

Option analysis for the evolution of the Clean Development Mechanism to engage developing countries in a post 2012 Kyoto commitment

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List of acronyms

AAC:	Australia Aluminum Council	GSEP:	The Global Sustainable Electricity Partnership
AF:	the Adaptation Fund	Gt:	Giga tonne
AIGH:	Australian Industry Greenhouse Network	GtC:	Gigatonne of carbon
AOSIS:	Alliance of small island states	HFCs:	Hydrofluorocarbons
AWG/LCA:	Ad Hoc Working Group on long-term Cooperative Action under the Convention	IAI:	The International Aluminium Institute
BAU (or BaU):	Business as Usual	ICAO:	International Civil Aviation Organization
BCSE:	Business Council for Sustainable Energy	ICC:	The International Chamber of Commerce
BINGOs:	Business and Industry NGOs	IEA:	International Energy Agency
BRIC:	Brazil, Russia, India and China	IETA:	International Emission Trading Association
CAN:	Climate Action Network	IGO:	Intergovernmental Organizations
CbDR/DC:	Common but differentiated responsibilities and different capabilities	ILMC:	Installation-Level Mitigation and Crediting
CCBS:	The Climate, Community & Biodiversity Standards	IMO*:	International Mitigation Obligations
CCMC:	Centralized Coordination of Mitigation and Crediting	IMO:	International Maritime Organization
CCS:	Carbon Capture and Storage	IPCC:	Intergovernmental Panel on Climate Change
CCX:	Chicago Climate Exchange	IPIECA:	The international Petroleum Industry Energy Conservation Association
CDM:	Clean Development Mechanism	IPO:	Indigenous People's Organizations
CDM-EB:	CDM executive board	IPR:	Intellectual Property Rights
CERS:	Certified Emission Reductions	LDC:	Least Developed Countries
CH4:	Methane	LDCF:	Least Developed Countries Fund
CO2:	Carbon Dioxide	LGMAs:	Local Government and Municipal Authorities
COP/MOP:	Conference of the Parties serving as the Meeting of the Parties	LULUCF:	Land Use, Land-Use Change and Forestry
COP:	Conference of Parties	MRV:	Measurable, reportable and verifiable
CPA-DD:	Programme Activity Design Document for PoA	N2O:	Nitrous Oxide
CPAs:	CDM Program of activities	NAMAs:	Nationally Appropriate Mitigation Action
DNA:	Designated National Authority	NGO:	Non-governmental Organization
DOE:	Designated Operational Entity	OECD:	Organization for Economic Co-operation and Development
ECN:	Energy Research Centre of the Netherlands	OPEC:	Organization of Petroleum Exporting Countries
ENGOS:	Environmental NGOs	PDD:	Project Design Document
EU ETS:	European Union Emission Trading System	PFC:	perfluorocarbons
EU:	European Union	PIN:	Project Idea note
EWEA:	The European Wind Energy Association	PoA:	Programme of Activities
GCC:	Global Climate Coalition	PPA:	Power Purchase Agreement
GCF:	Green Climate Fund	REDD:	Reducing Emissions from Deforestation and Forest Degradation.
GDF:	Green Development Fund		
GDP:	Gross Domestic Product		
GHG:	Green House Gases		
GS:	Gold Standard		

RINGOs:	Research-oriented and Independent NGOs	UN:	United Nations
RINGOs:	Research-oriented and Independent NGOs	UNEP:	United Nations Environment Programme
SBI:	Subsidiary Body for Implementation	UNFCCC:	United Nations Framework Convention on Climate Change
SBI:	the Subsidiary Body for Implementation	UNGA:	United Nation General Assembly
SBSTA:	Body for Scientific and Technological Advice	VCS:	Voluntary Carbon Standard
SCCF:	the Special Climate Change Fund	VER+:	Verified Emission Reduction plus
SCM:	Sectoral Crediting Mechanism	VOS:	The Voluntary Offset Standard
SD:	Sustainable Development	WBCSD	The World Business Council on Sustainable Development
SDPAMs:	Sustainable Development Policies and Measures	WCI:	the World Coal Institute
SF6:	Sulphur hexafluoride	WMO:	World Meteorological Organization
SIDS:	Small Island Developing States	WNA:	World Nuclear Association
SSC:	Small-scale methodologies	WTO:	World Trade Organization
TUNGOs:	Trade Union NGOs	WWF:	World Wide Fund for Nature
		YOUNGO:	Youth NGOs

Abstract

There are three main problems in the current climate change negotiation, the mitigation gap, the financial requirement and the different views and perceptions of the problem ; The mitigation gap refers to the difference between the current Green House Gases (GHG) mitigation pledges by developed countries and the necessary GHG reduction recommended by the Intergovernmental Panel on Climate Change (IPCCC), this has been translated into a call for developing countries to adopt mitigation pledges and at the same time a call to expand the carbon market in a post-Kyoto commitment; The financial requirement refer to a lack of funds necessary to treat the former problem and finally exist the problem associated to the difficulties to include the different views of developed and developing countries under the 'United Nations Framework Convention on Climate Change' UNFCCC. So far developing countries have been participating in mitigation actions though the Clean Development Mechanism (CDM), a mechanism where developing countries sell carbon credits to developed countries. Even though in the past the CDM was more effective than expected, it has faced critics during its function; furthermore, it does not lead to net emission reductions in developing countries.

The aim of this study is first make an overview of the solutions offered to current problems of CDM, second, identify parties with influence capacity over climate change negotiation, and finally to evaluate the level of support that these solutions have within parties with influence capacity over negotiations.

The findings of this study show that there were no specific proposals to evolve CDM that can offer a solution to all the critiques to CDM, however alternatives to CDM that involve an expansion of the carbon market, such as Sectoral Approach, National Appropriate Mitigation Actions (NAMAs), and International Mitigation Obligation (IMO) can offer solutions to the majority of those critiques.

For the second part of the study a literature review was performed over the negotiation process in the UNFCCC. It was found that the negotiation process is highly complex in nature, therefore, was preferred to study the position of NGOs which participate as observers given the more transparent position on important issues for the negotiation. Two groups of NGOs were chosen for further analysis, the Environmental NGOs (ENGOS) and the Business and Industry NGOs (BINGOS). These NGOs were more active participating in the negotiations through statements and present clear intentions to influence negotiations, also present a solid website-network organization, all together allow them to have a better chance to make their voice heard, comparing with other NGOs groups.

Finally, the position of BINGOS and ENGOS converge in their main views for a future of CDM (with few differences on specific topics). They both consider that developing countries should start to declare mitigation pledges and mitigation actions. Both see Sectoral Approach as a mechanism that should be used in a future commitment. Neither ENGOS nor BINGOS oppose to NAMAs, ENGOS call to build the necessary conditions in developing countries for its implementation and BINGOS call for clarification on investment opportunities within NAMA system. IMO on the other hand lack of support. To finance the future of climate change and any expansion to the CDM, both see private parties playing an important role but under different approaches, BINGOS call for the use of public funds to leverage the investment opportunities for private parties. ENGOS, on the other hand, call to have a common fund coming from a levy of each credit transition in the carbon market.

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1 Introduction

History of Kyoto protocol

Climate change is pointed as one of the most important problems face by humankind, and since climate change can affect countries all around the world, is a problem that has to be address in a framework of international effort. The institutional framework for such international cooperation is provided by the United Nation Framework Convention on Climate Change (UNFCCC), created in 1992, were its ultimate objective is prevent dangerous anthropogenic interference with the climate system. One of the most important principles of operation of the UNFCCC is the principle of “Common but differentiate responsibilities and different capabilities” (CbDR/DC), basically the CbDR/DC principle implies that although all countries have common responsibilities, these responsibilities are differentiated on the basis of their contribution to causing the problem and their capabilities to address the problem. Based on this concept the convention divides the world into developed (Annex-I) and developing countries (non-Annex-I) (Gupta 2010).

The adoption of guidelines, rules and directions to address the climate change problem under the UNFCCC are done by the Conference of Parties (COP) which is the meeting of the delegates of all the countries (or parties) participating in the UNFCCC. The COP has met annually since 1995 at COP-1 in Berlin.

The UNFCCC follows the recommendations of the Intergovernmental Panel on Climate Change (IPCC) which is a jointly effort of the scientific community to understand the problem of climate change. The IPCC was set up in 1988 by the United Nation Program (UNEP) and the World Meteorological Association (WMO). At the end of 1990 the IPCC published the ‘First Assessment Report’ providing initial consensus knowledge on climate change. It was suggested that if Green House Gases (GHG) are stabilize at 1990 levels, global emission of CO₂ would need to be reduce over time by more than 60%, methane (CH₄) by 15-20%, Nitrous Oxide (N₂O) and chlorofluorocarbons (CFCs) by about 70-85% (Gupta 2010).

In 1995, at COP-1, the Berlin mandate was adopted to promote legally binding reduction commitments to be adopted at COP-3 in 1997 at Kyoto. At the same time a pilot phase on Activities Implemented Jointly (AIJ) was adopted which allow to countries to voluntarily participate in projects to reduce emissions but no carbon credits to the investor were allowed in the pilot phase (Gupta 2010)

In 1997 at COP-3 the Kyoto protocol was approved, the protocol called developed countries to reduce their total emissions of six GHGs (CO₂, CH₄, N₂O, HFC, SF₆ and PFC) by 5.2% for the target period of 2008-2012 (Gupta 2010). The developed countries participating in the protocol can achieve their targets domestically but because the geographic location of the GHG emissions is environmentally irrelevant, these countries has flexibility to achieve part of their target reducing emissions overseas in a more cost-effective way (Yamin 2005). The Kyoto protocol includes five mechanisms: joint fulfillment, joint implementation (JI), the Emission Trading System (ETS), the Clean Development Mechanism (CDM) and the financial mechanism to implement the protocol (Gupta 2010).

- The joint fulfillment allows countries to adopt a joint target for implementation, hence, the European Union (EU) adopted a joint target of 8% emission reduction which allowed flexibility to its own member states in terms of the kinds of targets each country would adopt.

- The JI, and CDM are carbon credits markets which means that if an investor invests in another country and if that investment leads to a reduction of GHG emissions in relation to an existing emission baseline, then those emission reductions can be transferred to the country of the investing party. JI allows developed country investors to undertake projects in other developed countries (mostly countries with economies in transition) in return for emission credits. The CDM, in turn, allows investors to invest in developing countries in return for emission credits [named, Certified Emission Reductions (CERs)] (Gupta 2010).
- Finally, the ETS works in Europe (EU-ETS) as a cap-and-trade system, this mean that a regulator prescribes a limit on the level of GHG emissions (emission cap) and distribute emission allowances within the industries participating, then a company "A" which is emitting more than its allowances quota can buy allowances from a company "B" which is emitting less than its allowance allocation (that could be thanks to a emission reduction performed at company "B" at a cheaper cost than the value of allowances in the market or to a decrease in company "B" production).

Joint Implementation (JI) is different than ETS in that more industry sectors are included and joint participation is expected. On the other hand, JI allows credit for reducing any of the six GHG, whereas the EU-ETS only covers CO₂ (Hepburn 2007). At the same time The ETS is linked to the CDM, which mean that part of the emission reduction obligations to meet the cap can be achieved using carbon credits (CERs) generated by the CDM as well (Catrinus 2003).

2 Problem definition

There are three main problems in the climate change negotiations that are being discussed in search for solutions; the mitigation gap, the financial gap and the complexity on the different views of all the stakeholders about the climate change problem.

