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The Implementation of the Clean Development Mechanism in Mexico



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ABSTRACT

This study analyzes Mexico's commitments under the United Nations Framework Convention on Climate Change and the Kyoto Protocol, as well as the implementation of the Clean Development Mechanism in Mexico. In order to know Mexico's work and effort to implement the CDM, this project draws information from the Secretariat of the CDM and the Inter-secretarial Commission on Climate Change (ICCC), which is the Designated National Authority in Mexico. The purpose of analyzing the statistics provided by the two authorities is to observe trends that cause setbacks on the overall effectiveness of the CDM projects in Mexico, and how such setbacks affect Mexico's image on the international anti-climate change forum. The results use information on the number and types of CDM projects, comparison of various project designs; an interview with the expert on climate change in Mexico, Dr. Carlos Gay Garcia, and tables provided by the Secretariat of the CDM and the ICCC. The setbacks translate into poor production of certified emission reductions (CERs), lack of sectoral scope variety, low scale of sustainable development for most projects, and a rather short circle of participants willing to invest in CDM projects in Mexico. The proposals to broaden project-type variety, which seems to be the key in order to maximize the benefits of the CDM that Mexico receives, are creating fiscal incentives programs to attract other investors; and making the clean development mechanism analogous to a foreign investment business.

THEORETICAL MODEL

The main topic of this study is the clean development mechanism in the Kyoto Protocol, and the success of such mechanism in Mexico. To carry out the analysis of the implementation of such mechanism it was necessary to resort to various types of sources.

In the first section, the main sources were the international treaty texts of the United Nations Framework Convention on Climate Change and its Kyoto Protocol, as well as other scientific studies to obtain the general concepts from where the clean development mechanism derives and what the CDM implies.

Consequently, documents obtained from the Secretariat to the clean development mechanism, such as the CDM Reference Manual, annexes to the Kyoto Protocol, and information from the Designated National Authority were the central sources for the approval criteria and process of registration to the clean development mechanism.

With regard to the ratification process of international agreements in Mexico, its official Constitution and a thesis by the Supreme Court on the hierarchy of laws in the Mexican legislation were imperative in order to understand what hierarchy level the commitments under the Kyoto Protocol occupied.

Lastly, all statistics and information on the exemplary cases were obtained from documents published by the Secretariat of the CDM and the Inter-secretarial Commission on Climate Change.

METHODOLOGICAL FRAMEWORK

The interest on the subject of this study grows out of the continuous concern of global warming and its devastating potential consequences on the economy and social aspects, particularly on developing countries; and the activism Mexico implements against climate change under the provisions of the Kyoto Protocol. Another reason is questioning whether Mexico does in fact have a leading role in the anti-global warming effort.

The structure of this study starts by providing the general context under which the international community decided to jointly combat climate change; and immediately after describing the main international agreements on global warming, a detailed description on the clean development mechanism as an alternative for developing countries to contribute in the mitigation of climate change. The third section describes how an international agreement is ratified and becomes part of the Mexican legislation, as well as the adoption of the Kyoto Protocol and its position within Mexican legislation.

Subsequently, the analysis of CDM-specific data and two exemplary cases provide the reality of the CDM in Mexico and the ideal projects needed, in order to prove that the CDM projects implemented in Mexico do not yet constitute enough merit to claim that Mexico has a leading role on the international forum on climate change.

LIST OF ACRONYMS

AWMS- Animal waste management system

CAD- Compilation and accounting database

CDM- Clean development mechanism

CERs- Certified Emission Reductions

CO₂- Carbon dioxide

COMEGEI- (acronym in Spanish), Committte for Emission Reduction Projects and Capture of Greenhouse Gases

COP- Conference of the Parties,to the Convention

CRF- Common Repeating Format

DNA- Designated National Authority

DOE- Designated Operational Entity

EB- Executive Board

GEF- Global Environment Facility Fund

GHGs- Greenhouse gases

HFC-23- Hydrofluorocarbon (23)

NIR- National Inventory Report

ITL- International transaction log

KP- Kyoto Protocol (to the United Nations Framework Convention on Climate Change)

PDD- Project design document

UK- United Kingdom

UN- United Nations

UNFCCC- United Nations Framework Convention on Climate Change

To every single person I have met; to everyone who became an inspiration to me and my ways of thinking; to all of you who have believed in me and pushed me to keep going forward; to everyone who keeps me grounded just by being yourself; to the adoptive families I've created and to my own family; to my sisters; to every single international friend for showing me endless ways of seeing and living the world; to my mother and my brothers for standing by me, regardless. To you, Mother, I dedicate this.

Contents

ABSTRACT.....	ii
THEORETICAL MODEL.....	iii
METHODOLOGICAL FRAMEWORK.....	iv
LIST OF ACRONYMS.....	v
I. THE U.N. & CLIMATE CHANGE.....	7
A. The United Nations Framework Convention on Climate Change	8
B. The Kyoto Protocol to the UNFCCC.....	10
1. The Flexible Mechanisms in the Kyoto Protocol.....	11
2. Annex I and Annex II Countries.....	13
3. Non-Annex I Countries.....	14
C. The Clean Development Mechanism	15
1. Eligibility and Approval Criteria.....	17
2. Process of Registration and Certification	19
II. MEXICO'S PARTICIPATION AGAINST CLIMATE CHANGE.....	21
A. Mexico's Internal Ratification Procedure of International Agreements	23
B. The Integration of the Kyoto Protocol into the Mexican Legislation	24
1. The Inter-secretarial Commission on Climate Change	25
III. MEXICO'S CDM PROJECTS.....	26
A. Inter-Secretarial Commission on Climate Change Statistics	26
B. Secretariat of the CDM UNFCCC Statistics.....	36
C. Analysis of Statistics	41
IV. OUTSTANDING CASES OF CDM PROJECTS.....	46
A. Eurus Wind Farm in Mexico	46
B. Quimobásico HFC Recovery and Decomposition Project.....	48
C. Comparisons.....	50
V. CONCLUSION	53

I.THE U.N. & CLIMATE CHANGE

The recently growing concern for the degrading conditions of our environment and climate has caused changes in International Law and practically all other aspects of our lives. One cannot help be affected by the media and signs telling us how to save water, recycle, cut energy usage, or take any other sort of action that help our environment. The recent international environmental movement has strong basis for being so. The worsening of our natural environment's health is causing drastic changes that we can witness more so now than ever before. Recurrent record temperatures, flooding, tsunamis, droughts, massive winter storms, among other severe weather conditions, have been associated as results of nature's unbalance. One cannot pretend that these changes will not have consequences in our economy, health, and development as nations.

The United Nations (UN) is aware that the international community must take action in order to mitigate the sources causing havoc in our environment, and ameliorate the effects our actions are causing on the planet. Many of the environmental changes attribute to the levels of greenhouse gas (GHGs) emissions, deforestation, and careless usage of natural resources. Nonetheless, climate change and the environment have not reached a status of priority in the development plan of any country. Thus, the UN seemed compelled to take action with the help of International Law, and constructed international agreements addressing global warming. First came the creation of the United Nations Framework Convention on Climate Change (UNFCCC), to lay down the basis for a global commitment against practices that aggravate and accelerate climate change. However, the UNFCCC did not oblige its members to take serious action. Thus, the Kyoto Protocol was created, in order to create that legally binding effect that the UNFCCC treaty lacked.¹

The Kyoto Protocol offers three flexible mechanisms in which all group of countries can participate to reach the set goal on mitigation of GHGs emissions. The goal on anthropogenic emission reductions is to reach under 5 percent of the GHGs emissions from the year 1990.² The only mechanism that allows for non-Annex I countries to actively participate is the clean

¹ Thomas C. Heller & P, R. Shulka. Development and Climate: Engaging Developing Countries, in Beyond Kyoto: BEYOND KYOTO: ADVANCING THE INTERNATIONAL EFFORT AGAINST CLIMATE CHANGE. (The Pew Center, 2003).

² Kyoto Protocol to the United Nations Framework Convention on climate Change, Dec. 11, 1998. [Hereinafter, KP].

development mechanism (CDM). The focus of this work is to analyze the role of Mexico has taken in the creation and implementation of CDM project activities in its territory, and judge how effective the CDMs hosted in Mexico are. In order to arrive to concrete deductions on the implementation of the clean development mechanism, the first chapter addresses the creators of the CDM, the UNFCCC, and the Kyoto Protocol; followed by a general description on the clean development mechanism, and a general overview of the intricate process of CDM approval and registration. The chapter after, describes Mexico's process of adoption and ratification of international agreements, the level of importance these agreements take under Mexican legislation, and the compliance of the Kyoto Protocol with the creation of the Designated national Authority in Mexico. Last is the analysis of the current CDM project activities in Mexico, and their deficiencies, as a whole, that leads to setbacks on the potential role Mexico could play as a leading actor in the anti-climate change movement.

A. The United Nations Framework Convention on Climate Change

In 1972, the United Nations held its first environment conference at Stockholm³. This event would mark the beginning of a new global movement that demands great attention to climate change: the recently rapid degradation of our climate system and the environment; as well as, the contribution of all States to recognize that human activity has certainly has an effect on climate change. All these aspects are concentrated in the recognition, by all countries, of the principle in International Environmental Law of *common but differentiated responsibility*.⁴ The first real attempt at a multilateral climate-effort took place in 1992, at the Earth Summit in Rio de Janeiro; meeting in which all States present also agreed and became part of the United Nations Framework Convention on Climate Change⁵ (UNFCCC or Convention). The UNFCCC is an

³ A *Brief History on Climate Change*, BBC NEWS, February 2, 2010.

⁴ This principle 7 of the Rio Declaration states that although all countries contribute to different degrees to the global environmental degradation, more specifically climate change, all States do share the common responsibility to take action and implement ways to mitigate climate change. However, some states, the industrialized countries, have undoubtedly contributed more to this climate change, than the developing countries. Vito De Lucia (Lead Author); Richard Reibstein (Topic Editor). 2007. "Common but differentiated responsibility." In: *Encyclopedia of Earth*. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment). [First published in the *Encyclopedia of Earth* January 28, 2007; Last revised January 27, 2007; Retrieved April 29, 2010]<[http://www.eoearth.org/article/Common but differentiated responsibility](http://www.eoearth.org/article/Common_but_differentiated_responsibility)>

⁵ United Nations Framework Convention on Climate Change, Mar. 21, 1994.

international environmental treaty, ratified by 194 countries, to date⁶. The UNFCCC treaty refers to several other previous agreements and treaties on climate change or environmental degradation. However, the main purpose of the UNFCCC treaty was, and still is, to seek “stabilization of greenhouse gases concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate change.”⁷ The Convention is exactly what its name entails, a framework that requires further action on climate change.

The UNFCCC laid down the basic provisions and general rules by which all member Parties were to conduct future negotiations; “the UNFCCC establishes a broad foundation for multilateral action on climate change, one flexible enough to accommodate a wide variety of approaches.”⁸ The UNFCCC treaty called for member Parties to take action in their own territories, as well as, to assist and aid other countries that are not able to implement such GHGs mitigation measures, given their status as developing or least developed countries. The UNFCCC also went as far as to request in its content the creation of organizations, intergovernmental and international programs, and/or networks that would help assessing and conducting research with the goal of gathering data that went beyond the national territory of each member country.⁹ This request seems fair given that GHGs emissions do not concentrate and remain within a State’s boundaries.

Nevertheless, the UNFCCC was not a binding document, and the Convention itself anticipated this by allowing the creation of further annexes, protocols and/or any amendments necessary for the proper implementation of the goals of the UNFCCC. Articles 15-17 explain that any future changes made to the Convention shall be adopted at any Conference of the Parties, or COPs, held annually. The clear lack of enforcement of the UNFCCC led to the creation of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol) in 1998, six years later.¹⁰ It is worth mentioning that neither the UNFCCC nor the Kyoto Protocol allows reservations, meaning that, once any Party decides to adopt or ratify it, such Party must accept the document in its entirety.

⁶ *UNFCCC Structure*, (Feb. 2, 2010) <<http://coveringcopenhagen.com/negotiations-2/unfccc>>

⁷ UNFCCC, *supra* note, at art. 2.

⁸ Thomas C. Heller & P.R. Shulka, Development and Climate: Engaging Developing Countries, *in* Beyond Kyoto: BEYOND KYOTO: ADVANCING THE INTERNATIONAL EFFORT AGAINST CLIMATE CHANGE (The Pew Center, 2003).

⁹ Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dic. 11, 1998.

¹⁰ JOHN J. KIRTON & PETER L. HAJNAL, SUSTAINABILITY, CIVIL SOCIETY AND INTERNATIONAL GOVERNANCE, (2006).

