shared understandings have failed to offer a substantial response to climate change mitigation, other than increased production of GHG emissions, a higher pressure in the ecosystems and more social injustice. From any perspective, radical, moderate, capitalistic or not the current situation does not seem to fit to the definition of what is sustainable development: to meet the needs of the present without compromising the ability of future generations to meet their own needs.

8.2 Final Remarks

In this thesis I argue that the epistemic community around CDM had a crucial role in the success of the project CDM CUIDEMOS. Nevertheless, my intention since the beginning was not to challenge the success of the project, but to turn the causal arrows and look how the ideas within a dominant view about climate change mitigation constructed the identities, shape institutions, gave prevalence to certain interests, favored the epistemological approach (technocratic) and created the expectations of the project in the first place. I think this approach allowed me bypass the dichotomy of exploring only the actors or the structure.

In this study I have showed that while the actors are empowered by social and knowledge structures, they reinforce, create and transform the structure, as their hegemony is dependent on that. Discourses create power structures, shared understandings and a common language that determines how the global issue of climate change ought to be treated. That is why I guided my inquiries towards the study of the ideas within the global environmental discourse, specifically about the ideas of ecological modernization and sustainable development. To achieve that I searched for traces of the dominant discourse in policy plans, binding laws, climate change institutions (national and global), in the institutionalization of CDM. Likewise, I interviewed those regarded as owners of knowledge, members of the epistemic community around CDM and observed their interactions with their peers.

I believe that the first step to meaningful environmental change is questioning the reality we live in. Thus, we can challenge what we take for granted, scrutinize the status quo and understand that there are a certain type of values and beliefs upon which many of the institutions were and are still being constructed.

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Sincerely

Luis de Ita

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