The mitigation gap refers to the difference between the recommendation on mitigation path by the last report of the IPCC (including also other reports, such as the stern review) and what have been achieve so far. According with the fourth assessment report of the IPCC, it is necessary the stabilization of GHG atmospheric concentrations at 450 ppm to avoid a rise of global temperature beyond 2°C, this requires domestic reductions by industrialized countries in the range of 25-40%, by 2020 or 80-95% by 2050 (compared with 1990 CO₂ eq emission levels) plus a "substantial deviation" from business-as-usual (BAU) in developing countries by 2020 (Sterk 2008).

The Stern Review estimated that "even if emissions from developed regions could be reduced to zero in 2050, the rest of the world would still need to cut emissions by 40% from BAU to stabilize at 550 ppm CO₂ eq and for the target of 450 ppm CO₂ eq, this rises to almost 80%" [Stern 2007, in (Schneider 2009)].

Notwithstanding, by 2009, the emission reductions generated by the EU-ETS which includes about 45% of the CO₂ emissions and a little less than 40% of the GHG emissions of the EU were expected to reduce emissions in Annex-I countries from 9% to 14% by 2020 relative to 1990 levels (OECD 2009), therefore, The EU-ETS itself is not delivering the necessary mitigation actions required to follow the IPCC recommendations. Another variable to consider is that nowadays the distinction between developed and developing countries in many business areas has blurred, given that important multinational corporations, have been established in developing countries since Kyoto-

protocol was negotiated, which has contribute to the fact that by 2009 the GHG emissions of developing countries accounted for around 55% of global emissions (IEA 2011b).

The mitigation gap, was quantified by UNEP Risoe (2010) in a recent report, where, taking together the mitigation pledges of developed countries will be possible to achieve an emission level between 53-49 GtCO₂eq by 2020 (depending of the extent to which pledges are implemented), however to be consistent with the 2°C IPCC target the emission level must decrease to 44 GtCO₂eq by 2020. This difference is translated in the existence of a 'mitigation gap' between 5-9 GtCO₂eq by 2020 which has not been allocated to any party yet [UNEP Gap Report, 2010 in (VBO 2012)].

The problem of allocate the gap involve necessarily to allocate emission reduction targets in developing countries, since GHG emissions in developing countries have already exceeded emissions from industrialized countries and are expected to increase considerably in a longer term perspective (Schneider 2009). On this respect, one article has set numbers to the 'substantial deviation' in developing countries, allocating these between 15%-30% for the 450 ppm CO₂-eq target [den Elzen and Hohne, 2008a in (Winkler, Vorster & Marquard 2009)].

The way to encourage developing countries to declare mitigation pledges can bring political frictions, since suggest specific emission reductions targets in a 'Top-down' basis to developing countries may be difficult to accept by developing countries (Winkler, Vorster & Marquard 2009). One option more acceptable for developing countries is report emission reduction targets in terms of relative baselines. The distinction between absolute and relative reductions is that developed countries need to reduce emissions in absolute terms, relative to a fixed base year (most of the cases for year 1990). In the case of relative reduction, not specific numbers are put to the substantial deviation from baseline, the concept is that absolute emissions in developing countries may increase, but they should increase at a slower rate than they would have done without action on mitigation (BAU). These would be expressed in relation to a baseline, rather than a base year (Winkler, Vorster & Marquard 2009).

Notwithstanding, allocate a baseline for relative reduction in a top-down basis can be politically complicate as well, for that reason it is expected that developing countries start to quantify their emission reduction possibilities and how many national actions, set of actions or programs can be performed to contribute to emission reductions in a 'Measurable, Reportable and Verifiable' (MRV) way. To quantify their emission reduction possibilities and perform these national actions, developing countries are calling for financial support (Winkler, Vorster & Marquard 2009).

So far, developing countries has been participating in mitigation actions through the CDM, which at the end are mitigation allocated to developed countries. For that reason on the view of different authors, one important step in order to address the problem of the mitigation gap is to expand the carbon market extremely rapidly along with other mitigation policies to contribute to the necessary global emission reductions (Hepburn 2007, Schneider 2009). There are different proposal to evolve the CDM, some of them aim to solve specific critiques emerged during the function of CDM and other aims to transform the CDM in a mechanism with bigger coverage and more mitigation possibilities which only can be possible with the right financial framework and support.

The financial gap is related to the problem of mitigation gap, since, in order to assists developing countries in their mitigation actions considering the principle of CbDR/DC, it would be necessary to have an adequate financial framework. This problem was treated in 2009 at the Copenhagen Accord (during the COP15), where countries committed to provide 30 billion U.S. dollars in fast-track public financing between 2010 and 2012 which is called the 'Green Climate Fund' (GCF) which will start operations by 2013. Furthermore, was committed to mobilize 100 billion U.S. dollars yearly by 2020

for climate change mitigation and adaptation. (Business Europe 2010c). However it is not clear yet how the yearly 100 billions U.S. dollars committed by 2020 will be raised, which has been translated into the existence of a 'financial gap' as well (VBO 2012).

To enter into force, the Kyoto protocol must be ratified by at least 55 parties including Annex-I parties accounting for at least 55% of the total emissions from Annex-I countries in 1990 (Dessai, Lacasta & Vincent 2003), currently the Kyoto protocol include 192 parties (UNFCCC 2011c).

The problem to include a wide variety of views and perspectives, by all the parties on the climate change negotiations, has been increasing during the time since the parties start to gain knowledge and understand their unique circumstance respect to the climate change problem. This means that parties can change their initial position respect to the ratification of the Kyoto protocol, since depend on how the protocol represent the interest of the parties, for instance, United State ratified the protocol in 1997, however in 2001 withdrawal from the protocol arguing the "the world economy would collapse the United States were to take on strong stabilization or reduction targets" [Byrd Hagel Congressional Record, 1997 in (Gupta 2010)]. Australia ratified the protocol in 2007, after a change in government and with a different political perception of the problem (Gupta 2010), lately Canada which ratified the protocol in 2002, withdrawal from the protocol in 2011 arguing different interest with the protocol (Vaughan 2011). This is a clear example about how complicate can be the negotiation process for the parties under the UNFCCC in order to include all the position on the table.

The climate change negotiation also includes observers which are mainly non-governmental organizations (NGOs). They cannot directly participate in the decision making process, but their views about the negotiation process need to be heard and be included. At the beginning of the 90's around 50 NGOs where present in the climate change negotiations (Gupta 2010), currently, there are over 1409 NGOs participating, allocated in different groups or 'constituencies' according with their interest (UNFCCC 2011b).

The possibility of change in position of the parties and the growth in number of observers NGOs, add complexity to the discussion of an issue that is already complex in nature. The necessity for a common view in directions for the future of climate change negotiation become crucial in 2012 which is the year where the first commitment period of the Kyoto protocol ends and a new agreement will be necessary (Dessai, Lacasta & Vincent 2003).

The assessment of the options to evolve the CDM and how much support they have within parties and observers will give a good indicator of the options where developing countries can participate in a post-Kyoto protocol with the aim to solve the problem of the mitigation gap.

3 Research question

The central research question is formulated as follow:

Which of the mechanisms susceptible to be adopted in a post Kyoto protocol to evolve the CDM, has more support and consolidation among parties with influence capacity over climate change negotiation?

To answer this main question sub-questions are formulated:

1. How the proposed mechanisms to evolve the CDM address the current critiques to CDM?
2. Which are the parties that can influence the adoption of these proposed mechanisms?
3. Which are the main positions and reasons for advocate one proposed mechanism by parties with influence capacity?

4 Methodology

In order to answer the main research question, and the sub questions formulated. A methodology consisting of three steps have been elaborated.

Step 1: Consist of a literature review of the CDM process, all the critiques formulated during the function of the CDM and the solutions proposed to address these critiques or alternatives to CDM. With that information will be possible to elaborate an overview of the critiques/solutions to evolve the CDM.

Step 2: Consist of a literature review of the decision making process in the climate change negotiation in order to gain knowledge on which parties has influence capacity over the negotiations and are accessible to further study on their positions respect to the future of CDM.

Finally, step 3: Consist of an analysis of the NGOs involve in the negotiation process as observers. Given that there are currently over 1,409 NGOs admitted as observers, was preferred use a social network analysis tools as a way to discriminate for important NGOs who represent a wide variety of organization within their own constituency or group. This step of the methodology requires further details which will be explain below.

The social analysis network tool use to analyze NGOs is call "Issue Crawler" which is a web-based program that reveal the presence of websites networks through the links that the original 'seeds' (websites or starting points) have between each other. From there is possible to use the output data to rank important NGOs according with their inlinks received and its role connecting different sub-groups (betweenness centrality), finally the websites identified as important were analyzed on searching for positions on the future of climate change in a standardized way.

4.1 Issue Crawler

Issue crawler begins from a set of starting points or seeds: a list of URLs, which can be equivalent to a set of coordinates around which the geographical terrain is to be mapped.

From here, the crawler gathers the links present in the starting Web pages, and then searches the pages which these links point to, to in turn identify their outlinks; depending on crawl settings, it repeats this process up to three times (this is known as the crawl depth).

Thus, an increase in crawl depth means that a larger neighborhood of the seeds is explored for its linkage patterns regardless of the quality of its ties to the core network, an increase in iterations means that such exploration takes place only in areas which were already identified as belonging to the network during earlier iterations.

The Issue crawler analysis can be performed in three different ways depending on the purpose of the analysis, namely: 'co-link analysis', snowball analysis and inter-actor analysis.

Co-link analysis: can be executed 'by page' or 'by site'; *by site means* that, from all links discovered during the crawl it filters out only those which are reciprocal at least to some extent, that is, it identifies sites which are linked to by at least two of the starting points and which can therefore be considered to be at least part of a loosely interconnected network of Websites. Such co-link analysis can be repeated up to three times (through the iterations setting). On the other hand, *by page analyses*, analyze deep pages, and returns networks consisting of pages but not homepage only as with the 'by site' analysis.

It is also possible also to privilege the starting points of a crawl in subsequent iterations – with this setting checked, starting points will continue to be included in later iterations even if the first iteration found that these starting points were in fact non-important nodes.

Snowball analysis: with this option, Issue Crawler crawls the specified starting points, captures the starting points' outlinks and retains them. This is one degree of separation. Subsequently capture the outlinks of the retained URLs being the second degree of separation. By default the Issue Crawler snowball analysis captures two degrees of separation, and up to three in total. It is recommended when one wants to know all network actors around starting points.

Finally, the inter-actor analysis is when the Issue Crawler crawls the specified starting points, captures the starting points' outlinks and shows inter-linking between the starting points only. It also includes isolates, i.e., those starting points that have no received links from other starting points (Rogers 2011b). A representation of the different type of analysis that can be performed with issue crawler can be seen in Figure 1. Another important characteristic of issue Crawler is that all the analysis of networks performed by an analyst are public and can be seen for any other person interested in reviewing the starting points, type of analysis and results. Then, it is highly useful to share knowledge and ideas with other analysts performing similar studies.