B. The Kyoto Protocol to the UNFCCC

The Kyoto Protocol was created thanks to the flexibility the Convention allowed. The Kyoto Protocol represents the hard-law system¹¹ that helps reinforce the broad framework laid out by the Convention by providing limits to greenhouse gases¹² emissions; setting timeframes to meet GHGs reduction commitments; and presenting different mechanisms that allow the implementation of the Protocol. Another commitment under the Convention and the Protocol is that all countries must create national systems, and government agencies in charge of monitoring the atmospheric conditions, measuring each nation's amount of greenhouse gas emissions, and annually emit reports, or inventories, revealing such data.¹³ Each member Party should also submit an annual national communication containing a greenhouse gas inventory with all the relevant data and information required on the emissions of such party.¹⁴

The Protocol goes beyond the United Nations Framework Convention treaty in reaffirming, through legally binding obligations,¹⁵ the objective of stabilizing the concentrations of greenhouse gases in the atmosphere,¹⁶ and returning to the levels of gas emissions reached in 1990.¹⁷ However, in order for the Protocol to be operational it first needed at least 55 parties to ratify the Convention, including Annex-I Parties that accounted for at least 55 percent of the total of gas emissions for 1990 of all Annex-I Parties.¹⁸ Once met this criterion, the Protocol requires waiting ninety days before going into force. Although the adoption of the Kyoto Protocol was on December 11, 1997, almost six years after the agreement of the UNFCCC, it went into force on February 16 of 2005¹⁹ partly because of the U.S. rejection to ratify the Protocol, which the international community saw as a setback. Later, a commitment period was set, 2008-2012, with the goal to reduce gas emissions of Annex 1 countries, jointly, by 5 percent

¹¹ HELLER, *supra* note 5, at 3.

¹² The greenhouse gases contemplated in Annex A of the Kyoto Protocol are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydro-fluorocarbons (HFCs), per-fluorocarbons (PFCs), sulfur hexafluoride (SF₆).

¹³ KP, *supra* note 2, at art. 5, §1.

¹⁴ Kyoto Protocol Reference Manual, pg. 24, art 7, §2. [Hereinafter, KP Ref. Manual].

¹⁵ Moham Munasinghe & Rob Swart, PRIMER ON CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT 2, (2005)

¹⁶ KP, *supra* note at 2, art 2.

¹⁷ *Id.* at art 4, §2.

¹⁸ *Id.* at art. 25.

¹⁹ United Nations Framework Convention on Climate Change website, (Jan. 29, 2010) <http://unfccc.int/kyoto_protocol/items/2830.php> [Hereinafter, UNFCCC WEBSITE].

below their 1990 levels.²⁰ It is worth noting, that of the industrialized Parties to the Convention included in Annex 1, the United States of America accounts for nearly 25 percent of the global GHG emissions.²¹ Currently, there are 184 member Parties of the Convention that have also ratified the Kyoto Protocol. In theory, the Protocol provides sanctions for those member Parties that do not act in accordance with or fulfill the quantitative goals on emission reductions for the first commitment period settled in Annex B of the Protocol.²²

The Kyoto Protocol states in its Reference Manual,²³ that any non-compliance with the article 3, paragraph 1 commitment has specific consequences. The enforcement branch will deduct a quantity of the assigned amount from the Party in the subsequent commitment period equal to the amount by which the Party's Annex A emissions have exceeded its available assigned amount, multiplied by 1.3. The compilation and accounting database, (CAD), then keeps record on the deduction of the assigned amount; such information is transferred onto the international transaction log (ITL), which the Secretariat of the CDM administers. The ITL will notify the Party of its obligation to cancel the number of units equivalent to the deduction. The enforcement branch will also ask the non-complying party to prepare and submit a compliance action plan in which to explain the reason for non-compliance, and provide future actions developed in a timetable as to how the member Party is determined to meet its emission commitment in the next commitment period. Furthermore, the enforcement branch will suspend the Party's eligibility to transfer units to other parties through emissions trading in the subsequent commitment period.²⁴

1. The Flexible Mechanisms in the Kyoto Protocol

As mentioned before in this work, the Kyoto Protocol offers different international GHGs abatement mechanisms²⁵ that the member Parties can employ. They are; International Emissions

²⁰ KP, *supra* note 2, at art. 3.

²¹ KIRTON, *supra* note 10, at 345.

²² SEMARNAT, *ACCIONES DE MEXICO DE MITIGACION Y ADAPTACION ATEN EL CAMBIO CLIMATICO GLOBAL* (MEXICO'S ACTIONS ON MITIGATION AND ADAPTION ON CLIMATE CHANGE) 2, (2008).

²³ Pg. 38.

²⁴ KP Ref. Manual, *supra* note 14, at 39.

²⁵ MUNASINGHE, *supra* note 15, at 366.

Trading under article 17; Joint Implementation under article 6; and the Clean Development Mechanism under article 12. Mohan Munasinghe and Rob Swart give clear and concise definitions of the mechanisms in their work *Primer on Climate Change and Sustainable Development*; in order to provide a clearer idea of what the Kyoto Protocol suggests with each mechanism, below are the definitions of each mechanism.²⁶ However, for purposes of this paper the focus shall be on the Clean Development Mechanism, particularly those hosted by Mexico. These instruments grant flexibility to the Parties in choosing the method most convenient and least expensive to attain the goal-reductions fixed in the Protocol.

1. **International Emission Trading:** Also known as, Tradable Quota establishes a national emissions limit for each participating country and it requires each country to hold a quota equal to its actual emissions. Governments and possible legal entities are allowed to trade quotas. Emission trading under article 17 of the Kyoto Protocol is a tradable quota system based on assigned amounts calculated from the emissions reduction and limitation commitments listed in Annex B of the Protocol.
2. **Joint Implementation (JI):** Allows the government of, or entities from, a country with greenhouse gas emissions limit to contribute to the implementation of a project to reduce emissions, or enhance sinks, in another country with a national commitment and to receive emission reduction units equal to part, or all, of the emission reductions achieved. The emission reduction units can be used by the investor country or another Annex I party to help meet its national emissions limitation commitment. Article 6 of the Kyoto Protocol establishes Joint Implementation among other parties with emissions reduction and limitation commitments listed in Annex B of the Protocol.
3. **Clean development Mechanism (CDM):** Allows the government of, or entities from, a country with a greenhouse gas emissions limit to contribute to the implementation of a project to reduce emissions, or possibly enhance sinks, in a country with no national commitment and to receive certified emissions reductions equal to part, or all, of the emissions reductions achieved. Article 12 of the Kyoto Protocol establishes the Clean Development Mechanism to contribute to sustainable development of the host country and to help Annex I parties meet their emissions reduction and limitation commitments.

Furthermore, the Protocol foresees that implementation of these mechanisms²⁷ can be of danger to the development of each country, (particularly developing countries), its economic growth, and even the environmental adaption of some species; if the implementation process is done at a faster rate than what the environment can handle. On the contrary, if actions to mitigate greenhouse gas emissions are at a gradual pace there can be great advantages, for

²⁶ *Id.*

²⁷ As a side note, agreeing on these mechanisms took about four years of negotiation as the U.S. declined to ratify the Protocol while negotiations of the types of mechanisms were in progress.

example energy efficiency. As Munasinghe and Swart mention, “better energy efficiency leads to reduction of energy costs and dependence on fossil fuel energy, and as byproduct abates air pollution.”²⁸

The international mechanisms allow Annex-I countries to assist each other and non-Annex I countries with the idea that mutual cooperation in implementation can make the transition to climate-friendly technology less burdensome, and also cost-effective since reducing emissions becomes most efficient where it is cheapest- i.e. developing countries.²⁹ While the first two mechanisms mentioned in the box aim at cooperation among the same Annex I countries, the third mechanism, Clean Development Mechanism (CDM), focuses on Annex I countries helping non-Annex I countries-developing countries-that have ratified the Protocol in the international climate-effort.

2. Annex I and Annex II Countries

These countries carry the bigger load under the Protocol. In the UNFCCC Annex I, industrialized countries are urged to take the lead. Not only must they meet their individual and joint emission-reductions quota, but they must also provide the financial support, as well as environmental sound technology, to member developing countries. Annex I countries include the United Kingdom of Great Britain and Northern Ireland, Spain, the European Union, to name a few.

There are a number of reasons for encouraging Annex I countries to take the lead.

As was mentioned before, Annex I Parties are the most industrialized countries in the world, which causes them to emit greater amounts of greenhouse gases that contribute to climate change. Such countries are responsible for 62 percent of global emissions.³⁰ Nonetheless, developed countries count with the better financial and technological capabilities to respond to climate change; than developing countries do, making the former group more resilient to any possible adverse changes. Article 2 of the Protocol states that Annex I countries must also

²⁸ MUNASINGHE, *supra* note 15, at 298.

²⁹ *Id.* at 368; Personal interview with Carlos Gay Garcia, Dr. at the Atmospheric Sciences Center. UNAM. Mexico City. (Feb. 9, 2010)

³⁰ MUNASINGHE, *Supra* note 15, at 120.

promote sustainable development within each party's territory by implementing and elaborating policies and measures in accordance with its national circumstances. For example, promote sustainable forms of agriculture, encourage reforms aimed at reducing gas emissions, develop research, and spread awareness on climate change and renewable forms of energy, among others. Moreover, these countries are encouraged to cooperate among themselves to facilitate and enhance the effectiveness of their effort. Nonetheless, Annex I parties should bear in mind that while implementing these international mechanisms they should strive to minimize adverse effects on international trade; or negative social, environmental, and economic impact.³¹

Annex II countries is a group derived from Annex I countries that has agreed to provide financial support and environment-friendly technology to Non-Annex I countries; as it is stated in article 11 of the Protocol. However, Annex I countries consider it unfair that all responsibility to take action against climate change rests upon them. The compromise becomes heavier when certain Annex I countries are obligated to help developing countries partake in the mitigation of climate change, due to the latter's inability to afford such expensive technology and projects that do not affect the climate. It is specially this last mentioned commitment from Annex II countries towards non-Annex I countries that creates great frustration and skepticism upon the former to comply with the Kyoto Protocol. The Annex II group includes countries such as Canada, Japan, Germany, Greece, Spain, and Portugal, to name a few.

3. Non-Annex I Countries

This is the third group of countries part of the Kyoto Protocol. This group is made of developing countries and least developed countries that have ratified the Protocol. As mentioned before, these countries are guaranteed under the Protocol to receive aid from Annex II countries on grounds that implementation of environmentally sound technology is not the priority of countries in process of development; nor are they responsible for most of the gas emissions that have contributed to the rapid climate degradation. Moreover, the Protocol anticipates that such climate change abating mechanisms could have negative consequences in Non-Annex I countries' development process. So what are the responsibilities of these countries under the Protocol? Technically, they do not have many, if any at all. Whatever action any Non-Annex I

³¹ KP, *supra* note 2, art 2.

country takes to mitigate its own anthropogenic emissions is a voluntary action. The Non-Annex I group does not have any commitment to meet reduction-emission quotas, or financial duties towards other members, or any other goal to reach within the commitment period. Basically, Non-Annex I countries are in a comfort zone in which they are “guaranteed” to receive state-of-the-art and environmentally sound technology, as well as, other forms of financial aid from developed parties included in Annex II without having to do much. The UNFCCC lays it out clear and simple, “The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology.”³² With this previous statement, is easier to understand why Annex I and II countries consider the agreements in the Protocol unfair and disadvantageous because they must provide all means to mitigate climate change, when the greenhouse gas emissions are not a sole contribution from the industrialized countries.

In the future, the Convention anticipates that the binding inclusion of Non-Annex I countries will be necessary, since the developing countries will have reached a point in which they can no longer be considered as such, and their level of anthropogenic emissions shall compare to the most industrialized countries of today.³³ Examples of this group include Mexico, China, Brazil, the Republic of Korea, and Argentina, to name a few.

C. The Clean Development Mechanism

The clean development mechanism (CDM) is an option to achieving certified emissions reductions (CERs) credits for member Parties willing to invest in the creation of sustainable development projects on Non-Annex I territories.

Article 12 of the Kyoto Protocol defines and provides guidelines, regulations, and methods of approach to fulfill the purpose of the CDM. This mechanism has been operational since the beginning of 2006.³⁴ The main objective of the CDM is to, “Assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of

³² UNFCCC, *supra* note 5, at art 4. §2.

³³ Dr. Carlos Gay Garcia, *supra* note 29, at Feb 9, 2010.

³⁴ UNFCCC WEBSITE, *supra* note 19.

the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under article 3.”³⁵ In other words, the Clean Development Mechanism seeks to push climate-friendly technology and resource flows from industrialized member Parties to non-Annex I countries, with the incentive that part of, or all, certified emission reduction credits accrued can contribute towards the fulfillment of the “developed country’s emissions targets.”³⁶ It is important to keep in mind that the clean development mechanism is the only Kyoto mechanism in which Non-Annex I countries (developing member countries) can participate.³⁷

The types of CDMs project activities that the Protocol presents,³⁸ but they are not limited to include access to environmentally sound technologies, know-how practices, along with formulation of policies and programs and financial support to implement such climate-friendly technologies. Any CDM project can fall into any of these three categories: The small-scale projects, large-scale projects, and reforestation/forestation projects. Furthermore, there can be CDM projects specifically aimed at reducing emissions, or CDM projects that enhance removal through afforestation and reforestation. The projects specifically aimed at reducing anthropogenic emissions can receive certified emission reductions (CERs) credits. In addition, CDM projects that enhance removal of GHGs through afforestation and reforestation receive two other different types of credits, namely: temporary CERs (tCERs) and long-term CERs (lCERs). Each CER, regardless of the specific type, is equivalent to one kiloton of CO₂.³⁹

With regard to the financial support for the creation of CDM activities specified in the Convention and the Protocol, Annex II lists a number of most-industrialized countries whose duty and responsibility is to provide financial support and assistance to non-Annex I countries in their quest to mitigate greenhouse gas emissions. Annex II parties bear this burden because as the most industrialized countries, they are also responsible for the larger percentage of the greenhouse gas emissions in the world. Consequently, in light of the “common but differentiated

³⁵ KP, *supra* note 2, at art. 12.

³⁶ HELLER, *supra* note 1, at 4; Dr. Carlos Gay Garcia *supra* note 29, at Feb. 9, 2010.

³⁷ SEMARNAT, *supra* note 22, at 17.

³⁸ KP, *supra* note 2, at art 10. §2

³⁹ Dr. Carlos Gay Garcia, *supra* note 29, at Feb. 19, 2010.

responsibilities”⁴⁰ principle all countries must take part in climate-change adaptation activities. Therefore, several funds have been created with the purpose of helping those developing and least developed member Parties; one of them is the Global Environment Facility fund (GEF), which was created in 1992. During the Conference of the Parties 7 (COP7), the member Parties created three more funds. Some operate under the UNFCCC, such as the ‘least developed countries’ fund and a special climate fund; while under the Kyoto Protocol there is the ‘adaptation’ fund sponsored by the proceeds of CDM projects already effective.⁴¹ In order for a project to become effective, it must first go through a rigorous process of selection and approval, not only by the Designated National Authority within any given member country, but also the CDM Executive Board.

1. Eligibility and Approval Criteria

The CDM Executive Board (from here on, CDM EB or Executive Board), under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP), is the body that oversees all aspects and parts involved in the mechanism. The Executive Board is in charge of the rule-making and rule-enforcing roles that regulate all aspects of the CDM. The CDM EB’s decisions fall into three types. Decisions of an operational nature relating to the functioning of the regulatory body, decisions of a regulatory nature relating to the supervision of the CDM in implementing its modalities and procedures throughout the project activity cycle; or rulings relating to the observance of the modalities and procedures by the project participants and/or operational entities. On the other hand, the Designated National Authority is the body created in each host country to grant local approval for the projects⁴² created within each party’s territory. The eligibility to participate in any of the three mechanisms is made up of six specific criteria, mentioned below, derived from the

⁴⁰ WILLIAM R. SLOMANSON, FUNDAMENTAL PERSPECTIVE ON INTERNATIONAL LAW, 602. (2010). This principle states that developed countries acknowledge the responsibility they bear for placing the highest pressure on the global environment, and contributing more to climate change than any other country. The common but differentiated responsibilities principle does not exempt any country for contributing to climate change, rather, the principle suggests that all countries are responsible but those that most industrialized have developed technologies and lifestyles that damage the environment rapidly, at higher rates, and directly. Whereas underdeveloped and developing countries do not contribute to climate change in the same proportions as industrialized nations because they do not own the technology, and the lifestyles are often rural and agriculture-based.

⁴¹ MUNASINGHE, *supra* note 15, at 370-71.

⁴² Dr. Carlos Gay Garcia, *supra* note 29, at Feb. 9, 2010.

requirements under Article 5 and Article 7 from the Protocol.⁴³ However, these criteria apply to Annex-1 countries since these are the ones legally bound to comply with specific gas emission reductions. These criteria apply immediately after submission of the initial report, with the exception of criterion **(f)**, which applies “until the submission year after the Party first transferred or acquired Kyoto units.”⁴⁴

- (a)** The Party is a Party to the Kyoto Protocol;
- (b)** The Party’s initial assigned amount has been established and recorded in the CAD;
- (c)** The Party’s national system is in compliance with the requirements established under Article 5, paragraph 1;
- (d)** The Party’s national registry is in compliance with the requirements established under Article 7, paragraph 4;
- (e)** The Party has submitted its inventory for the most recent year, and this inventory meets the requirements established under Article 7, paragraph 1 and;
- (f)** The Party has submitted information on its assigned amount under Article 7, paragraph 1 (e.g. the SEF and related information), and has correctly accounted for additions to and subtractions from its assigned amount.

*Failure to meet criteria (c), (e), and (f) for a CDM prevents a party from retiring, (although any party can still acquire CERs from the CDM registry), CERs to be used for compliance with Article 3, paragraph 1 commitment [of the Protocol].

In addition, a party can fail to meet criterion **(e)** relating the greenhouse gas inventory whenever any of the following situations occur:⁴⁵

- (a)** The Party has not submitted an annual inventory, containing both the [common reporting format] CRF tables and the [national inventory report] NIR, within six weeks of the due date (15 April of the relevant year);
- (b)** The Party has omitted a key source category that accounts for 7 per cent or more of its annual Annex A emissions in the most recently reviewed year;
- (c)** The total adjustments applied to Annex A emissions in any given year of the commitment period amount to more than 7 per cent of total reported Annex A emissions;
- (d)** At any point during the commitment period, the sum of the total adjustments to Annex A emissions for all years, measured as a percentage of reported Annex A emissions for those years, exceeds

⁴³ KP Ref. Manual, *supra* note 14, at 40.

⁴⁴ *Id.*, at 41.

⁴⁵ *Id.*, at 42.

20 per cent; or
(e) An adjustment is applied in three consecutive years to an Annex A key source category that accounts for 2 per cent or more of the Party's Annex A emissions.

It is worth mentioning, that a late submission (more than six weeks after the due date) of any Party's inventory can also impinge on a Party's eligibility to partake in the Kyoto mechanisms.⁴⁶ Any Annex I country that chooses to participate in the Kyoto mechanisms will be considered eligible to do so 16 months after the submission of its initial report. This is done with the idea of granting time to the Compliance Committee to review the initial report within a period of 12 months maximum, and four more months for the enforcement branch to do expedited procedures to clear any questions of implementation regarding eligibility.⁴⁷

Non-Annex I countries are not held to any eligibility criteria because their purpose is clearly expressed under the Protocol; and, also, part or all of the emission reduction credits accumulated in any developing member country from any mechanism can be used by the projects' participants to meet its emission reduction quota.⁴⁸ However, any Annex I country can retire up to one percent of its base year (1990) emissions, times five, in tCERs and ICERs. Retirement refers to the internal transfer of units from a holding account in a national registry to the retirement account.⁴⁹ The process of registration is very complex, and it involves several steps, from approval all the way through the issuance of CERs. There are also several parties involved in the process; the next section gives a general overview of different steps in the process of registration.

2. Process of Registration and Certification

The clean development mechanism is the creation of a sustainable development project in developing countries. The idea of the CDM is to help industrialized countries meet their emissions reductions, while helping the less advantaged countries partake in the mitigation of global warming. Thus, the CDM must be a sustainable development project that benefits the host country in its social and economical development, in addition to cutting down greenhouse

⁴⁶ *Id.*, at 54.

⁴⁷ *Id.*, at 43.

⁴⁸ As a side note, there is no limit to the number of CERs that any Clean Development Mechanism can retire.

⁴⁹ KP Ref. Manual. *supra* note 14, at 87.

gas emissions. Therefore, the CDM must go through a rather convoluted registration process made up of eight different stages,⁵⁰ in order to assure that the project contributes with its two main purposes: cutting down anthropogenic emissions and helping non-Annex I countries implement environmentally sound technology and other environment-friendly measures. The first phase is the project design document (PDD), which is designed by the participants in the project. The PDD contains, in general, a description of the project, definition of the methodology to be used, a description of how the project will reduce anthropogenic emissions, duration of the project and crediting period, environmental impact, funding sources, and monitoring plan and methodology.

The participants turn in the PDD to the Designated National Authority (DNA), who hands out the letter of approval if the project fulfills the requirements. Then, the Designated Operational Entity (DOE) validates the project before the CDM Executive Board, only to confirm that the project meets the prerequisites. Once the DOE validates it, then the project is accepted and registered first by the DNA and later by the Executive Board. Once the Executive Board approves and registers the project, participants can execute it. Then while the implementation is in process, the participants must have already created a plan to monitor the project and report its effectiveness to the DOE. After the monitoring report has been submitted, the DOE verifies (verification process) that the report is congruent with its actual performance and the expected outcomes predicted in the project design. The DOE also determines that the calculation process to determine the number of CERs is well developed, as well as asserting the true number of CERs. If the report claims are true and the DOE determines the project works as expected in its project design document, then the Designated Operational Authority along with the CDM Executive Board, allow the certification, or issuance of certified emission reductions.

⁵⁰ National institute of Ecology, (April. 30, 2010) < http://cambio_climatico.ine.gob.mx,>

II. MEXICO'S PARTICIPATION AGAINST CLIMATE CHANGE

Mexico is a member Party to both the UNFCCC treaty and its Kyoto Protocol. Mexico signed the United Nations Framework Convention on Climate Change in 1992, and in 1993, the Senate ratified it. Four years later, Mexico adopted the Kyoto Protocol, but ratified it in 2000.⁵¹ These two agreements are now part of the national environmental Mexican legislation based on the provisions of article 133 of the Mexican Constitution, discussed later on this work.

In the Protocol, Mexico is listed as a developing country, listed in the non-Annex I group. In other words, Mexico's commitment under the Protocol to implement gas-emission reduction mechanisms depends mostly on the amount of financial assistance and provision of environmentally sound technology that Annex II countries are willing to grant. Nonetheless, Mexico has complied with its commitment to create national systems specifically aimed at supervising the greenhouse gases emitted, and creating national anthropogenic emissions inventories, as well as national annual communications agreed in the Kyoto Protocol. President Felipe Calderon presented the National Strategy on Climate Change on May 25 of 2007.⁵² In this National Strategy the Mexican President asked the Inter-secretarial Commission on Climate Change⁵³ (Mexico's National Designated Authority for CDMs) to create an instrument that engages all the government organs to comply with the goals and ways in which to mitigate climate change in Mexico. Thus, the Special Program on Climate Change 2008-2012 was created as an integral part of the National Development of 2007-2012.⁵⁴ The Inter-secretarial Commission along with the Mexican Committee for Projects on Gas Emission Reduction and GHGs Capture⁵⁵ are the principal authorities in charge of promoting, registering, and approving CDM projects, as well as, registering their emission reductions.⁵⁶ Additionally, other programs were created with financial support of the GEF fund or monetary grants from other countries

⁵¹ SEMARNAT, *supra* note 22, at 1.

⁵² *Id.*

⁵³ CICC, its acronym in Spanish.

⁵⁴ SEMARNAT, *National Strategy on Climate Change: Executive Summary*, (2007).

http://www.semarnat.gob.mx/queessesemarnat/politica_ambiental/cambioclimatico/Documents/enac/sintesis/sintesis ejecutiva/Executive%20Summary.pdf [Hereinafter, SEMARNAT NSCC].

⁵⁵ This is the work group created by the DNA in Mexico to oversee all CDM projects and programs in the Mexican territory.

⁵⁶ NIE, *supra* note 50.

with the purpose of carrying out scientific research on levels of greenhouse gas emissions, and any other atmospheric conditions stipulated as implementation requirements of the Protocol.