Map's graphic concepts

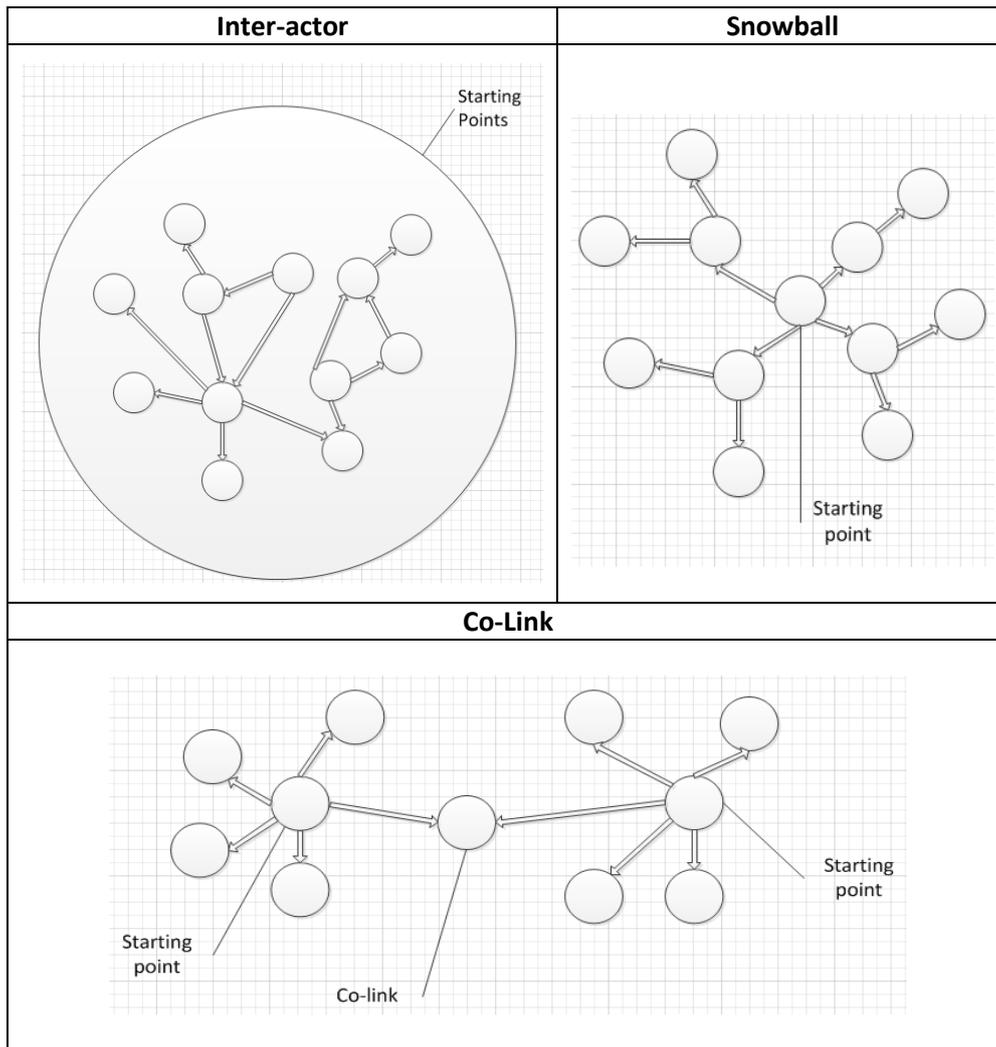
Size of the node: The size of the node is related with the number of inlinks received. The bigger the node the more inlinks from the networks has been received.

Color of the node: The color of the node is randomly assigned to each web domain (.org, .com, .net, etc.) that is present within the network.

Arrows: The arrows attached to the links drawn between nodes in the map also indicate the predominant patterns of interlinkage – showing which sites are predominantly origins and which sites are mostly destinations for Web traffic.

Site's level of centrality: It is an aggregate of inlinks received and outlinks made, the higher this value the more central is the node in the network. It indicates that the node is not simply a source of information for others, but also actively connects to other information sources (in other words, it can be described as a 'good citizen' of the many-to-many network, rather than operating on a one-to-many broadcast basis) (Rogers 2011a).

Figure 1: Type of analysis that can be performed with issue crawler



4.2 Gephi

Gephi¹ is an interactive visualization and exploration program for all kinds of networks and complex systems, dynamic and hierarchical graphs. The main advantage of Gephi is that it is possible to interact with the representation; manipulate the structures, shapes and colors to reveal hidden properties.

The goal is to help data analysts to make hypothesis, intuitively discover patterns, and isolate structure singularities or faults during data sourcing (Vinu E.V, N.Ch.Sriman Narayana Iyenkar 2011).

¹ Gephi available at <http://gephi.org/>

Gephi can work with any graph file such as .gdf, .gexf, .gml and etc. Therefore it is possible to use the data gathered from Issue crawler (.gexf) to be analyzed into Gephi program.

Then with Gephi one can calculate different properties of the network and being able to compare one network with others, and at the same time identify important actors within a network.

Some network questions that can be answered with Gephi are shown on the next table.

Table 1: : Network Questions (Jørgen 2012)

English	Graph Theory
How popular are the actors?	What is the degree distribution?
How connected are the actors?	What is the average path length (APL) and diameter?
How tight-knit are the actors?	What is the average clustering coefficient?
How important are the actors?	What is the betweenness and Closeness centrality?

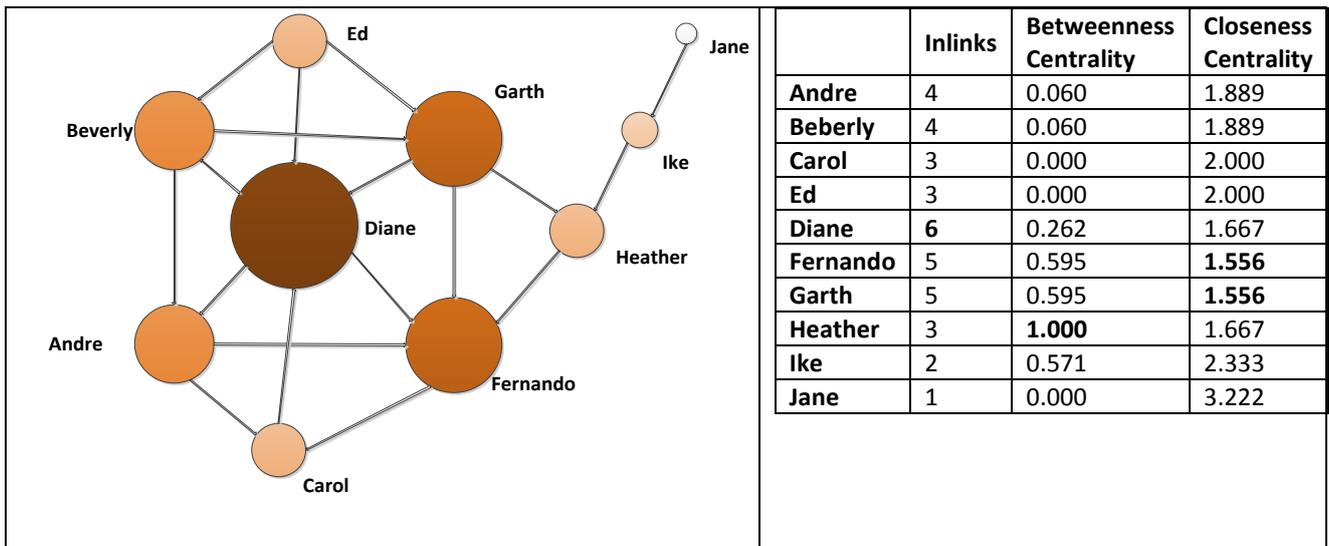
Some of the most common characteristic used to evaluate the role of the actors in a given network are the closeness centrality, betweenness centrality and inlinks numbers as are described below:

Betweenness Centrality: is a measure of how often a given vertex lies on the shortest path between two other vertices. This can be thought of as a kind of “bridge” score, a measure of how much removing a person would disrupt the connections between other people in the network. For instance in Figure 2 Heather has the highest betweenness centrality because if Heather is removed from the network, then Ike and Jane are totally isolated from the network.

Closeness Centrality: The average distance from a given node to all other nodes around, represent who are more reachable by other actors at shorter path lengths. For instance, in Figure 2, Fernando and Garth can pass a message faster to the other nodes than Jane the one with the highest closeness centrality (or highest distance to other nodes).

Inlinks: Represent the number of links or edges receive from others node in the network. In Figure 2 supposing that each link between two nodes is in both directions then, Diane has the highest number of inlinks and Jane the lowest.

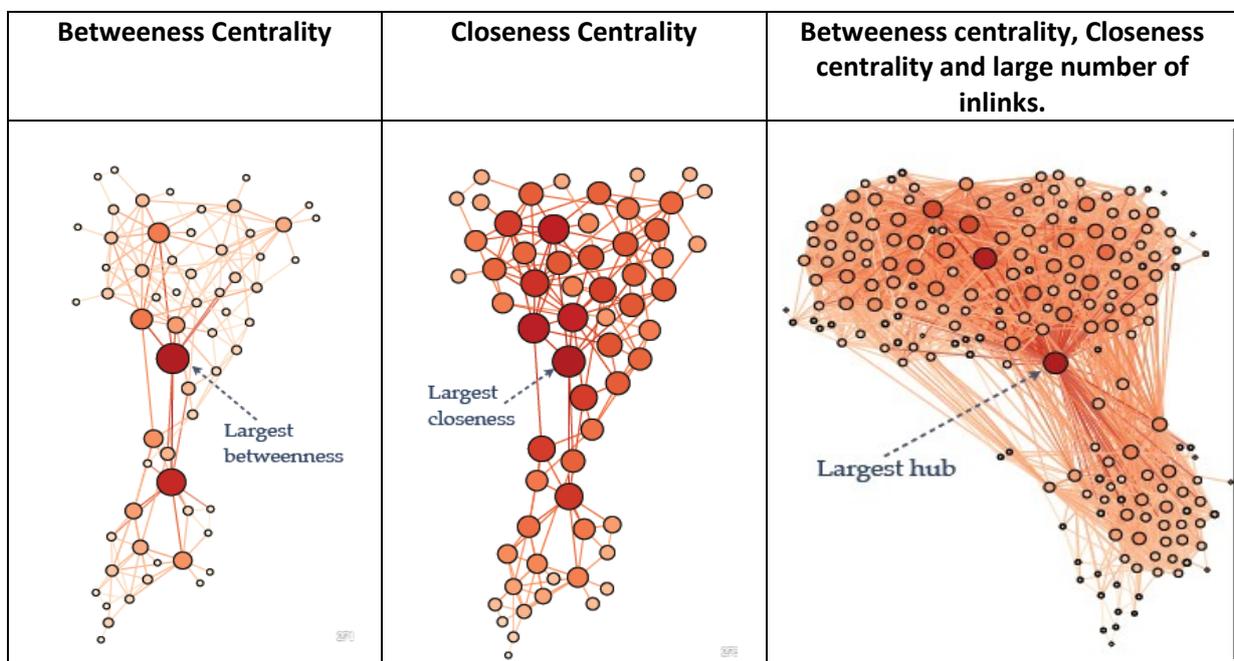
Figure 2: Friends network for a simple Gephi analysis, adapted from (Hansen, Schneiderman & Smith 2011)



In a small network such as the “Friends Network” above it is relatively easy to detect important actors looking the map, however, with larger networks is more important to look directly to the output tables.

Table 2 shows representations of a node with the highest betweenness centrality, highest closeness centrality and high betweenness centrality, closeness centrality and number of inlinks from left to right respectively, in networks with high numbers of nodes.

Table 2: Representation of some important properties of a node within big networks (Jørgen 2012)



For the analysis of the NGO’s websites networks, there were considered as a parameter of analysis; the number of inlinks that each website receive from the network and the position of betweenness centrality.