Such is the case of the *Programa Nacional Científico sobre Cambio Climático*,⁵⁷ (the National Scientific Program on Climate Change, in English). This program has three main topics to address. A greenhouse gases inventory for Mexico, possible scenarios of climate change and effects of greenhouse gas emissions, and improvements on previous studies regarding Mexico's vulnerability to climate change impacts.⁵⁸ However, whether all the national systems, institutions and programs created out of compliance with the ratification of the Protocol have effectively carried out their functions and duties, is a topic in question by Mexico's experts and academicians on climate change and international environmental law. For matters of this work, we shall further develop on those national systems specifically related to the management of CDMs in Mexico, later in this work.

Some of the most important instruments containing the greenhouse gas inventory and all other information on Mexico's compliance with the Protocol are the national communications. On December 9, 1997, Mexico presented its first communication.⁵⁹ To date, Mexico has submitted four communications since the ratification of the Protocol; the only host country with that many communications. At the gas emissions level, Mexico is responsible for 1.5% of the global emissions.⁶⁰ One must keep in mind that the amount of gas emissions to reduce by the end of the commitment period 2008-2012 is 5 percent; this means, that Mexico has the possibility of making a significant difference in the reduction of gas emissions commitment, all depending on how active, effective, and determined is Mexico's role. So far, it appears to be that Mexico has been active in the climate change movement, particularly when it comes to implementing the international instrument proposed in the Protocol. More specifically, aside from the creation of recent research programs entirely devoted to climate change research, the implementation of clean development mechanism projects in Mexico appear to be the recurrent climate change mitigation method. This is not to say, that Mexico has not created any other programs or projects to promote anthropogenic emission reductions; however, the focus of this

⁵⁷ This was a joint project between the *INE* (National Institute of Ecology) and *UNAM's* Centre of Atmospheric Sciences created with financial funds received from the U.S. Country Studies Program.

⁵⁸ Dr. Carlos Gay Garcia, *supra* note 29, at Feb. 9, 2010.

⁵⁹ UNFCCC WEBSITE, *Supra* note 19.

⁶⁰ SEMARNAT, *supra* note 22, at 5.

work is specifically on the implementation of the clean development mechanism *projects*, as opposed to CDM *program* activities, in Mexico.

A. Mexico's Internal Ratification Procedure of International Agreements

In Mexico, the central body of laws that regulates all conduct in the State is its National Constitution. The Mexican Constitution also regulates the hierarchy of norms within its territory. Article 133 of the Mexican Constitution speaks of this hierarchy and establishes that the Constitution; as well as, the Union Congress' laws; and all treaties celebrated by the president that do not compete with these previous two, and approved by the Senate comprise the Supreme Law of the Nation. If any local state law challenges any of the previously mentioned bodies, each local state legislative branch shall seek to amend its laws in accordance with the Supreme Law. However, to say that the Constitution and treaties are both components of Supreme Law, does not mean they hold equal magnitude and value. According to a thesis by the Supreme Court published in November 1999,⁶¹ there has been a constant doubt as to the hierarchy of norms in Mexican Law.⁶² Yet there is common agreement that the "Constitution is the fundamental law." This is because all laws emanate from the Constitution, and all norms are subject to approval by the Union Congress, even local state laws, and international agreements. Thus, no international treaties should challenge in any way that which the Mexican Constitution establishes, otherwise, such treaty is considered unconstitutional under Mexican Law. Moreover, under Mexican Law the international treaties find priority right below the Constitution, and above all federal and local laws. In other words, international treaties are in second place in the Mexican norm hierarchy.

International agreements are commitments of great scale that apply to all federal Mexican states. In order for any international treaty celebrated by the executive to become constitutional, the Senate, organ that, in theory, represents the will of the federative entities must first approve it. Since the President represents all components of the Mexican State in any international forum,⁶³ any international treaty he celebrates is a commitment of great endeavor

⁶¹ *Tribunal Pleno* (Supreme Court in Mexico), *International Treaties are Hierarchically above Federal Laws and Second to the Federal Constitution*, X- 46 (1999).

⁶² *Id.*, at 46.

⁶³ MEX. CONST. art 89, §X.

that obliges all authorities within the Mexican territory to comply, once having ratified the agreement. More importantly, international treaties take second place in the hierarchy of Mexican norms because the treaty's local or federal jurisdiction is not relevant. Rather, as is explicitly stated in article 133, the powers of international treaties celebration and ratification belong to the executive and the Senate, respectively, and these powers can compel the Mexican State under any matter. All other federal and local law-making faculties not expressed explicitly in the Constitution are reserved for the federative entities.⁶⁴ However, once the international treaty becomes part of the legislation in Mexico, the idea is that the commitments accorded under such treaty get built-in to the legislations of the federative states.

B. The Integration of the Kyoto Protocol into the Mexican Legislation

Although not all commitments under the Protocol apply equally to all its member Parties, there are certain obligations for all parties, such as the creation of a national greenhouse gas inventory; and the creation of institutions within each country to respond to the clean development mechanism Executive Board.⁶⁵ These two commitments apply also to the non-Annex I countries, such as Mexico. Thus, after Mexico ratified the Kyoto Protocol, the Mexican government needed to begin the construction of national systems especially designed to monitor the levels of anthropogenic emissions in the atmosphere. At the same time, Mexico needed a special form a government-affiliated body through which all advances on mitigation of climate change could be reported to the Conference of the Parties, the supreme body of the UNFCCC. In addition, all non-Annex I countries are potential host countries for CDM project and program activities; but before any developing country can host a CDM activity, such Party must first create a designated national authority (DNA). This body is the local regulator of all CDM activities within any non-Annex I country; the DNA also serves as the bridge between the host country, the project participants, and the CDM Executive Board. The designated national authority in Mexico is the Inter-Secretarial Commission on Climate Change, with a work group especially designed to handle all aspects concerning clean development mechanism activities.

⁶⁴ *Id.* art. 124.

⁶⁵ Dr. Carlos Gay Garcia, *supra* note 29, at Feb. 9, 2010.

1. The Inter-secretarial Commission on Climate Change

In Mexico, all clean development mechanism projects are subject to approval by the Designated National Authority, the Inter-secretarial Commission on Climate Change. The Commission consists of Officials from various Mexican Ministries.⁶⁶ The objectives of this Commission are; to formulate national policies that prevent the emission of greenhouse gasses; coordinate the actions of all government agencies and federal entities, as well as, the creation of programs and strategies to comply with the provisions of the Protocol.⁶⁷ In order for the Inter-secretarial Commission to accomplish its objectives, it has created four working groups. The Working Group for the National Climate Change Strategy, the Mexican Committee for Emission Reduction Projects and Capture of Greenhouse Gases (COMEGEI, its Spanish acronym), the Working Group on International Negotiations, and the Climate Change Advisory Council. The COMEGEI preceded the creation of the Inter-secretarial Commission, and later became part of it. The COMEGEI group is designed specifically to promote the creation of CDMs, as well as, spreading and evaluating their performance. The Committee is also in charge of issuing the approval letters. This Committee consists of Officials from the Ministries already mentioned, except the Ministry of Foreign Relations. It meets every first working day of each month.⁶⁸ Both the Inter-Secretarial Commission and its work group work together to deliver a report on the advances or changes to the CDM projects. Although the information these institutions provide is limited, some general trends can be derived. The next chapter focuses on the statistics provided by the Designated National Authority and the Secretariat of the CDM.

⁶⁶ These are the Ministry of the Economy, Foreign Relations, Environment and Natural Resources, Transportation and Telecommunications, Social Development, the Department of Energy,

⁶⁷ Inter-Secretarial Commission on Climate Change, (Feb. 19, 2010),
<http://www.semarnat.gob.mx/queessemarnat/politica_ambiental/cambioclimatico/Pages/cicc.aspx>
[Hereinafter, ICC].

⁶⁸ *NIE*, supra note 50.

III. MEXICO'S CDM PROJECTS

As already mentioned, the COMEGEI is the committee in charge of monitoring all aspects concerning the clean development mechanism projects in Mexico. In the following paragraphs the statistics from the Mexican Committee for Emission Reduction Projects and Capture of Greenhouse Gases, (the COMEGEI), shall be presented first, followed by the statistics and data published by the Secretariat of the CDM UNFCCC. Later, two examples of CDM projects in Mexico: a wind power farm and a HFC 23 decomposition project will be compared to an animal waste management system (AWMS) in a porcine farm. Consequently, these two groups of data will be compared and analyzed in order to find congruencies and differences between them, as well as, creating a bigger picture of the advancements on the implementation of CDMs in Mexico.

A. Inter-Secretarial Commission on Climate Change Statistics

In 2007, The Designated National Authority, (the Inter-secretarial Commission on Climate change), through its working group specially designed for the creation and implementation of clean development mechanisms (the Mexican Committee for Emissions Reduction Projects and Greenhouse Gases Capture), made its first public report on CDM activities taking place in Mexico. According to the Committee previously mentioned, 178 CDM projects had received letter of no objection, along with letters of approval by the DNA. Let us reiterate that the DNA is a body created by each member party within its territory. Therefore, even when projects receive a written approval, this does not entail any sort of direct recognition from the CDM Executive Board, rather the written approval indicates that the host country consents the creation of the project in question. Furthermore, the approval is only a prerequisite for the validation of any CDM project by the Designated Operational Authority (DOE). Nonetheless, no project can begin any active implementation of a project activity in the approval phase. In order for any project to begin activities, the project needs to be registered before the Executive Board of the CDM, first. The table below estimates that, if all projects in it reached the registration phase, after which any CDM project can begin implementation, they could contribute, as a whole, a total reduction equivalent to 10,595 kilotons of CO₂, per year. Table 1

contains the numbers mentioned earlier in this paragraph, and shall be described in the paragraphs that follow.

Table 1: CDM Projects in Mexico, 2007, with Letters of No-objection & Letters of Approval⁶⁹

Types of Projects	# of Projects	Location (State)	Equivalent of CO2 Reductions(ktons/yr)
Animal Waste Management in Porcine farms	88	Aguascalientes, Chihuahua, Chiapas, Coahuila, Durango, Edo. México, Guanajuato, Jalisco, Michoacán, Nuevo León, Nayarti, Puebla, Querétaro, Sinaloa, San Luis Potosí, Sonora, Oaxaca, Tamaulipas, Veracruz, Yucatán.	2,507
Animal Waste Management in Cattle Barns	54	Aguascalientes, Baja California, Chihuahua, Coahuila, Guanajuato, Durango, Jalisco, Nuevo León, Puebla, Querétaro, Sinaloa, Sonora, Tlaxcala	941
Methane Landfills	9	Aguascalientes, Chihuahua, Durango, Edo. México, Morelos, Jalisco	1,110
Wastewater Management	1	Sonora	10
Wind Energy	8	Baja California, Oaxaca	2,216
Hydroelectric	4	Guerrero, Jalisco, Michoacán, Oaxaca	161
HFC-23 Incineration	1	Nuevo León	2,155
Mitigation of Nitrous Oxide in Chemical Industries	1	Veracruz	103
Cogeneration and Energy Efficiency	9	Edo. México, Hidalgo, Michoacán, Sinaloa, Sonora, Tabasco, Tamaulipas, Quintana Roo, Veracruz	703
Fugitive Emissions	2	Coahuila, Veracruz	665
Transport	1	Distrito Federal	24
TOTAL	178		10,595

According to the table above, the majority of clean development mechanism projects, in 2007, were concentrated on animal waste handling project in porcine and cattle farms. Eighty-

⁶⁹ COMEGEI, 2007. (Feb. 9, 2010) < http://cambio_climatico.ine.gob.mx/sectprivcc/proyectosmdlmex.html>

eight projects were on waste management in porcine farms with an expected reduction of 2,507-kilotons of CO₂, while 54 projects were on waste management in cattle barns with an estimated reduction of 941-kilotons of CO₂. Many of these animal waste management projects are concentrated in Northern Mexico. The other types of projects concern alternative energy (wind energy), methane landfills, wastewater management, hydroelectric, fluoroform (HFC-23) incineration, transportation, fugitive industrial gases emissions; however, the number of project in each of these areas range from one to nine projects, limiting the variety of projects in Mexico. In this report, the estimated number of tons of CO₂ burned by eight wind energy projects and one incineration of HFC-23 are 2,216 and 2,155 respectively. One can notice that, the GHGs reduction capability per project in the alternative energy, as well as, incineration of fluorocarbons area is greater than a single animal waste handling system project.

The table above allows us to get an idea of how fast Mexico took initiative in hosting CDM projects, given that the Committee for Emission Reduction Projects was created in 2004, but the earliest projects were registered in 2006.⁷⁰ Unfortunately, the data in this table is limited since one cannot infer how many of the 178 projects did register before the CDM Executive Board, carried out their activities, and earned CERs. One possible explanation for the limited information from 2007 is that the process of approval and registration of clean development mechanism projects is rather time-consuming, complicated, and strict. Nonetheless, the categorical concentration of projects is a common tendency, even in recent count of projects by the actual Secretariat of the CDM. Next, there is a more recent report the Inter-secretarial Commission on Climate Change published on the number of clean development mechanism projects. The next three tables are part of the latest report; such tables are also discussed in the following paragraphs.

The most recent table on clean development mechanism project in Mexico, also created by the COMEGEI, gives a more detailed report on the project in 2009. This table is similar to the one published in 2007, but it divides the projects created, up to the end of 2009, by sectoral scopes, and into subcategories according to the number of projects found at each phase of the standard registration procedure. The 2010 report, also, makes estimations of the potential achievement of CERs in each sectoral scope for projects that have not yet reached the CDM

⁷⁰UNFCCC WEBSITE, *supra* note 19.

Executive Board (CDM EB) registration. The most recent table, presented next, will be discussed by parts in the paragraphs that follow.

Table 2: CDM Projects in Mexico, 2010⁷¹

CDM Project Category	Project Designs with Letter of No-objection, but No Letter of Approval.	
	Average expected CERs/yr	
	# of Projects	tCO ₂ e/yr
Wind Energy	9	2,375,086
Hydroelectric	15	2,866,898
Geothermic	3	240,767
Solar Energy	1	103,381
Cogeneration & Energy Efficiency	41	10,840,780
Fuels substitution	2	157,197
Electricity Distribution	1	266,535
Fugitive Methane Emissions	3	865,423
Transport	1	170,000
Industrial Gasses Emissions	4	800,773
Porcine Farms Waste Management	2	28,500
Cattle Barns Waste Management	1	32,000
Methane Landfills	17	3,132,965
Wastewater Treatment	3	916,906
Reforestation/Forestation	5	971,491
Sour Gas Reinjection in Oil Wells	1	22,549,810
Subtotal up to October 6, 2009	109	46,318,512

As mentioned in a previous chapter, the project design document is the proposal document in which it describes the project and all its components, its purpose, participants, methodology/technique used to implement the project, and expected reduction of emission by the

⁷¹ Subsecretary of Planning and Environmental Policy, (Feb. 18, 2010)

http://www.semarnat.gob.mx/queessemarnat/politica_ambiental/cambioclimatico/Pages/mdl.aspx [Hereinafter, SPEP].

project. The first section, presented above, lists the number of project proposals, (or project design documents, PDD), that have not been rejected, but do not have approval by the DNA, either. The majority of proposals found at this stage of the registration procedure are clustered in the energy efficiency industries with 41 project proposals and an expected reduction of 10,840,780 tons of CO₂; while the methane landfills category has 17 proposals, that altogether expect to reduce 3,132,965 tons of CO₂. The third sectoral scope with the most number of project proposals is the hydroelectric category with 15 drafts and an expected reduction of 2,866,898 tons of CO₂. In addition, a clear difference between this 2010 report and previous 2007 report is that there are several project proposals found in new, different categories. These new categories include; reforestation (5 project proposals), substitution of fuels (2 project proposals), solar energy projects (one proposal), and sour gas reinjection in oil wells (one project proposal). Although the number of projects designs found in these new categories is significantly less than the dominating categories, we can also appreciate that the variety of CDMs in Mexico is moving in the right direction.

Moreover, in 2007, there were 178 projects expected to work, whereas in 2009 only 109 PDDs were proposed. Although there was a significant decrease in project proposals between the two years, there is a negative correlation of expected emissions reductions between the two periods. In other words, while 178 PDDs hoped to reduce 10,595,000 tons of, in Table 1; in 2009, only 109 PDDs predicted a reduction of 46,318,512 tons of CO₂, that is over four times more than the reductions expected in the first table. This significant difference in reduction of emissions could be attributed to higher efficiency of the new CDMs in different scopes, as the ones mentioned earlier.

Unfortunately, there is no way of knowing exactly how many of the 109 PDDs mentioned in Table 2 were actually registered and begun implementation activities, since the table does not provide any detailed information of each project. More importantly, the letter of no-objection does not entail any action taken on the project, and further, necessary changes can be made to the PDDs before approval. Nonetheless, the waiting period and proper registration of the projects, as stated before, certainly delays the implementation of projects. On the other hand, such strict registration and verification procedures guarantee that the project delivers a significant reduction of greenhouse gas emissions, while providing added benefits to the host

country, i.e. sustainable development, transfer of technology, among others. The letter of approval is the next step in the registration procedure; Table 3 provides the numbers on projects that have been approved by the Inter-secretarial Commission on Climate Change in Mexico.

Table 3: CDM Projects in Mexico, 2010. ⁷²

CDM PROJECT CATEGORY	Projects with Letter of Approval, not yet Registered.	
	Average anual expected CERs	
	No.	tCO ₂ e/año
Wind Energy	3	315,441
Hydroelectric	7	214,396
Geothermic		
Solar		
Cogeneration and Energy Efficiency	12	746,810
Fuels Substitution	3	221,839
Electricity Distribution		
Fugitive Methane Emissions	2	664,233
Transport	1	25,887
Industrial Gases Emissions	2	1,454,053
Waste Management in Porcine Farms	20	583,547
Waste Management in Cattle Barns	8	331,017
Methane Landfills	15	1,685,025
Wastewater Treatment	3	102,453
Reforestation-forestation		
Sour Gas Reinjection in Oil Wells		
Subtotal up to October 6, 2009	76	6,344,700

⁷² *Id.*

The projects approved by the Inter-secretarial Commission on Climate Change are presented in this second part. This is the first filter to eliminate many projects. Although Table 1 and 2 are independent of Table 3 and of each other, one can still observe that many project proposals are submitted, but only a few make it past the first selection round, which is the approval by the DNA. Near the end of 2009, only seventy-six new projects had been approved by the DNA; most of them concentrated in these categories: the efficient energy industries category (12 projects); waste management/handling in porcine farms (20 projects), and landfills (15 projects). We can see, again, a higher concentration of projects in the animal-waste-handling category, as noticed in Table 1. Although one may think that a letter of approval is a “foot in the door” for CDMs project activities, the truth is that there is no guarantee that any given project will survive for the entire operational lifetime the PDD had anticipated. Thus, assuming all 76 projects function properly and pass all stages of registration, their GIGs mitigation potential, in average per year, would be 6,344,700 tons of CO₂. Table 4 can include projects from table 1 that actually reached registration, but as far as exactly which ones in each sectoral scope, is hard to tell because of the limited information the DNA provides.

Table 4: CDM projects in Mexico, 2010.⁷³

CDM Project Category	CERs* Earned by Registered Projects		Projects Registered before the CDM EB	
	CERs earned		Average CERs expected YR	
	No.	tCO2e/YR	No.	tCO2e YR
Wind Energy			8	2,434,730
Hydroelectric	2	141,271	3	118,844
Geothermic				
Solar				
Cogeneration & Energy Efficiency			3	265,678
Fuels Substitution				
Electricity Distribution				
Fugitive Methane Emissions				
Transport				
Industrial Gases Emissions	1	4,789,363	2	2,540,280
Animal Waste Management in Porcine Farms	16	786,433	74	2,253,434
Animal Waste Management in Cattle Barns			17	160,441
Methane Landfills	1	125,591	11	1,544,907
Wastewater Treatment			1	15,153
Reforestation/Forestation				
Reinyección de gas amargo en pozos petroleros				
Subtotal up to Octubre, 2009	20	5,842,658	119	9,333,467
Subtotal CDM Program Activities			1	24,283
Total			120	9,357,750

⁷³ *Id.*

The projects in the table above have passed the EB registration phase, which means that all 120 projects in the right column have begun implementation activities. It is worth noting that, in the table, only 119 are clean development mechanism *projects*, whereas the one CDM *program of activity* is a different approach and methodology to earning emissions reductions credits. In short, a CDM *program activity* can be “a single or set of interrelated measures to reduce GHG emissions applied within a designated area, which can be a single (or a group of these), facility installation, or land.”⁷⁴ In Mexico, there is only one CDM program of activity, which was registered on July 2009, “*Cuidemos Mexico*” (Let’s take care of Mexico, in English), is a smart use of energy program, sponsored by Great Britain and Northern Ireland. However, for purposes of this work, the focus is specifically on CDM project activities.

In addition, only 20 of the total registered projects have already earned CERs. As for the rest of the projects, they could be at any point of the verification procedure. However, we can see the pattern of project clusters, repeat; in fact, we can see that the number of CDM categories with registered projects is very similar to Table 1. The concentration of projects in Table 4 is similar to Table 1 and 3. Ninety-one of the registered projects by the end of 2009 were animal waste management system (AWMS) CDMs either in pig farms or cattle barns. Surprisingly, only sixteen of the 74 porcine farm projects, according to the Sub-secretary of Planning and Environmental Policy, have delivered results reflected in certified emissions reduction credits, with a low 786,433 tons of CO₂ per annum.⁷⁵ Let us not forget that one ton of CO₂ equals one CER. On the other hand, no AWMS cattle barn project had delivered any CERs, by the time the report was completed. Once again, this is an example of how registration, even implementation of the project, does not entail automatic earnings of CERs, the monitoring and verification procedure must follow implementation, in order to extend certification to any CDM project. Another key participant in the scrutiny of the CDMs is the Designated Operational Entities (DOEs); these actors are in charge of verifying the validation of the project, as well as monitoring its implementation and report verification. In other words, the DOEs, verify that the project is functioning as expected, and that there is an actual reduction of GHGs emissions obtained by each project. Consequently, achieving certification and CERs, in addition to being a rather unyielding procedure, is a long process.

⁷⁴ UNFCCC, *Glossary of CDM Terms*, 12 (2009).

⁷⁵ SPEP, *supra* note 71.

To sum up, the Inter-secretarial Commission on Climate Change tables presented thus far, although they provide limited information with not much detail as to the CDM projects in Mexico, it is enough to notice patterns in Mexico's CDMs, and suggest improvements. For example, as was repeatedly stated, until 2009, the great majority of clean development mechanism projects conglomerate in animal waste management systems (AWMS) in livestock farms. Although, these projects have their advantages, they also have setbacks. The positive aspects of these types of projects are in the sense of noticeable reductions of animal waste odor; better living conditions for the animals, less spills of animal waste into rivers, and of course, the burning of methane gases. Even if the advantages just mentioned are positive, they do not seem to be enough to guarantee the sustainable development aspect that every CDM project activity should include. Another setback is that, AWMS projects have lower GHGs-emissions-reduction potential when compared to other CDM categories, and the large amounts of animal waste required to burn *one* ton of CO₂. More importantly, after four years of implementing CDM projects, Mexico is just starting to diversify its types of CDM projects⁷⁶. Project-type variety is essential, if Mexico seeks to place itself as a main actor in compliance with the Kyoto Protocol. More importantly, too many of AWMS projects can discourage sponsor countries, (especially countries that see their Kyoto Protocol commitments as a burden), from investing more capital into larger, more complicated projects, when they have the least expensive option of creating animal waste handling projects.

Dr. Carlos Gay Garcia suggests that increasing variety in the type of CDM activities hosted in Mexico can lead to greater amounts of GHGs reductions.⁷⁷ In the next paragraphs, statistics collected by the Secretariat of the CDM shall be presented and analyzed; followed by a gathering and comparison of the information provided by the DNA and the Secretariat of the CDM.

B. Secretariat of the CDM UNFCCC Statistics

The Secretariat of the CDM UNFCCC, (from here on the Secretariat or Secretariat of the CDM), is the link between all project participants and the Executive Board. Any project

⁷⁶ Compare Table 2, which shows the most recent project design proposals, against Table 4, which shows the older projects that are already registered and earning CERs.