The closeness centrality was left apart from the analysis since it a parameter more appropriate when one wants to evaluate the ability to broadcast a message within a network (i.e. Twitter or Facebook).

4.3 Google Syntax

After identify these important actors in the NGO networks each of the websites were analyzed looking for information relevant to the climate change and the future of CDM.

On that purpose was use a search syntax in Google in order to search inside each website in a standardize way despite the organization or presentation that a website could have.

This search syntax includes the following 10 relevant key words: “sectoral approach”, “future of CDM”, “Nama”, “CDM proposition”, “Durban expectation”, “position on”, “CDM proposal”, “COP17”, “COP18” and “analysis of COP17”. The entire syntax including the keywords which was directly typed on Google search is shown in the next table.

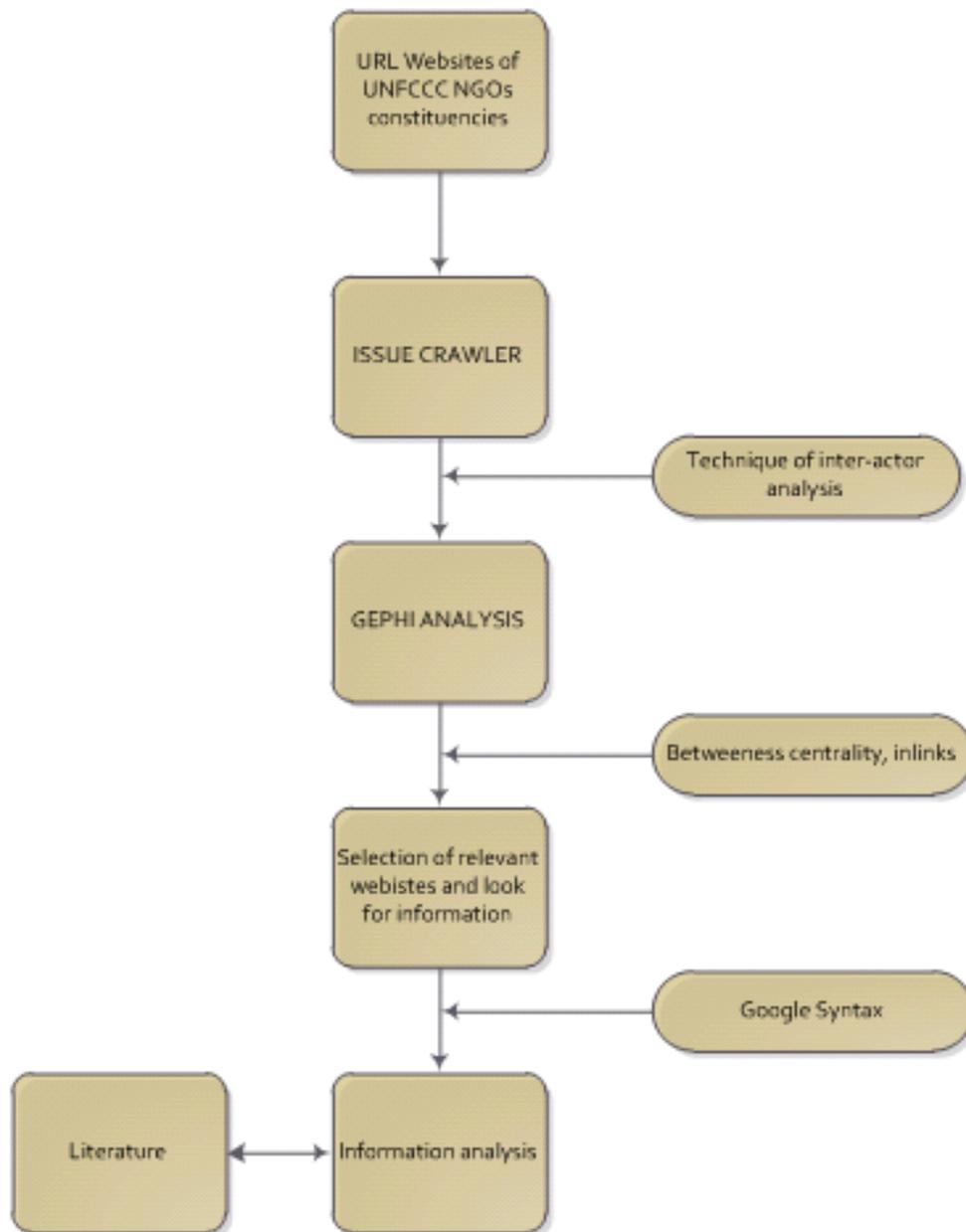
Table 3: Google search syntaxes

In-website search syntax for Google search
"sectoral approach" OR nama OR "CDM proposition" OR "future of CDM" OR "Durban expectation" OR "position on" OR "CDM proposal" OR COP17 OR COP18 OR "analysis of COP17" site: <i>(here go the url domain of the NGO)</i>

After apply this syntax Google search inside each NGO’s website all the information and documents that contain at least one or more of the keywords selected.

The next figure represents all the steps of the methodology described above.

Figure 3: Methodology used for NGO analysis



5 Clean Development Mechanism

5.1 Brief history of CDM

The clean development mechanism was a late invention in the negotiation of the Kyoto Protocol, so late in fact that was called the “Kyoto Surprise”. In June 1997, only six months before the Kyoto negotiations, the Brazilian delegation proposed to create a Green Development Fund (GDF) that would be supported by countries out of compliance with their commitments, and that would support mitigation projects in developing countries. Though endorsed by the G77 and China, this proposal did not fly because developed countries were strongly opposed to penalties for noncompliance. To reach an agreement, the United States and Brazilian negotiators suggested in November 1997 that the GDF could be turned into a “positive” scheme whereby countries with commitments under the Kyoto Protocol would be allowed to exceed their emissions quotas by supporting emission reduction projects in developing countries. The new mechanism would put as much emphasis on “promot[ing] sustainable development” as on “help[ing] developed countries meet their commitments.” After intense negotiations, the CDM was finally included as Article 12 of the Kyoto Protocol, signed 11 December 1997 (Lecocq, F., & Ambrosi, P. 2007).

However, the agreed text left many ambiguities unresolved. First, parties differed in their interpretation of the new emphasis on development. Most developed countries still viewed the CDM as a way to gain access to cheap mitigation opportunities in developing countries, and thus to reduce their mitigation costs. But developing countries were looking at the CDM as a new channel for development assistance (Lecocq, F., & Ambrosi, P. 2007).

For CDM host countries, the goal of the CDM is to help them “achieve sustainable development and to contribute to the ultimate objective of the Convention” (UNFCCC, 1997: Article 12(2)). The first mentioned goal – sustainable development – has not been formally defined and is subject to the interpretation from the development priorities of the respective countries. This is an important criterion, which triggered the acceptance of the CDM as an instrument by developing countries (Vasa, Neuhoff 2011).

Generally sustainable development goals include economic, social, and environmental aspects [Olsen, 2007, in (Vasa, Neuhoff 2011)]. The latter goal – contributing to the ultimate objective of the Convention – can be interpreted to mean helping developing countries transition to a low-carbon development path, with the ultimate objective of decreasing global GHG reductions in the range of 50-85% relative to 2000 levels [IPCC, 2007; UNFCCC, 1992 in (Vasa, Neuhoff 2011)].

While not explicitly a goal of the CDM, the Convention and the Kyoto Protocol stipulate that in order to achieve the decarbonization objective, developed countries should support developing countries via the transfer of financial and technological resources to promote low-carbon development in Non-Annex I countries (UNFCCC, 1992: Art. 4.3&4.5; UNFCCC, 1997: Art. 10(c)&11.2).

The main operational guidelines of the CDM were agreed upon only in November 2001, as part of the Marrakesh Accords. And the process was only complete in 2003 with the agreement over the rules governing forestry-related CDM projects called Land Use, Land-Use Change and Forestry (LULUCF), notwithstanding, the first project was registered in 2004 (Lecocq, F., & Ambrosi, P. 2007).

The CDM, accepts all projects that reduce the six GHGs listed in the Kyoto Protocol, with the exception of the protection of existing forests (REDD), nuclear energy, and in the future, HFC destruction from new facilities as well (Lecocq, F., & Ambrosi, P. 2007).

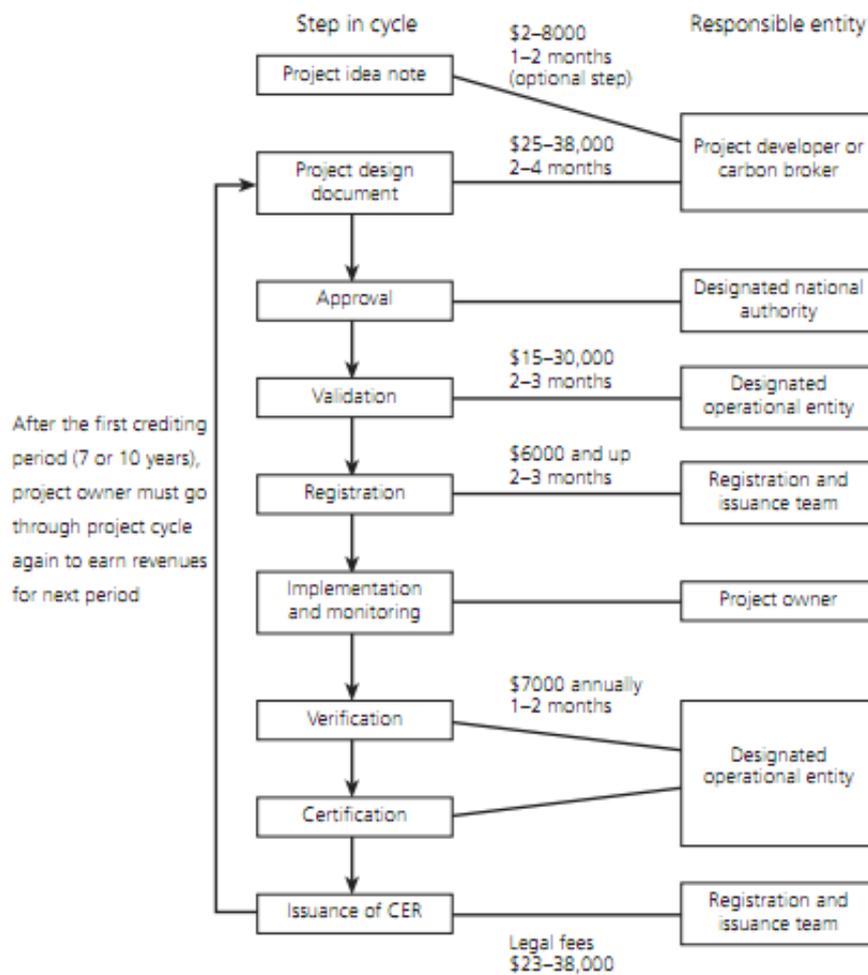
5.2 Process of CDM

All CDM projects must be registered through the CDM executive board (CDM-EB), following the CDM project cycle. The CDM project cycle is completed by a project developer which has the option to first submit a Project Idea note (PIN) to the Designated National Authority (DNA) which review the project and determine whether or not the project contribute to sustainable development under the UNFCCC treaty requirements. The DNA then issues a 'letter of not objection'. Then the project developer create the Project Design Document (PDD) explaining the project in detail including, expected emissions offsets, a monitory plan, an environmental analysis, additionally proof and stakeholders comments. If the PDD is considered appropriated by the DNA, then, a contracted Designated Operational Entity (DOE) that has been certified by the UNFCCC to validate the methodology selected for the project, is tasked with inspecting the PDD and ensuring that it meets the CDM project guidelines and is accurate. After this the DOE prepare a validation report of his findings. Usually several revisions of the PDD are necessary based on the validation report findings. Next the project developer and DOE submit the PDD and validation report made by the DOE to the CDM registration and issuance team which exanimated the PDD, and if is accepted by the registration and insurance team the project activity start as a 'registered project'.