⁷⁷ Dr. Carlos Gay Garcia, *supra* note 29, at Feb. 9, 2010.

proposals, changes, reports, must be addressed, ultimately, to the Secretariat. This is the body in charge of keeping track and record of all CDM PDDs, projects already registered and implemented, the rejected, and those going under verification, etc. Concisely, the Secretariat of the CDM is in charge of all CDM *project* and *program* activities found at different stages of the registration and accreditation procedure in any member country. Therefore, any clean development mechanism project in Mexico with a letter of approval must be reported to the Secretariat, even if is a failed project. Next, general details of the projects registered by the Secretariat

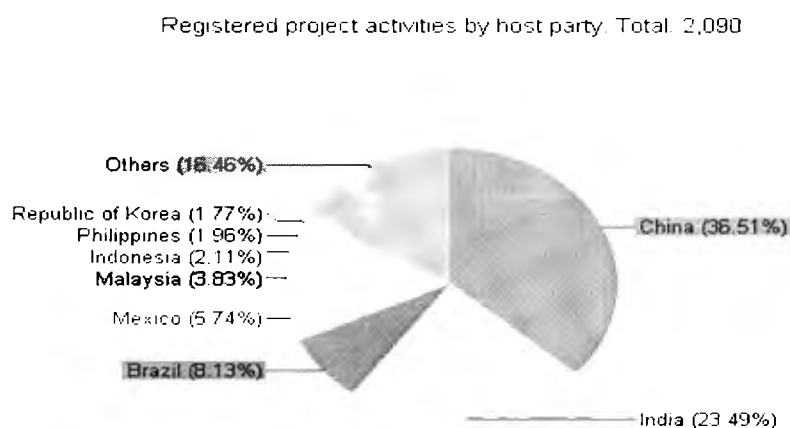
Until April 2010, the Secretariat of the CDM has record of 131 projects hosted in Mexico.⁷⁸ However, not all of the projects hosted in Mexico reported to the Secretariat are currently active. According to the Secretariat's project search website, only 120 projects in Mexico have current registration before the CDM Executive Board, and are currently at the implementation phase, or beyond. The total of CDMs listed in the Secretariat of the CDM website includes the CDM *program activity*, in Puerto Vallarta, already mentioned. The other ten projects cannot carry out any activities for a few reasons. One project is still requesting registration by the Executive Board, while five other projects have withdrawn. In addition, four different projects were rejected. Withdrawals usually occur because the participants fail to provide detailed information on the projects, or fundamental components that every CDM must have, and after several review requests to the Executive Board, the participants must reanalyze the whole project in order to supply the missing information and modify it accordingly. Rejections by the Executive Board usually occur because the participants cannot prove the direct relevance between the creation of the proposed project and the problem the project is trying to mitigate. Rejections are more common for participants with several projects of the same methodology and type, since the participants must prove that the creation of a new, identical project is necessary for the purposes the proposal claims.

The participants involved in over half of the projects in Mexico are Switzerland, the United Kingdom (UK), and Northern Ireland. Certainly, the former are not the only countries to create CDM projects in Mexico, other countries such as Spain, Japan, France, Denmark and the

⁷⁸ A list of all the CDM project activities hosted in Mexico, and registered, are found in the CDM UNFCCC website, along with all the documents pertaining the registration process of every single project. See, <http://cdm.unfccc.int/Projects/projsearch.html> (Mar. 12, 2010).

Netherlands have also contributed, but to a much lesser degree than the first group of countries. According to the Secretariat of the CDM, the countries in the latter group participate in anywhere from one to five projects, each. It is no coincidence that, the countries sponsoring most of the projects in Mexico (Switzerland, the UK, and Northern Ireland) are also the participants in practically all projects of animal waste handling in livestock farms. This is not to say that the group of countries just mentioned, only creates AWMS CDMs. However, when looking at the bigger picture of CDM projects, as a whole, regardless of their type, Mexico occupies an important place in implementation of clean development mechanisms. The pie chart below shows Mexico against other host countries

Figure 1: Distribution of Registered Project Activities and Their Ratio of CERs by Host Party



http://cdm.unfccc.int/cd/12/03/2010/14_53

Source: Secretariat of the CDM website⁷⁹

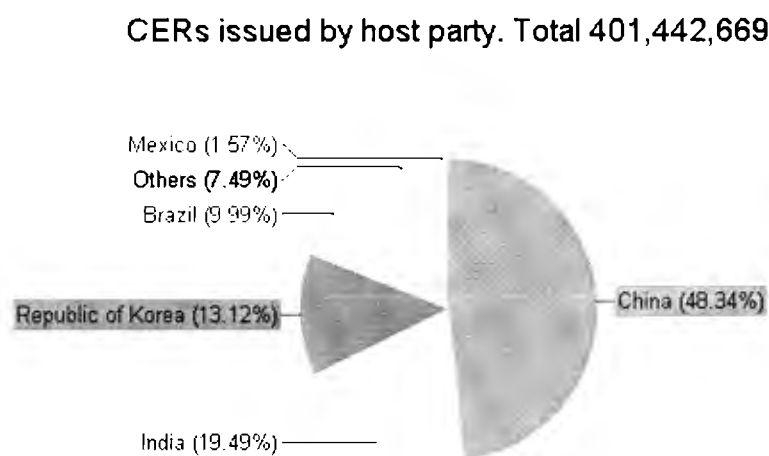
The pie chart above represents a distribution of the non-Annex I countries with most CDM projects. Out of all 151 non-Annex I countries participating in the Kyoto Protocol, Mexico occupies fourth place with most number of CDM *project activities, as a single country*, (note that this and the following pie charts do not consider the only CDM *program activity* taking place in Mexico, *Cuidemos México*). With 5.74 percent of the total 2090 projects, Mexico

⁷⁹ Secretariat of the CDM UNFCCC website, (Mar. 12, 2010)

< <http://cdm.unfccc.int/Statistics/Registration/NumOfRegisteredProjByHostPartiesPieChart.html> >

is the second Latin American country with most CDM project activities, just behind Brazil. Notice that no other Latin American country has a significant number of project activities to stand on its own, thus they are included in the “others” section. Consider China, as well, leading with over 36 percent, which translates to about 763 project activities. On the other hand, Republic of Korea, with thirty-seven projects, is in eighth place as single country with most project activities. Although one might be inclined to assume or infer that the higher the number of projects, the higher the number of CERs each country earns, this is not always the case. The following pie chart ranks host countries with most CERs obtained.

Figure 2: CERs Issued by Host Party⁸⁰



[http://cdm.unfccc.int/c\) 20.04.2010.15.54](http://cdm.unfccc.int/c) 20.04.2010.15.54)

The pie chart above ranks the top five countries with the most number of certified emissions reductions credits (CERs) issued. China and India still stand as the top two countries with most projects *and* most number of certified emissions reductions credits. However, there are noticeable changes in this chart, if compared to the previous figure. Surprisingly, the Republic of Korea finds itself in third place with 52,666,789 CERs earned, leaving Brazil in fourth place, with 40,106,176 CERs. This is a big jump for Korea, who in the previous pie chart took the eighth place. Lastly, not considering the group of “others,” Mexico occupies fifth place

⁸⁰ *Id.* (April. 04, 2010).

as a single country with most CERs issued, representing only 1.57 percent of CERs issued in all host countries. While some countries have more CDM projects than others, this does not constitute a premise to assume that the more project activities in any given host country will result in high amounts of CERs issued, compared to any other host country with less CDM projects. The question would then be, what is more important, more project activities or more CERs?

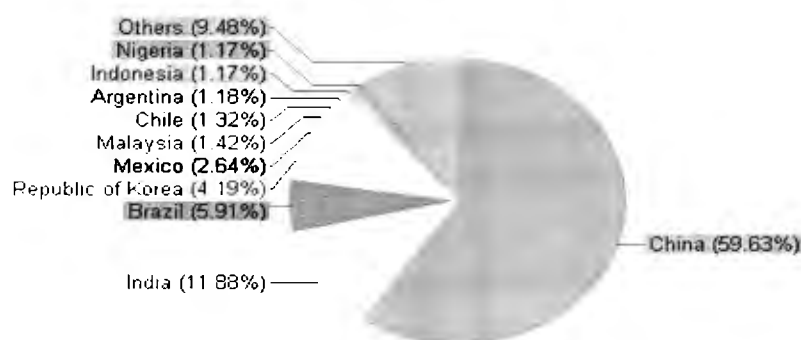
Let us assume that the effectiveness of any CDM project reflects on the amount of CERs the project earns. Then, one could say that the amount of CERs a Country's CDM projects can deliver are more important than the actual number of projects, given the fact that the whole purpose of *any* Kyoto Protocol mechanism is to mitigate greenhouse gases emissions into the atmosphere. In the case of Mexico, it is interesting to see how all 121 projects have only delivered 6,199,257 CERs. We can see that Mexico's large contribution of projects does not correlate to higher number of CERs issued, when compared with other countries. Take Brazil, for example, with only 50 projects more than Mexico, the South American country has already earned 40,106,176 CERS, over six times more than Mexico. On the other hand, the Republic of Korea has only thirty-seven CDM projects, that are eighty-four projects less than Mexico, but as far as CERs, Korea has more than Brazil and Mexico, together! According to statistics by the Secretariat, Korea has 52,666,789 CERs issued. Thus, recalling the assumption made at the beginning of this paragraph, out of Brazil, Mexico, and the Republic of Korea, the latter would be the country with the most effective projects, out of the three. Moreover, following the initial argument, Mexico has the least effective projects out of the three. The next pie chart just illustrates expected average annual CERs issued by host country.

The main purpose of the chart below is to provide a general picture on the effectiveness of the projects already registered in Mexico. For this year, 2010, the Secretariat of the CDM reports that the 120 project activities registered will deliver only 2.64 percent, which are about 9,387,370 credits of the total CERs. If compared to Table 4, the total expected reduction credits for 2009 were about the same: 9,357,750 CERs, considering that the estimates for 2009 were up to October of the same year. Nonetheless, CDM project activities in Brazil (with 21,014,909) and Korea (with 14,898,894), expect to deliver almost twice the CERs as Mexico, with the same number of projects registered for Figure 2. Notice, also, that Brazil is one place higher than

Korea in expected average annual CERs, perhaps because Brazil has significantly more projects than Korea. Nevertheless, Korea holds its place above Mexico even in expected CERs, possibly because as suggested in the paragraph above, even with 37 projects, Korea truly has more effective projects in mitigating greenhouse gas emissions.

Figure 3: Expected Average Annual CERs⁸¹

Expected average annual CERs from registered projects by host party. Total: 355,582,219



<http://cdm.unfccc.int/> (c) 20 04 2010 14:56

C. Analysis of Statistics

There are different variables to consider prior to assuming that the more CDM project activities any host country has will lead to more CERs issued, compared to any other country with less CDM projects. Whatever the true reason is for Korea's higher amount of CERs issued, compared to Mexico, the purpose of this work is not to analyze Korea's exemplary CDM implementation and success. Rather, the comparisons between Mexico and Korea, or Brazil, serve more as references to analyze Mexico's role as part of the bigger picture in the implementation of CDMs.

Certainly, the number of CERs issued per project should be one of the essential factors in measuring project effectiveness. After all and as already mentioned, clean development mechanisms are an alternative proposed in the Kyoto Protocol to help meet the objectives on

⁸¹ *Id.*

GHGs emissions reductions across the globe. Not to forget that, the clean development mechanism is the only alternative in which Mexico, as non-Annex 1 country, can participate, and meet the agreements/objectives the Latin American country adopted when it ratified the Protocol.

Nonetheless, as essential as the certified emissions reductions credits are, these cannot constitute *the only* element to measure project effectiveness, especially since there are several factors that affect the issuance of CERs. For example, the verification period, is usually a long process due to the reports that the participants to each project have to elaborate and turn in to the Designated Operational Entity (DOE). The DOE must then verify that the tons of emissions reductions of CO₂ the participants claim are true. The DOE is, also, in charge of granting the certification, or CERs, to the participants. Another factor is the physical location of the project. Consider wind energy CDM projects, for example, which cannot be built just anywhere in the world, the wind currents must be strong enough to move the turbines to certain speeds that can also produce clean energy. The tables and charts shown earlier provide information that illustrate where Mexico stands on CDM project activities, but such statistics also raise questions regarding the success of the projects. In the next paragraphs, the statistics provided by the tables and pie charts will be connected and analyzed as a whole.

The first issue raised from the statistics presented by the National Designated Authority is the lack of variety in types of projects already registered. Although the newest project designs not rejected belong to sixteen different CDM categories, the projects in Mexico currently earning CERs are mostly on animal waste management systems. In Mexico, the limited project variety, undoubtedly has consequences, not only on the number of CERs issued; but other benefits, such as foreign investment attraction, the creation of new jobs, lucrative services, just to name a few.

Projects aimed at reducing certain greenhouse gas (GHGs) emissions have stronger impact on the mitigation of climate change because some greenhouse gases have larger global warming potential than others do; for example, methane is more threatening to the climate change because it traps 20 times more heat than carbon dioxide.⁸² The Kyoto Protocol uses the

⁸² Cohen, J. Hopwood, N. *Greenhouse Gases and Society*, (Apr. 23, 2010).
<<http://www.umich.edu/~gs265/society/greenhouse.htm>>

global warming potentials⁸³ to calculate the carbon dioxide equivalence of any greenhouse gas under Annex A. Consequently, one CER is a unit equivalent to one metric ton of CO₂.⁸⁴

CDM projects in the sectoral scopes of energy industries (renewable/non-renewable resources), waste handling and disposal, and fugitive emissions from production and consumption of halocarbons and sulfur hexafluoride seem to reduce greenhouse gas emissions at higher rates than projects of other type⁸⁵ because such projects deal with more dangerous anthropogenic emissions. In tables 1-4 found earlier in this work, the Designated National Authority (the Inter-secretarial Commission on Climate Change) in Mexico, with the cooperation of its CDM-focused work group (COMEGEI), gave the estimated annual emissions reductions per sectoral scope. The expected average, annual CERs reflect the GHGs emissions-reduction potential of each category. For example, pointing to the 74 projects focused on waste handling in porcine farms the expected annual average CERs is of 2,253,434; while the expected annual average CERs from eight wind power projects or two fugitive industrial gases emissions projects is 2,434,730 and 2,540,280; respectively. This would mean a ratio of approximately 30.451 per project in the animal waste management category, whereas one of the eight wind power projects can produce an annual average of 304,341 CERs, or one fugitive industrial gases emissions project can yield 1,270,140 CERs, on average, per annum. The significant difference among the previous averages can attribute to the effort and time required to burn one kiloton of CO₂. Phrased differently, the porcine farm projects may require vast amounts of animal waste in order to produce methane that equals to one metric ton of CO₂, thus collecting all that fecal matter may take longer than the actual incineration process.

Since earning CERs is a time-consuming process, in the table below the CO₂-EcoConsulting (a consulting firm dedicated to creating and processing clean development mechanisms projects in Argentina), cites the statistics estimated by the Executive Board in its website on the average waiting period to earn a CER.

⁸³ The Global Warming Potential, or GWP, is "the total effect over time of adding one unit of greenhouse gas to the atmosphere." Global Warming Potential, (Apr. 23, 2010)

<http://www.iitap.iastate.edu/gcp/gwpotential/gwpotential_lecture.html>

⁸⁴ KP, *supra* note 2, at art. 6

⁸⁵ To see the list of CERs issued to registered projects in all host countries, http://cdm.unfccc.int/Issuance/cers_iss.html?s=80

In addition, variety of CDM projects should be of concern to Mexico because it is not only one greenhouse gas that contributes to global warming, rather, it is combination of all greenhouse gases that play a role in climate change. Furthermore, project variety does not only influence issuance of CER, it also affects foreign investment for the host country, the creation of new short and long-term jobs, as well as having lucrative potential.

Table 5: Transaction Costs and CERs Waiting Periods for a CDM Project

Description	Estimated Cost	Waiting time to Obtain CERs
normal Project	Between US\$ 120.000-250.000	24 months
Small-Scale Project	Between US\$ 110.000-150.000	12 months

Source: CO2-EcoConsulting Firm. <http://laspi.net/ebi/prod01.htm>.

The clean development mechanism is the only option in which developing countries can benefit from the help of industrialized countries, while, at the same time, contributing to lessen global warming. In a sense, all the money invested by each project's participants constitutes direct foreign investment because Annex II Parties must fund the projects, provide transfer, or access to, environmentally sound technology and know-how practices.⁸⁶ Table 5 gives estimated costs for creating and all other registration, verification costs to implement a CDM project. Of course that the complexity of the project dictates how expensive it shall be, even so for the most part, they require extremely large sums of capital that include the hiring of employees to construct the facilities, installing the technology, maintenance, thus creating new jobs. However, certain projects produce profitable services, like clean energy, that can be sold to third parties near the location of the project interested in new sources of energy. Consequently, the project has a lucrative component that benefits the investing parties and the third parties looking to obtain green services. Nevertheless, the question still lingers, why does Mexico hosts a large number of CDM project activities that deliver less CERs and do not offer any added benefits, as is the case of the animal waste management systems in porcine farms and cattle barns?

⁸⁶ KP, *supra* note 2, art 10.

When it comes to creating CDM projects in developing countries two important factors to consider are: capital and an Annex I member Party willing to invest in the creation of projects outside its territory. As mentioned earlier in this work, the compliance of Non-Annex I countries depends on the effort and action Annex II countries take in implementing the Kyoto Protocol clean development mechanism in host countries. However, the issue, up to day, is that Annex II countries consider this commitment a burden to provide financial or environmentally sound technology to Non-Annex I Parties, essentially because the latter do not really have goal-oriented commitment in the Protocol. Along these lines, the creation of CDMs requires large amounts of money, (refer to table five for estimated average costs), some projects more than others do, whether it is direct capital investment, or in the form of green-technology, or just the creation and implementation of the project. Thus, the dilemma for Annex II countries is whether to invest in new technology for quite expensive projects or programs in a foreign country that, in theory, does not have anything to offer in return. Therefore, Mexico needs to build incentives or create benefits that attract industrialized countries to invest in the creation of new, more complex projects than AWMS projects.

IV. OUTSTANDING CASES OF CDM PROJECTS

In the next paragraphs, two exemplary CDM project activities in Mexico, the Eurus Wind Farms and the Quimobásico HFC Recovery and Decomposition Project, will be described and later compared to an AWMS project in order to understand the essential setbacks of the latter compared to projects like the former.

A. Eurus Wind Farm in Mexico

The Eurus Wind Farm is an alternative energy CDM project located in the state of Oaxaca, Southern Mexico. This project registered before the CDM Executive Board on January 6, 2007. This Eurus Wind farm is an energy facility developed by Spain's company Acciona Energia (Acciona Energy) and Cemex S.A.B. de C.V. (Cemex); they are the main shareholders. As said by Acciona, quoted in an article by the Global Energy Network Institute, "Eurus is the largest wind farm in Latin America,"⁸⁷ with a cost of 550 million dollars invested in the facility, and all capital obtained from private funding.

The objectives of this CDM project stated on its project design document form (PDD) are, first, to take advantage of the available wind resources in order to provide renewable energy, with the idea that of selling energy generated through cleaner and more sustainable methods to Mexican partners or clients seeking this type of energy. The Eurus project also becomes a clean development mechanism because of less electricity production at the fossil fuel power plants, thus cutting down on the level of CO₂ released into the atmosphere, as well as, adding zero GHG emission power. Eurus does not supply GHG emission. Nonetheless, in order for this project to function to its highest potential, the location for this type of projects is vital because wind drafts vary from place to place. According to the Eurus CDM-PDD the speed and quality of air sources in the La Venta in the Isthmus of Tehuantepec, are appropriate and suitable for the creation of the Eurus wind farm.

⁸⁷ <http://www.geni.org/globalenergy/library/technical-articles/generation/wind/energycentral.com/acciona-completes-assembly-of-latam's-largest-wind-farm/index.shtml>

The Eurus farm comprised of 167 turbines can generate enough electricity to supply 500,000 people, and meet about 25 percent of Cemex energy consumption.⁸⁸ The United Kingdom and Northern Ireland are indirectly involved in this project.

The crediting period for the wind farm is from January 1, 2009 to December 31, 2018, meaning ten crediting years, although the minimum lifetime expected for this project is 20 years, until the end of 2028. During the crediting period, the expected total emission reductions of 5,995,710 tons of CO₂. So far, the project has accredited 9196 CERs for the first monitoring report, January 01, 2009 to June 30, 2009; and awaiting issuance for 138,554 CERs more. Furthermore, the project proposes environmental and social advantages/benefits, additionally to lowering greenhouse gas emissions:

- Enhancement of local grid performance; there will be fewer incidences of voltage drops and local power shortages through the use of local energy resources (wind).
- New jobs can be created in the area; particularly during the construction phase of the wind farm, and afterwards the jobs required for maintenance and operation during the expected service life of the wind farm.
- Foreign capital will be attracted, yielding higher taxable income.
- Less dependence and depletion of fossil fuels as energy sources.
- Additional uses of land will be found, bringing in additional sources of income for landowners such as leasing, etc. without sacrificing current land use practices.
- Reduction of non-GHG emissions from replaced power generation.⁸⁹

It is worth noting that the Eurus Wind Farm project, did not start out with intention of becoming a CDM project, rather, the participants considered it a great option as a CDM after the project had undergone construction. Nonetheless, wind farms consist of two types of project activities that add to its value and cost-effectiveness; they work as a power generation plants from renewable resources, *while* producing emission-free electricity. These advantages, along with those listed above; are enough reasons to resort to this type of renewable energy. Sadly, even so, wind energy is not a particularly attractive proposition in the business-as-usual scenario.⁹⁰ This unattractive, common perspective intensifies when wind farm-CDM projects require large sums of capital investment, most of which comes from private funding; as well as,

⁸⁸ *Ibid.*

⁸⁹ Eurus Wind Farm CDM-PDD, pg 3. (Mar. 13, 2010).

<http://cdm.unfccc.int/UserManagement/FileStorage/KOK0F9UUFRX9CULNHXUGAAORR0UYON>. [Hereinafter, Eurus PDD].

⁹⁰ *Id.*, at 10.

the tedious task of seeking the most suitable geographical locations so the project can reach its optimal production level of clean energy while mitigating anthropogenic emissions.

The next project with large potential to mitigate greenhouse gas emissions, out of any other project in Mexico, is the Quimobásico HFC Recovery and Decomposition Project.

B. Quimobásico HFC Recovery and Decomposition Project

The Quimobásico Hydro-fluorocarbon (HFC) Recovery and Decomposition Project is a CDM project in the city of Monterrey, state of Nuevo Leon, Mexico, carried out by the same company, Quimobásico S.A. de C.V. This company is in charge of producing refrigeration gases, propellants, foaming agents, and other applications. Other parties involved directly in the project are Japan, the United Kingdom, and Northern Ireland; the Netherlands and Switzerland are involved indirectly. The sectoral scope of this project is, “fugitive emissions from production and consumption of halocarbons and sulfur hexafluoride,” and according to the project’s CDM-PDD,⁹¹ the operational lifetime expectancy for Quimobásico HFC Recovery is 35 years. The project’s crediting period began on June 14, 2006 to June 13, 2013, with a renewable crediting period of 7 years. This project, like the Eurus Wind Farm, did not receive any public funding of any kind to be constructed, nor to reach its objective to reduce HFC 23 emissions by recovering and decomposing this gas.⁹² The purpose of this project is to recover and decompose HFC-23, a potent greenhouse gas.

There are two reasons why projects like this one are important. The first reason is that, even though HFC 23 is a gas of low toxicity used in refrigeration, as a greenhouse gas, HFC-23 has a large global warming potential. According to the Secretariat of the CDM, one tonne of HFC-23 is equivalent to about 14,800 tons of carbon dioxide, (CO₂).⁹³

The second reason is that according to the Quimobásico’s project design document, currently, the Mexican government has not created norms that establish safe limits on the release

⁹¹ Quimobásico HFC Recovery and Decomposition Project CDM-PDD, (Mar. 13, 2010). <http://cdm.unfccc.int/UserManagement/FileStorage/CRFVZP3HKZRLQGI9TRPXWMK7OPFNRE> [Hereinafter, Quimobásico].

⁹² *Id.* at 2.

⁹³ Forster, P., V. Ramaswamy, P. Artaxo, T. Berntsen, R. Betts, D.W. Fahey, J. Haywood, J. Lean, D.C. Lowe, G. Myhre, J. Nganga, R. Prinn, G. Raga, M. Schulz and R. Van Dorland (2007). “Changes in Atmospheric Constituents and in Radiative Forcing.” *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.*

of HFC-23 emissions. Thus, by implementing the Quimobásico HFC Recovery project in Mexico, the benefits of the project go beyond mitigating greenhouse gas emissions. First, there is the benefit, in itself, of decomposing a highly dangerous greenhouse gas; which consequently translates into GHG emissions reductions and eventually into crediting of CERs. Second, implementing projects like Quimobásico, promote taking initiative in HFC 23 regulation and awareness for the government institutions regulating the emissions of greenhouse gases, to take action. Furthermore, the Quimobásico project also promotes business awareness and responsibility for the companies that produce HFC 23 or any other greenhouse gas as result of the business' regular activities. Most importantly, recovering and decomposition of HFC 23-projects are of great benefit for developing countries like Mexico, since technologies to reduce HFC 23 are costly and complex and they require significant sums of investment.