After one year of operation another DOE from a different firm is contracted to assist the project developer to the 'verification process' assessing the baseline emission and emission reduction calculations to determine the amount of emissions reduced by the project. Once the second DOE has verified the emission reductions it issue a request for certification to the CDM-EB which review the information gathered and make a determination on issue CER to the project, this process must occur annually for CER issuance to take place. Both the PDD and validation reports are posted on the UNFCCC's CDM section (Lokey 2009)

The overall process of getting CERs issued and verified annually costs anywhere between \$58,000 for a very simplified small-scale project and \$500,000 for a complex larger project. A general view of the process and estimated cost are depicted in Figure 4.

Figure 4: CDM cycle process (Lokey 2009)

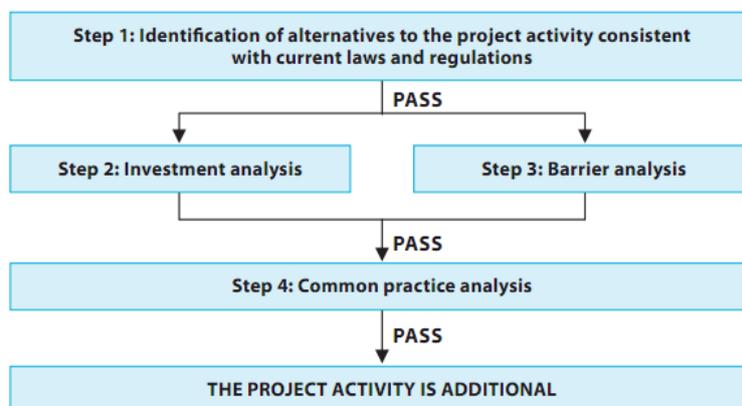


5.3 Proof of Additionality

The crucial part of the PDD is the section which describes how the project is additional to other business-as-usual (BAU) projects that could be executed. By using CERs from emissions reduction projects in developing countries, emitters in industrialized countries can increase their emissions output beyond their individual-country carbon constraints. The emissions reductions in developing countries are thus offset by an increase in Annex I country emissions. It is therefore important for environmental integrity that only emissions reductions are credited that would not have occurred anyway (Vasa, Neuhoff 2011).

The project must exist independently of financial incentives or environmental regulations that would promote the construction of the project in a business-as-usual, then assessing additionality is hypothetical; finding a balance between limiting the number of free-riders and avoiding loss of mitigation opportunities (OECD 2009). This process count of 4 main steps as show Figure 2 and are explained below.

Figure 5: Flowchart of the CDM Additionality tool version 4 (Kollmuss Zink. A .H., Polycarp C. 2008)



Step 1: *Identifying realistic and credible alternatives to the proposed project activity that are compliant with current laws and regulations.*

Compliance with existing laws and regulations is mandatory even if they are unrelated to GHG emissions. If the proposed project activity is not compliant with existing laws and regulations, then the project developer must demonstrate that the applicable laws and regulations are not systematically enforced, and that widespread non-compliance is prevalent.

On the other hand, if the project is implemented to fulfill official policies, regulations, or industry standards, it cannot be considered additional. If the project goes beyond compliance ("regulatory surplus"), it may be additional, but more tests are required to confirm this. For example, an energy efficiency project might be implemented because of its cost savings and would in this case not be additional.

If this step is satisfied, then project developers need to satisfy either the investment analysis test (step 2) or the barrier analysis test (step 3), or both, before moving to demonstrate that the proposed project is not commonly practiced (step 4).

Step 2: *Investment analysis to determine that the proposed project activity is not the most economically or financially attractive.*

If the proposed project produces no economic benefits other than CDM revenues (i.e. HFC industrial gas projects), a simple cost method can be used to demonstrate that the project is not financially attractive without the CDM revenues. However, if the project does generate revenues other than CDM revenues, then an investment comparison analysis or a benchmark analysis using appropriate financial indicators should be applied. The financial analysis must also include a sensitivity analysis to show that the financial attractiveness of the project is robust to reasonable variations in the critical assumptions.

If the analysis results in at least one of the alternatives being more financially attractive than the proposed project activity, then it would have satisfied the investment analysis test and the project developer can move directly to satisfy step 4 (common practice analysis). But if the project does not satisfy step 2, then the project developer needs to first fulfill step 3 (Barrier analysis) before moving to step 4.

Step 3: *Analysis of barriers that prevent the implementation of the proposed project activity or do not prevent the implementation of one of the other alternatives.*

In undertaking the barrier analysis test, project developers must assess barriers other than the financial barriers discussed in step 2 . Such barriers may include investment barriers like the non-availability of private capital or technological barriers like the non-availability of skilled labor or higher technological risks under local conditions. To satisfy the barrier analysis test, the project developer must demonstrate that the barrier identified prevents the implementation of the proposed project and does not prevent the implementation of the one of the identified alternatives. If this condition is satisfied, then the project developer can move directly to satisfy step 4 . But if it is not satisfied, then the project developer must satisfy step 2 before moving to step 4 .

Step 4: *Analyze whether the proposed project activity is 'commonly practiced' by assessing the extent of diffusion of the proposed project activity.*

After demonstrating step 1 and either step 2, 3 or both, the project developer must demonstrate that the proposed project activity is not commonly practiced in the specified region . This is done by discussing other similar activities to the proposed project either to prove that no similar activities can be observed. If they are observed, then the essential distinctions between the proposed project and the observed similar projects must be explained. This step reinforces and complements claims made under the investment and/or barrier analyses. The satisfaction of this step means that the project is additional (Kollmuss Zink. A .H., Polycarp C. 2008).

Which test is best suited to validate additionality depends on the type of project. An additionality test appropriate for one type of project (e. g ., a simple regulatory test for methane flaring, where there is no reason to do the project if not required by law) might not be sufficient for other kinds of projects (e.g., energy efficiency, where there could be plenty of reasons for doing a project besides complying with regulations).

5.4 Registries

Carbon offset registries keep track of offsets and are vital in minimizing the risk of double-counting (that is, to have multiple stakeholders take credit for the same offset) Registries also clarify ownership of offsets. A serial number is assigned to each verified offset when an offset is sold, the serial number and "credit" for the reduction is transferred from the seller to the buyer account. If the buyer "uses" the credit by claiming it as an offset against their own emissions, the registry retires the serial number so that the credit cannot be resold.

Registration and Enforcement Systems must include:

- A registry with publicly available information to uniquely identify offset projects.
- Serial numbers for each offset credit generated by each project.
- A system to transparently track ownership of offsets which makes it possible to track each offset to the project from which it originated.
- A system to easily check on the status of an offset (i.e., whether an offset has been retired).
- Contractual or legal standards that clearly identify the original "owner" of emission reductions.
- Contractual or legal standards that spell out who bears the risk in case of project failure or partial project failure (e.g. who is responsible for replacing the offsets that should have been produced by the failed project) (Kollmuss Zink. A .H., Polycarp C. 2008).

6 Criticisms to the CDM

In less than a decade the CDM has become a vibrant market with 3844 projects registered by early 2012 (UNFCCC 2012c). It is expected a CERs generation of 2724 million tonnes of CO₂eq at the end of 2012 (UNEP RISO Centre 2012). Notwithstanding, it has faced several critiques concerning its environmental integrity, functioning and bias on projects type and locations, to mention some which will be explained in detail below.

6.1 Small-Scale projects inclusion and high transaction cost per projects.

Probably one of the first critiques to CDM was that the transaction costs for small-scale CDM projects was as high as big projects, these cost include: PDD development costs, validation costs, registration costs, monitoring, verification and CERs issuance costs (Figure 1), where only the registration and CERs issuance (administration fee) costs are dependent on the project size (amount of generated CERs). Therefore, these projects suffer from having to complete almost all of the same steps as large-scale projects. The overall process is almost as expensive while the number of CERs that can be earned is limited (Lokey 2009).

Moreover there is always uncertainty at the beginning of the amount of CER that will be generated. For that reason when evaluating CDM projects, banks discount expected CDM revenues because of the uncertainties around registration and issuance, future carbon prices, and potential import constraints. This reduces the contribution that CDM revenue can make to the capital-intensive investment, meaning that, the CER cash flow is frequently only seen as an add-on to domestic support schemes (Vasa, Neuhoff 2011). These uncertainties make that CERs sold up-front have a lower price than the CERs generated at the end of all the CDM process (Lokey 2009). As a result of these uncertainties, banks often do not take CERs revenues into account when decided to give a loan to a CDM project, making even more difficult the access to small-scale project (Sterk 2008).

6.2 Problem of additionality and perverse incentive.

The problem of additionality and perverse incentive are intimately related. The perverse incentive, arises when in the host country of a CDM project exist regulations or financial incentives that mandate or encourage the creation of a project (meaning that it is more difficult to prove additionality to earn CDM revenues). For that reason, it is created a 'perverse incentive' to don't promote clean energy facilities and policies. The larger the gap between the market price of CERs and the emission reduction cost, the greater such perverse incentives would be. This may be seen as a form of "intertemporal leakage", whereby expected action tomorrow increases emissions today. Nowadays, and despite that the additionality tool is required for all CDM projects it is likely that a significant number of non-additional projects are anyway registered (OECD 2009).

To avoid such perverse incentives, an E+/E- rule² has been defined for the CDM. Projects are evaluated against policies that have historically been in place. This can allow governments to

² a) National and/or sectoral policies or regulations that give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuels [so-called Type E+ policies]. b) National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to

mandate environmental reductions while retaining financial inflows from the CDM. The result is, however, equally challenging, as project developers can qualify for CDM projects even if the projects are already commercially viable under the current policy framework so has not solved completely the problem of additionality (Vasa, Neuhoff 2011).

For instance, in the 51st session in December 2009, the CDM-EB decided to reject 10 Chinese wind farms because they could have been implemented without the CDM as a result of the feed-in tariff. The Chinese feed-in tariff had previously been decreased by the National Development and Reform Commission, and the CDM-EB feared that the CDM was replacing the feed-in support. [He & Morse, 2010 in (Vasa, Neuhoff 2011)]

However, the rejection based on this new feed-in tariff policy could be interpreted as a violation of the E+/E- rule. Even if the decision of the EB was correct in this case—in theory it would have prevented the approval of non-additional projects—it is not consistent with previous decisions, which deliberately ignored regulatory changes. This emphasizes the dilemma of the CDM-EB in deciding which projects to register. It also illustrates that credits are created from potentially non-additional projects, which are commercially feasible with available national support, meaning that, the use of these credits may even increase global emissions (Vasa, Neuhoff 2011).

In fact, various studies agree that a share of registered CDM projects is non-additional [Michaelowa & Purohit, 2007; Schneider, 2009a; Wara & Victor, 2008, in (Vasa, Neuhoff 2011)]. For instance, based on a random sample of 93 from 768 CDM projects registered by mid-2007, Schneider (2009) found that a large share of projects (up to 40%) would have happened without support from the CDM [Schneider, 2009a, in (Vasa, Neuhoff 2011)].

Part of the problem arises from a subjective interpretation of the CDM-EM guidelines, since, for the investment and barrier analyses (step 2 and 3, figure 3), project developers chose subjective, company-specific barriers or used company-specific investment hurdle rates, rather than a sectoral or national market rate, as suggested by CDM-EB guidelines. On the other hand the internal rate of return (IRR³) which is one indicator to determine additionality during the investment analysis (step 2, Figure 5) can be easily manipulated by modifying project assumptions such as discount rate and capacity factor (Sterk 2008).

Furthermore, when using the common practice analysis (step 4), project developers frequently chose the technology narrowly and the comparison group broadly (e.g. all national power producers) in order to demonstrate a low technology penetration rate for the technology in question. According to Schneider (2009), this results partly from a lack of guidance and partly from the misinterpretation of available guidance by both project developers and DOEs [Schneider, 2009; in (Vasa, Neuhoff 2011)]. These misinterpretations undermine the effectiveness of the additionality demonstration process.

promote the diffusion of renewable energy or to finance energy efficiency programs) [so-called Type E- policies] (EB 22, Annex 3, paragraph 6) (CDM Rulebook 2011)

For Type E+ policies, the Executive Board has confirmed that only those policies implemented before 11 December 1997 can be taken into account when developing the baseline scenario. For Type E- policies, the Executive Board has confirmed that only those policies implemented before 11 November 2001 need to be taken into account when developing the baseline scenario (CDM Rulebook 2011).

³ Internal Rate of Return (IRR): Is a criterion for a cost-benefit analysis of any project, represent the discount rate when the net present value of all cash flows from a project is equal to zero (Blok 2007).

For some authors CDM often become the “icing on the cake,” making already economically feasible projects more profitable [Ellis & Kamel, 2007; Haya, 2007; in (Vasa, Neuhoff 2011)]. Purohit & Michaelowa (2007, p. 11) found that most wind energy projects in India pass the investment additionality test (step 2 in Figure 5) only if they omit tax benefits, which at least one project has done. Furthermore, the buyers of CERs, individual EU-ETS emitters, do not have a particular incentive to check additionality, since a registered CER is the accepted currency for compliance [Purohit & Michaelowa, 2007; in (Vasa, Neuhoff 2011)].

Therefore the process creates strong disincentives for countries to improve policy frameworks, since a share of the project cost would be paid by CDM buyers instead of out of national tax revenues, and on the other hand there are not incentives for the buyers of CERs to check the additionality.

6.3 Unequal distribution of projects, geographically and by CER type.

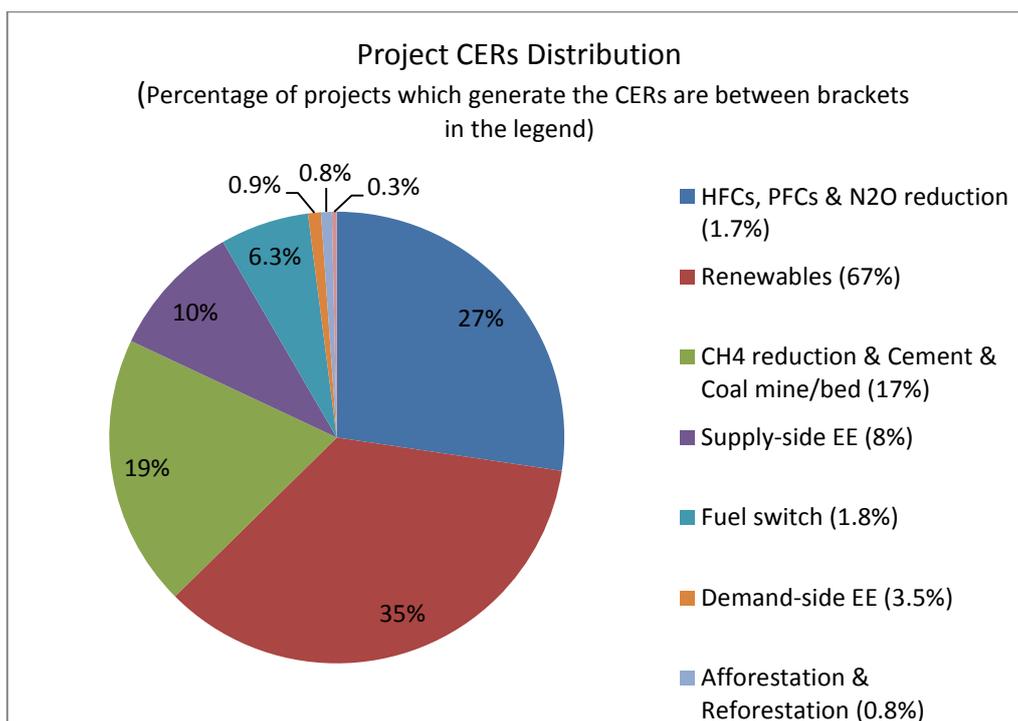
In order to get a picture of the unequal distribution problem, in 2003, Latin America dominated the CDM market with 66 % of the projects. However, by 2007, Asia leads the CDM market, generating 84 % of total CER volumes. China alone captures 60 % of the world’s CDM activity (Lokey 2009) Meaning that many smaller and less developed countries fail to attract CDM projects, arguably because their institutional framework is not seen to be sufficiently robust by investors.

By January 2011, only nineteen projects have been registered in Least Developed Countries LDCs, with an additional nine projects achieving registration in Small Island Developing States, in total, registered projects in LDCs account for less than 1% of expected 2012 credit supply (Vasa, Neuhoff 2011).

The unequal distribution of projects is not only regional but also by CER source, since, large portion of the CER supplied are confined to the destruction of HFC-23 [a greenhouse gas with a global warming potential (GWP⁴) of 11,700] which is generated as a byproduct of HCFC-22 used as refrigerant. By 2010 the HFC-23 destruction project represented just 2.5% of the total projects which account for 52.6% of all CERs issued. This relation has decreased nowadays since by 2012 the share correspond to only 27% of total CERs issued which include not only HFC-23 but also PFC, and N2O projects and correspond to 2% of the total CDM projects (UNEP RISO Centre 2012).

⁴ Global Warming Potentials (GWPs) are a quantified measure of the globally averaged relative radiative forcing impacts of a particular greenhouse gas. It is defined as the cumulative radiative forcing – both direct and indirect effects – integrated over a period of time from the emission of a unit mass of gas relative to some reference gas. Carbon dioxide (CO₂) was chosen by the IPCC as this reference gas and its GWP is set equal to one (Gillenwater 2011).

Figure 6: Project CERs Distribution (UNEP RISO Centre 2012)



This source of CERs constitute the majority of offset used by European companies (59% in 2009), which do not contribute to sustainable development. In financial terms, it is estimated that the destruction of HFC-23 can be carried out at a cost of €0.17 per tonne of CO₂-eq, while its destruction is sold as CER on the EU-ETS as much as €12 per CER, some 70 times more than the cost to destroy the gas. And given that the CER price is not linked to the actual cost of CDM projects, a project to build an incinerator of HCF-23 would cost €3.98 million but the plant would earn approximately €398 million in CERs (CDM Watch 2010).

Hence, this generate large windfall profits for a few companies, concentrated in few countries, since, from 19 HFC-23 destruction projects registered by 2011, 11 are in China, 5 in India and 1 each in Argentina, Mexico and Republic of Korea (Climate Connect 2011). The Chinese government has recognized the large windfall profit from this project type and taxes CER revenues at 65% to create a sustainable development investment fund from the revenues. However, as Wara (2008) observes, the Chinese government has not taken steps to implement national legislation addressing HFC projects [Wara 2008 in (Vasa, Neuhoff 2011)]

During 2011, The European commission, has formally adopted a ban on the use of HFC-23 and N₂O projects, which will begin on 1 January 2013 with a phase-out period of 4 months until 30 April 2013 for credits from existing projects. However the Executive Board of the CDM has been postponing a decision on this matter (Climate Connect 2011).

6.4 Sustainable Development Criteria

The Clean Development Mechanism (CDM) was approved by developing nations specifically because offset projects were not only to provide cost-effective reductions for Annex I countries but also development benefits for the host countries, notwithstanding in practice, the CDM has failed to

consistently deliver such development and sustainability benefits (OECD 2009). In fact has been corroborated by scientific analyses that sustainability and development benefits are no longer seen as an integral requirement for a carbon offset (Kollmuss Zink. A .H., Polycarp C. 2008).

This has raised criticisms from who claim that carbon offsetting enables rich countries to take advantage of cheap business opportunities in developing nations that lead to no improvements for the local population (new carbon colonization) (Kollmuss Zink. A .H., Polycarp C. 2008). Tending to reinforce inequities in flows of finance, not just between countries but also within countries (e.g. HFC projects) . For instance, Despite proactive attempts by the Chinese government to steer investors toward the poorest parts of the country, There is evidence that the wealthier the region the more likely it is to attract CDM projects (Newell 2009).

Every developing country defines its sustainability criteria, and the process does not include a formal way to support host countries in the formulation, monitoring and enforcement of this sustainable development criteria. Especially non-governmental organizations have voiced concerns that the sustainability criteria are in many cases very weak, if they exist at all. In practice, it cannot be observed that host countries reject projects for the reason of lacking sustainable development benefits (Sterk 2008). This is potentially the result of a “race to the bottom” where countries that have more stringent sustainable development criteria compete with other CDM hosts that hold investors to less strict criteria, enabling. the implementation of low-cost projects with larger rents and potentially lower risks [Schneider, 2007,p. 47 in (Vasa, Neuhoff 2011)]

To counteract some of this criticism and to support sustainable development initiatives, some project developers/countries have chosen to invest a portion of their gains into local schools, health care systems, etc. However that does not represent a common practice between project developers [Schneider, 2007,p. 47 in (Vasa, Neuhoff 2011)].

6.5 Zero sum game to the atmosphere

The ‘zero sum game to the atmosphere’ means that emission reductions achieved through CDM projects in developing countries enable industrialized countries to increase their emissions above their assigned Kyoto targets. In this regard, the CDM does not reduce the global GHG emissions (Schneider 2009). Even more, assuming between 20% and 66% of non-additional projects, the use of CERs for the EU-ETS during the period 2008-2009 increased global emissions by 30 to 106 million tonnes of CO₂eq (Vasa, Neuhoff 2011).

7 Proposed Mechanism to evolve the CDM

During the last decade different options to evolve CDM and the carbon market start to emerged. One first attempts to solve some of these critiques by the UNFCCC has been the Bundling and program of activities (PoA) approach, entering in function from Bali COP meeting in 2007, during those years also emerge the Gold Standard and at the same time some other alternatives proposals to CDM such as; ‘sectoral approach’, ‘national appropriate mitigation actions (NAMAs)’, and a ‘global carbon market system’. Finally also was proposed an alternative to the use of carbon market as the main mechanism to solve climate change called ‘International Mitigation Obligations’ (IMO).

The next table shows a general overview of critiques to CDM that could be solved or are going to be solved with the implementation of these proposals.