In addition to the technology-transfer benefit, the economical benefit of this project is reflected in CER related value, but the project itself has no additional economic benefits like the Eurus Wind Farm, which can sell the clean energy generated. Therefore, the likelihood of any non-Annex I country adopting any measures to decompose and limit levels of HFC 23 emissions, decreases because of the significant amount of capital required. In short, if this project had not been created, the HFC-23 the company produces would still be released freely into the atmosphere continuing to deteriorate it. On the bright side, Quimobásico S.A.de C.V. is the only company in Mexico, so far, to produce CFCs and HCFC 22- HFC 23 is a by-product of the latter chemical. As a result, Mexico eliminates all its emissions of HFC-23 with the implementation of this CDM project.⁹⁴

During the crediting period for this project, Quimobásico expects to recover 1,290 kilotons of HFC 23, which translate to the equivalent of 15,087,539 tons of CO₂. Currently, Quimobásico HFC Recovery and Decomposition Project has accumulated 4,789,363 CERs, and is awaiting crediting for seven more monitoring periods.

There was a request for registering a second plant to the Quimobásico HFC Recovery and Decomposition Project, such new project claimed to be completely independent from the first

⁹⁴ Quimobásico supra note 91, at 82.

one, however the request for registration has been withdrawn at the request of the Executive Board.⁹⁵

C. Comparisons

Projects such as wind farms or HFC recovery and decomposition are exemplary cases of a complete clean development mechanism project, (CDM) because they help mitigate GHGs emissions; and are excellent options for sustainable development due to all the flagrant benefits they bring provide to developing countries.

Additionally, CDM projects can also be lucrative opportunities, like the Eurus wind farm, that add a tangible incentive for the investing Parties and other future, potential sponsors. In reality, for Annex II countries, profitability becomes a very important factor when creating and implementing CDM projects in non-Annex I countries because the project bears potential of gaining back some, if not all, of the capital invested by the participant countries.

Although CDM projects in other areas such as energy efficiency, trapping of fugitive emissions, and alternative energy tend to grant more benefits, this does not mean that the animal waste management system (AWMS) in livestock operations are less important. AWMS projects, which constitute the majority of projects in Mexico, also have their benefits and contributions to the safekeeping of our environment. For example, AWMS projects, in addition to preventing greenhouse gas emissions; they also diminish the foul odor the feces release, and water/land contamination motivated by the storage or disposal of animal waste. AWMS projects are an economically sustainable manner to mitigate GHGs emissions from the large swine population in Mexico, 14,625,199,⁹⁶ and they basically consist on the creation of covered lagoons into which animal waste can be stored with anaerobic digesters that decompose the solids residue while allowing methane gas to accumulate to be burned by an integrated flare. Truly, there is not much complexity to the project, nor does it require avant-garde technology-

⁹⁵ To see document, <<http://cdm.unfccc.int/Projects/DB/SGS-UKL1234254418.33/history>>

⁹⁶ Facts and statistics quoted in an AWMS CDM-PDD, 3.

<http://cdm.unfccc.int/UserManagement/FileStorage/QDXFH093G0N2JNYUUD53T6TU1QJ6ID>

transfer. Unfortunately, the lack of complexity can affect the mitigation potential, even when the project can help improve the quality of the immediate environment.

Because a relatively less complex CDM project usually does not require large sums of capital investment, they do not contribute significant sustainable development to the host country, the added benefits are also taken away, i.e. creation of jobs, economic profitability, know-how services, etc. In addition, developed member Parties are not willing to invest much of their capital on projects for other developing member Parties. Even so, the industrialized countries members to the Kyoto Protocol must still comply with their commitments, and so the best alternative is creating projects that can help them achieve greenhouse gases emissions reductions credits (i.e. CERs) at the least expense possible. A clear example of this perspective is precisely the large number of animal waste management systems in confined animal feeding operations, (AWMS) projects, not only in Mexico, but also throughout all host countries. These types of project can be of extremely low cost,⁹⁷ or none at all, to the Parties as is the case for a few projects in Brazil and Mexico. Hence, it becomes cost-effective to opt for these AWMS projects and create various small projects of this type in different host countries, while still receiving CERs. In fact, the waste handling and disposal scope, in which are included the AWMS projects, is the second sectoral scope with most number of projects registered, 462, to be precise.⁹⁸

On the other hand, wind farms, or recovery and decomposition of HFC-23 projects, require more capital investment, than animal waste handling in livestock farms, to be developed and to keep them functioning. Currently, Mexico has eight projects wind farm projects mostly in the area of the state of Oaxaca; these wind farm projects can have a fee level anywhere from 25,000 to 118,000 dollars, approximately.⁹⁹ Spain co-sponsors most of the wind farm projects, with the exception of the Eurus Wind Farm, that in addition to Spain includes the United Kingdom, and Northern Ireland. According to statistics published by the Secretariat of the CDM, the Eurus Wind Farm in Mexico is the second project with most CERs expected annually,

⁹⁷ The fees for AWMS projects implemented in Mexico can range anywhere from 5,000 to 20 000 dollars, depending on the size of the project. See, <http://cdm.unfccc.int/Issuance/cers_iss.html?s=1120>

⁹⁸ See UNFCCC website, *supra* note 15.

⁹⁹ These are the fee level costs only; the figures do not include the costs on project creation and implementation. See UNFCCC CDM website and refer to each project for further details on each project; <http://cdm.unfccc.int/Projects/index.html>

599,571, it is also the most expensive wind farm project with a fee level¹⁰⁰ of 118,414 dollars. However, the project with highest number of CERs expected per annum in Mexico is the Quimobásico HFC Recovery and Decomposition Project, which belong to the category of fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride.

¹⁰⁰ Fee level refers to the amount participants spend in the registration process of any project depending the kind of project and methodology it will use to reduce GHGs.

V. CONCLUSION

To recapitulate, the less-than recent awareness on global warming has pushed the international community to seek environmental redress through the creation of the United Nations Framework Convention (UNFCCC) and its Kyoto Protocol (KP). While the UNFCCC is only the foundation to a multilateral agreement against climate change, the Kyoto Protocol holds the legal basis that engages all countries to take action against global warming, under the principle of *common but differentiated responsibility*. The purpose of the Kyoto Protocol is to create a legal commitment in which the industrialized States agree to implement effective measures against global warming in order to reach the 5 percent global-emission reductions based on the 1990 global levels of GHGs emissions, by 2012. Mexico is a member Party to both, the UNFCCC and the Kyoto Protocol.

In the case of the Kyoto Protocol, the clean development mechanism is one of the three flexible mechanisms proposed within the Protocol. The CDM helps integrate the developing countries (non-Annex I), and have them contribute in the reduction of the global anthropogenic emissions. To clarify, the Annex I and II countries are the only member Parties to the Kyoto Protocol legally bound to reduce their GHGs emissions by 2012, the ending year to the commitment period. All other members not included in the previously mentioned annexes are developing countries listed as “non-Annex I countries,” these have no legal obligation to reduce their GHGs emissions by the end of the commitment period. As already mentioned, the clean development mechanism is the link between non-Annex I countries and Annex I countries. The CDM is also the only flexible mechanism from which Mexico can benefit and take action. This mechanism offers great opportunities in various aspects. For developing countries like Mexico that lack the financial means to take great leaps forward on the mitigation of climate change, the CDM, in theory, attempts to get them caught up with the industrialized States. It is worth noting that, the main concern of all non-Annex I countries within their territories is their overall development, mostly the economical development. This priority poses a threat of rising GHGs emissions from developing countries; which is why the Kyoto Protocol exhorts Annex II countries to contribute environmentally sound technology into the former to help make the process of development a cleaner one.

The work Mexico has accomplished on climate change mitigation indicates a step in the right direction for this developing country. Nonetheless, there are still several aspects to improve. Since the adoption and ratification of the United Nations Framework Convention on Climate Change, and more recently, the Kyoto Protocol, Mexico seems to have quite an active stance to meet the agreements under both of these international instruments. Although, the legal binding effect of the Kyoto Protocol to reduce greenhouse gas emissions does not regard Mexico, the activism within this Latin American country points to the possibility of a real integration and implementation of the international agreements already mentioned, into the Mexican legislation. Although the actual integration and proper following of international agreements within Mexican territory is rare; Mexico has taken serious actions in the case of the UNFCCC treaty and the Kyoto Protocol. Mexico has not only complied with the essential commitments under the KP; but also the creation of cleaner public transportation.¹⁰¹ Nonetheless, the CDM demands improvement and more strict approach in order to exploit its full potential. One issue is that the environmentally-aware mindset has not spread throughout the Mexican territory in the same manner, much less in the transnational businesses. Many of the setbacks in the CDM within Mexico derive from the lack of project variety. As was discussed, alternative energy projects are very promising and great sustainable development options; Mexico counts with various places with plenty of solar energy, or wind waiting to be transformed. The issues remains the same, Mexico can continue to do a halfway decent job on the project-quality of CDMs, or look at this as a great opportunity to help the planet, and as a chance to position Mexico at a higher level before the international community. The CDM is an opportunity that can bring several advantages, especially if we also consider that the upcoming Conference of the Parties (COP 16) will be held in Cancun. Perhaps, 2010 is the ideal year for Mexico to begin a new trend in negotiations to seek more partners willing to invest capital to create more new, sophisticated clean development mechanism projects or program activities.

The purpose behind this work is to propose a couple of changes to the Mexican system that lead to two interrelated outcomes that seek to improve the implementation of the clean development mechanism in Mexico. The first intention of the proposals is to increase the

¹⁰¹ As a side note, In the capital, Mexico City, several bus lines have becomes "green", thanks to the Green Fund.

number of countries to invest in the creation of clean development mechanism projects in Mexico. Since the main participants in Mexico's CDM projects are the United Kingdom, Switzerland, and Northern Ireland (they participate in over half of the projects already implemented),¹⁰² the idea is that by attracting other countries, the new participants could work together to create bigger, more complex projects with higher degree of sustainability that benefit all parties. The second purpose goes hand in hand with the first, if more industrialized countries were to participate in the creation of CDM projects in Mexico, this Party could enjoy a larger variety of CDM projects, and consequently obtain higher (measurable) outputs, overall, that would benefit all project participants. These two goals derive from the analysis presented in earlier paragraphs and after observing the weaknesses of the CDM projects already implemented. If Mexico were to expand the variety of CDM projects, attract more investors, and earn more CERs, Mexico would not only receive material benefits, but it could also play a leading role in the global movement against climate change, more specifically under the forum of the United Nations Framework Convention on Climate Change. However, the means to reach such goals require the integrated effort of the Mexican governmental institutions.

In order to realize these goals, the Ministry of the Economy in Mexico, the institution that handles all foreign investment, must work in harmony with the Inter-secretarial Commission on Climate Change (the DNA) to create a fiscal incentive program that benefits the investing participants in CDM projects. More specifically, the Ministry of Economy should grant fiscal exemptions or deductions to the technology-transfer importation tax, property tax, corporate income tax (for the CDM projects that sell a service), and payroll tax (for those projects that require workers and a maintenance staff to continue activities), just to name a few examples. As mentioned before, incorporating the previous types of tax breaks would help in attracting a different and larger number of participants from Annex II countries. The benefit of the tax breaks is double. On one hand, we have the benefit to the potential participants to help them reduce initial creation costs required from any given CDM project. In addition, the fiscal incentives would also help change the perspective Annex II countries have on the clean development mechanism. Instead of seeing the CDM as a duty and requirement unfairly imposed upon Annex II countries, these member Parties can regard the CDM as another form of profitable investment. The fiscal incentives are a sort of "help me to help you" concept, in return

¹⁰² See UNFCCC WEBSITE, *supra* note 15.

Mexico strengthens its image before the parties of the Kyoto Protocol, and improves its position altogether in the international community as a strong leader. The key is to create specific fiscal incentives with higher exemption rates than those fiscal incentives aimed towards Foreign Direct Investment in general.

The second proposal aims at changing the light under which the CDM is perceived. This has already been mentioned, but the view that matters the most is the one the Annex II countries have of the CDM, simply because such group controls the funding reserved for CDM projects. If instead of regarding the clean development mechanism as a “duty under the Protocol with no tangible rewards,” Annex I and II countries were to see the CDM as any other form of profitable foreign investment, the chances of gaining capital would increase. In order for this change in perception to occur the methodology to implement any CDM project also needs to change. In other words, allowing and promoting the integration of brokers in charge of the processes of approval and registration, prior to beginning actual project-implementation, as well as finding countries to which to sell the CERs in the international carbon market. The Designated National Authority would be in charge of granting a limited number of broker positions, provide these new components with the adequate skills and training, and allow them to handle all the previously mentioned duties. In addition, if the CDM project generates a service, it would be in the best interest of the host party to allow the participants to sell such services to companies interested in becoming environmentally aware businesses, but cannot afford all the machinery and technology required to produce green services/products. Consequently, the clean development mechanism becomes more of a business-based exchange in which all parts can benefit from the very beginning of the project.

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INTERVIEWS

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