Table 4: Extend of solutions achieved to critiques of CDM by proposed future mechanism

Proposals / Critiques	Small Scale inclusion	Transaction cost per project	Net GHG reductions	Additionality Concern	Perverse incentive	Distribution of Projects geographically	Distribution of CERs per industrial area	Sustainable Development Contribution	Comments on important points
Bundling	Better access	Reduced	Same as CDM	Same as CDM	Same as CDM	Better	Same as CDM	Same as CDM	
PoA	Better access	Reduced	Same as CDM	Possible Reduced	Same as CDM	Better	Better	Same as CDM	The DOE liability for CERs issued from rejected CPAs is probable one of the main cumbersome of PoA
Gold Standard	Same as CDM	Same as CDM	Same as CDM	Same as CDM	Same as CDM	Same as CDM	Same as CDM	Improved	The only one which address SD concern
Sectoral Approach	Not in the scope	Reduced	Yes providing an adequate sector coverage	Eliminated (with an ambitious reduction baseline)	Reduced if baselines are negotiated for a long period	Better	Better (especially after banning HFC)	Same as CDM	Is very important guarantee the protection of installation data
Policy CDM	Depend of the policy applied	Reduced	Depend of leakage	Eliminated (with an ambitious reduction baseline)	Depend on political discussion	Better	Better	Same as CDM	Require strong government and national institutions
NAMAs	Depend of the NAMA applied	Reduced	Depend of leakage	Eliminated (with an ambitious reduction baseline)	Reduced specially with a strong MRV	Better	Better	Same as CDM	Mechanism that like to developing countries due to its flexibility
IMO	Better	Not in the scope	Yes	Eliminated	Reduced	Maximum Improvement	Not in the scope	Focused on LDC	The use of carbon market is limit to only high cost projects
World Credits	Not in the scope	Reduced	Yes	Eliminated	Still can be present (countries would prefer to be seller than buyers)	Maximum Improvement	Better	Same as CDM	Its implementation has high economic and political difficulties

The function of these proposed mechanisms as well as the the improvements to CDM that offer will be described below.

7.1 Improvements to CDM

7.1.1 Bundling

Some financial barriers especially transaction costs for small projects can be significantly reduced under the bundling of projects.

The development of so-called small-scale (SSC) methodologies and bundling of CDM projects was through the decisions 21/CP.8, 4 /CMP.1 and 1/CMP.2. The Conference of the Parties serving as the Meeting of the Parties (COP/MOP) issued further guidance for the CDM and allowed for "simplified modalities and procedures for small-scale CDM project activities." A basic difference to large-scale projects is that simplified baseline and monitoring methodologies

are provided by the CDM Executive Board (CDM-EB), by contrast large-scale baseline methodologies have to be developed by the project developers themselves. Furthermore, a simplified Project Design Document (PDD) was provided for small-scale projects.

Bundled projects share one project design document and one validation report, and are registered and verified together during the whole process of validation, verification, and certification, in other words, the bundle is treated as one project but include different projects. These can be arranged as one or more sub-bundle with each activity retaining its distinctive characteristics (technology, location, baseline methodology), however the project activities within a sub-bundle are the same type and its sum of output capacity must not exceed the output capacity for its type, namely (Mariyappan et al. 2007) :

Type I: renewable energy (max. output 15 MW or equivalent)

Type II: energy efficiency (max. output 60 GWh or equivalent)

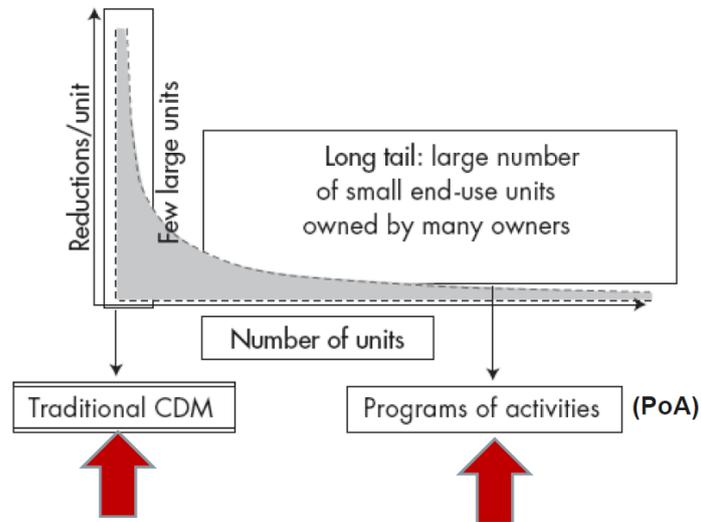
Type III: other (emission reductions of less than or equal to 60,000 tCO₂ equivalent annually)

7.1.2 CDM- Program of Activities (PoA)

The Programmatic Approach was officially established in 2007 by the adoption of Guidelines and Procedures for PoA by the CDM-EB. It was designed to give better conditions of access to small projects in the CDM, for many individual activities that are distributed over space, time and even countries which are brought together (i.e. Compact Fluorescent Lamps (CFLs) to replace inefficient incandescent lamps) (Figure 7) and is here where is the main difference with bundling. Therefore, a CDM PoA is considered: 'A voluntary coordinated action by a private or public entity which coordinates and implements any policy/measure or stated goal (i.e., incentive schemes and voluntary programs), which leads to GHG emission reductions or net GHG removals by sinks that are additional to any that would occur in the absence of the PoA, via an unlimited number of CDM program activities (CPAs)' (Annex 38, EB32, 2007) (CD4CDM 2009).

The CDM PoA occurs at two levels; At the program level and at the activity level. At the program level the PoA is the organizational and financial framework, that provides structure to the activities, and is managed by a coordinating entity for a period no longer than 28 years. At the activity level, a single measure or a set of measures to reduce GHGs, is applied to many plants or installations of the same type over the lifetime of the program.

Figure 7: The Long tail of GHG reduction (ESMAP 2007)



Even though, the PoA have brought better access to the inclusion of small projects into CDM, until early 2012 there are only 17 PoA project registered with corrections (UNFCCC 2012b). Some barriers and problems that can explain the slow adoption of the procedure, are explore next.

7.1.2.1 Barriers in Developing the PoA

Lack of Data

In order to apply the CDM methodologies for the PoA CDM project and to develop the baseline, extensive data is required. For Instance, in case of biogas plants the data about the fossil fuel consumption for cooking and applied manure management systems, is needed.

Agricultural statistics usually do not collect and show data about small and medium farms (households), and normally a program coordinator has to obtain this data through surveys. Although the CDM EB allows project developers to use surveys for the data collection, the first draft procedures for sampling and surveys for data collection have only be issued in May, 2009 which could be one reason contributing to the slow adoption of PoA so far. The collection of data via surveys has also proven to be difficult since (local) staff usually require training and trial and error processes are often necessary and time consuming (CD4CDM 2009).

High monitoring cost

Even though, exist simplify methodologies for some activities (for the last example exist; The simplified monitoring for the measurements of the biogas consumed by households or small farmers), the costs of the measuring equipment (even only applied to a sample), may still include high investment and training costs.

Unclear carbon rights

Before the PoA implementation the carbon rights have to be resolved. The Standard approach is that participants in the program have to give their carbon rights to support the program financing; notwithstanding because that, the participant has little incentive to participate from the monitoring process. Another option is that a subsidy to the participants is financing through the carbon

revenues, however, this option will depend on the trust of the participant in the program and if the initial investment is not so high.

Regulatory Barriers

The regulatory barriers have been partially lifted and modified by CDM-EB in May 2009 (CDM-EB 47th meeting). However, several regulatory barriers are still valid:

- Liability of DOEs: CPAs can be reviewed within one year after the inclusion of CPA or renewal of the crediting period of the CPA, or six months “after the issuance of CERs for that CPA”. In the case that the CPA is excluded after this revision, then the DOE will be liable for CERs issued from rejected CPAs.
- Starting date of a CPA: In contrast to the standard CDM approach, where the starting date, of a project activity can be before the project registration and still can be considered additional. The earliest starting date of a CPA can be the beginning during the validation of the programme, i.e. the date on which the CPA is first published for global stakeholder consultation.
- Constant adaptation to methodologies: In case the approved methodology is put on hold or withdrawn, no new CPAs will be included in the PoA. If the methodology is revised, the PoA has to be revised accordingly.
- Combination of methodologies requires approval from the EB - Since the CDM-EB 47th meeting, it is allowed to combine one or more methodologies for PoAs. However, while the combination of methodologies is widely used in standard CDM, in the case of PoA, it requires special approval from the CDM-EB following the “Procedures for approval of the application of multiple methodologies to a program of activities”. This may hamper the use of combined methodologies, and PoA itself, since the procedure for obtaining the approval might require too much time (CD4CDM 2009).

7.1.3 Gold Standard (GS)

The most important attempt to deliver clear sustainable development benefits with CDM projects has been the development of the CDM Gold Standard (GS) launched in 2003. It was developed by an international expert panel at the initiative of the World Wide Fund for Nature (WWF) and supported inter alia by the German government. It defines quality standards that exceed those laid down in the Kyoto Protocol and the Marrakesh Accords, hoping that buyers will be willing to pay a higher price for CERs from certified high-quality projects. The Gold Standard is supposed to also reward non-climate sustainability benefits and in this way promote high quality projects, it can be used for voluntary as well as CDM projects. Within the main differences with the ‘classic’ CDM is that GS has a very well developed stakeholder process and stresses environmental and socio-economic co-benefits for the host communities (Kollmuss Zink. A .H., Polycarp C. 2008).

Since the CDM rules are quite general and require relevant local stakeholders to be consulted via "appropriate media" The validator (DOE) needs to confirm that relevant stakeholders have indeed been consulted with appropriate media and that comments from local stakeholders have been appropriately taken into account during the validation. However, the Gold Standard is more specific with the aim to ensure transparency and participation with clear rules for what media is to be used, what type of information is to be presented, and what questions are to be asked to local stakeholders. GS details the documentation that needs to be made available to local stakeholders along with a questionnaire for the stakeholders to fill out (Kollmuss Zink. A .H., Polycarp C. 2008).

7.2 Alternatives to CDM

7.2.1 Sectoral Approach or Sectoral crediting mechanism (SCM)

In the year 2005 emergence sectoral approaches as a potential policy tool to address global warming. In that year, an OECD round table was held on transnational sectoral agreements for climate change policy, and the G8 Gleneagles Plan of Action discussed the concept.

It became an integral part of the post-2012 negotiations, with their inclusion in the Bali Action Plan (BAP) in 2007 as one of the enhanced mitigation actions.

However, the concept of sectoral approaches is still not clearly defined, and UNFCCC Parties, civil society and business take a very different view of what it is (Marcu 2009).

Notwithstanding the argument is that a narrowly-focused agreement covering firms that share some characteristics and compete among themselves may be easier to achieve than broader agreements. Indeed, a relatively small number of sectors account for a large share of world emissions (OECD 2009).

The EU sees sector-based market mechanisms as the next stage in the evolution of carbon markets for developing countries, with PoA as an intermediate step, all forming a progression. It is probably that the 'classic offset mechanisms', will remain options for developing countries, but will not be targeted at what are now called advanced developing countries', that is, Brazil, Russia, India and China (BRIC) (Sterk 2008, Marcu 2009).

These mechanisms will enable developing countries to establish the necessary domestic frameworks to facilitate the formation of domestic cap and trade systems. Therefore, the establishment of sector-based market mechanisms is seen as a key step for developing countries towards the emergence of a global cap and trade system (Marcu 2009). Notwithstanding the sectoral approach could bring some positive and negative impacts on the market price and environmental integrity that is important to explore.

7.2.1.1 *Impact on project finance and the market price*

The 'classic' CDM projects could be considered relatively predictable, given that each project has to provide a forecast of the amount of offsets it will produce, however an adjustment that may yield more CERs in the current year may yield less in future years. Since the emissions reductions are calculated each year to incorporate the most up-to-date and accurate numbers (Lokey 2009).

In the case of sectoral approach, the supply becomes even more unpredictable with sectoral mechanisms, as the total GHGs amount that a sector produce will be dependent on more variables, such as, price of energy, economic growth or crisis, to mention some (Marcu 2009).

Hence, when sectoral approaches are debated a major point of discussion is if the CER supply coming from sectoral approach could have an important effect on the market balance. Then the main concern against sectoral market mechanisms is that they potentially could 'destroy' the GHG market. However, according with Marcu et al (2009), the spirit of GHG markets as commented are invoked to help minimize the cost of addressing climate change and are not there to deliver a targeted price. If price level is the target, then a carbon tax is a much simpler and more certain delivery vehicle (Marcu 2009).

7.2.1.2 Environmental Integrity

A different dimension of the ‘perverse incentive’ problem that is currently observed under the CDM project-base scale, is the competing interests of buyer and seller, since, producers try to maximize both price and the number of items sold or services rendered, whilst buyers try to lower the price and minimize the number of products they must purchase to satisfy their need. This system of checks and balances does not function in offset carbon trading, since, there is an inherent conflict of interest in the current market design. Although there is competition on pricing, the supplier (project developer/funder) wants high prices and the offset buyer wants low, since both the supplier and buyer of carbon offsets aim to maximize the number of offsets produced, there is a strong financial incentive for both supplier and buyer to overestimate the baseline scenario and thus artificially inflate emission credits to increase profitability⁵. This inherent alignment of interests is a profound design flaw of project-based carbon trading systems (Kollmuss Zink. A .H., Polycarp C. 2008).

This alignment of interest could be solve in the case of sectoral approach when the baselines are negotiated but will persist the risk that the negotiation could become politicized, resulting in baselines that will generate credits from what would otherwise be business as usual (BAU).

On the other hand, sectoral crediting mechanisms have the potential to reduce carbon leakage⁶. Since leakage fundamentally results from incomplete coverage of binding mitigation action. Leakage would then only be likely to occur in non-covered sectors in developing countries. In practice, the extent to which sectoral crediting reduces leakage depends in part on the baseline against credits is granted and the extent to which important sectors are covered (OECD 2009).

7.2.1.3 Type of sectoral approach

The recent debate is focusing on two concepts: sectoral crediting and sectoral trading: However, hybrids are also possible.

a) Sectoral Crediting :

Sectoral crediting are emission reductions in certain sectors in a developing country from a pre-defined sectoral baseline. That baseline can be defined as an intensity target⁷ or an absolute target⁸. There are two different types of sectoral crediting currently under serious consideration. One is the sectoral crediting mechanism (SCM), (sometimes called, ‘sectoral no-lose targets’) as the other is sectoral CDM model.

⁵ This dynamic is to some extent mitigated by the buyers' potential risk of damaging his reputation if they buy offsets from a project that might later be criticized for overestimating its credit reductions.

⁶ Carbon leakage occurs when there is an increase in GHG emissions in one country, as a result of an emissions reduction by a second country with a strict climate policy (OECD 2009)

⁷ Intensity targets are measured in emissions per unit of output and are linked to future GDP. They would automatically adjust to unexpected growth trends and insure countries against the risk of unexpected increases in mitigation costs. (OECD 2009)

⁸ With an absolute target, the number of credits is determined directly by the cap.

i) Sectoral Crediting Mechanism (SCM):

This is the option designed to generate emissions credits where an entire sector satisfies a predetermined emissions target. The establishment of the target for a specific sector, would be determined upon assessment of both domestic and international commitments to the sector

The baseline may be measured in terms of an intensity calculation, a fixed emissions goal for the sector, or a technology penetration goal. The essential factor is that emission credits will be granted on an ex post⁹ basis if the sector, as a single entity, exceeds the standard established by the crediting baseline.

Two options to structure this system are 'Centralized Coordination of Mitigation and Crediting' and 'Installation-Level Mitigation and Crediting' which will be describe as follow:

- *Centralized Coordination of Mitigation and Crediting (CCMC):*

Basic Design.: A Sectoral crediting baseline is set below a BAU that is agreed by the country and the Parties. A coordinating entity (with government Involvement) would be responsible for determining how reductions are achieved and if any credits achieved as a result of these initiatives how would be distributed to sector participants.

In most jurisdictions this would make government intervention an inevitable reality. The crediting will also go to a government agency which will become the holder of large portion of credits (Marcu 2009). This option is similar to the proposed by Samaniego, J. and Figueres, C. (2002), where CER flow directly to the government according with the effectiveness of policy initiatives to reduce GHGs in a particular sector (Samaniego, J. & Figueres, C. 2002).

This design however faces some risk described as follow:

Sovereign risk. Installations will have to deal with sovereign national governments. This may translate into the government having the discipline, or will, to enforce rules and achieve reductions.

Finance Structure. Since it is possible to assume that few installations in developing countries have the ability to self-finance such programs or to do so in a coordinated way. It is therefore more likely that a large buyer, or someone that can act as an amalgamator, will have to emerge, such as a development bank or large financial institution.

If covered entities are required by regulation to achieve reductions, they may be able to acquire financing via a local bank or through a government loan program. However, their ability to repay that financing is directly related to the unknown of whether or not the sector as a whole over-achieves its crediting baseline.

Incentive Structure.: Covered entities would have little incentive to lower their own emissions individually because those efforts could be wholly or partially neutralized by another installation's

⁹ Ex-post are reductions that have already occurred and their quantities are certain.

increasing emissions profile or inferior effort. This is why a strong coordinating entity is critical.

Smoothing the Transition to Cap-and-Trade: A system whereby a target is met solely through standards and feed-in tariffs does not transmit a carbon price signal to private entities. In so doing, it does not teach them to integrate such a price into their bottom line, nor does it provide them with the flexibility to identify installation-specific, inexpensive and efficient ways to lower emissions (Marcu 2009).

- *Installation-Level Mitigation and Crediting (ILMC):*

Basic Design: The developing country government is responsible for setting an emission reduction objective for the sector and for each individual installation within the sector. The emission reduction objective is necessarily set at some point below the crediting baseline. The host government is responsible for obtaining and cancelling an amount of emission reduction credits equal to the over-crediting in case the goal is not accomplished.

Installations have discretion as to how they reduce their emissions, at the end of the crediting period; a true-up process is required in order to ensure that the sector as a whole has achieved its crediting baseline.

Finance Structure: Under this option, external risk to investment will be largely minimized. Regulatory risk is less than with the CDM because there is no question of project eligibility. Sovereign/political risk is also minimal because governments are not required to approve, impose or enforce measures or plans to lower emissions, since installations have discretion on how to reduce emission.

Incentive Structure: Individual installations face a direct, positive incentive to lower emissions as long as their own cost of reducing emissions is less than the price of carbon. This is the simplest, most straightforward way to transmit the carbon price signal to non-covered entities in developing countries leading them to internalize the price of carbon into their bottom line. In so doing, it prepares those entities for the transition to an economy-wide cap-and-trade system.

The fact that the government is liable for any failure to meet the sectoral reduction target in the event that some crediting takes place provides it with an incentive to become more active in the sector's efforts to reduce emissions.

Some problems that face this design are:

Government liability: Requiring the host country government to hold the liability (i.e. take the risk) is a valid option, but it is likely to be resisted by some developing countries. To allay concerns over government liability, a reserve pool, created by a levy on credits issued to installations, could be created to cover, partially or wholly, the over-crediting that could occur. Or establish penalties to installations that don't achieve the individual emission reduction.

State companies: There is some concern however, that in a number of developing countries the larger industries are state-owned, suggesting that there could be an incentive to set 'weak' objectives for those companies.

ii) Sectoral CDM' model:

The essential difference between this model and SCM, is that in the SCM the whole sector must be under an agreed baseline, while for sectoral CDM reductions are counted at the enterprise level,

even though, the baseline is also set at a sectoral level, only individual installations must be under the baseline, for that reason is also called 'multi-projects sectoral baseline'.

For this reason, this is a tool that business likes. It is simple and straightforward, with clarity regarding who the projects participants are, where the private investor intervenes, and the relatively limited role for the government in reaching the reduction targets.

As was mentioned, it largely eliminates subjectivity on the issue of additionality by establishing a sectoral baseline.

Guidelines for how baselines will be set up will have to be agreed at the international level. The task of defining international guidelines should stay with the CDM EB and the UNFCCC Secretariat and the practical implementation and data collection, should be allocated to different regional institutions that have the necessary capacity and are seen as impartial (Marcu 2009).

b) Sectoral Trading:

In this case, an allowance type instrument is issued with an ex-ante allocation¹⁰ that has to fall within a sectoral baseline of emissions which is agreed with the international community. Countries will have to adopt allocation systems that should be national prerogatives. The baseline can be expressed in relative terms, but absolute caps will certainly be easier to understand and accept, especially by those concerned about environmental integrity.

The distribution of allowances through auctioning, grandfathering or benchmarking, will be a point of discussion, auctioning will impose additional cost on a sector, and is likely to be resist by industry and governments of developing countries.

Another element that needs to be taken into account in order to make the system credible is the risk of non-compliance for the sector and any penalties that may ensue.

After all, allowances from that system would have been sold to buyers outside the system, and they cannot be called back without risking the credibility of the whole international emissions trading system. A system other than penalties should be envisaged and a reserve of some sort should be put in place: something like a commitment period reserve could be put in place allowing only a certain number of allowances to flow outside a sectoral trading system.

Sectoral trading presents many advantages; It start creating the infrastructure and capacity-building for a global cap and trade system and also credits allocated ex-ante eliminate the whole uncertainty associated with project mechanisms additionality. The challenge comes from the fact that sectoral trading needs a hard cap, which developing countries could be reluctant to embrace (Marcu 2009).

The next table summarizes the main characteristics, advantage and disadvantages of the different type of sectoral approaches under revision.

¹⁰ Ex-ante: refers to reductions that are planned or forecasted but have not yet been achieved, therefore, the exact quantities of the reductions are uncertain.

Table 5: Summary types of sectorial approach under discussion

	Subtype	Covered	Coordination	Allocation	Advantages	Disadvantages
Sectoral Crediting	SCM	Establishment of a baseline for a whole industry sector	Option1(CCMC) : Central (governmental) agency which oversees the sector as a whole and enforce rules to achieve reductions.	Ex-post	<ul style="list-style-type: none"> Government is active in enforce mitigation policies 	<ul style="list-style-type: none"> Few incentives to lower emissions individually Some sovereign lose by installation. Installation ability to pay a loan requested will depend if the whole sector go below baseline. Doesn't transmit a carbon price into the installation bottom line
			Option2 (ILMC): Government set targets for sectors and installations but no reduction plans. At the same time hold the liability for an over-crediting	Ex-post	<ul style="list-style-type: none"> Is good way to transmit the carbon price into their bottom line. Prepare installations to a transition toward a cap-and-trade system Government is active in enforce mitigation policies 	<ul style="list-style-type: none"> Possible resistance from governments to hold liability over achieve the baseline State-owned installation could have 'weak' objectives.
	Sectoral CDM	Establishment of a baseline for a whole industry sector but reductions are counted at the enterprise level. (That is why it is also referred as 'multi-projects sectoral baseline')	International guidelines are defined by CDM-EB and UNFCCC secretariat	Ex-post	<ul style="list-style-type: none"> Tool that business like since is simple. 	<ul style="list-style-type: none"> Not strong incentive for the government to make policy mitigation.
Sectoral Trading	n/a	Establishment of a baseline for a whole industry sector	Government can decided allocation distribution but doesn't oversee the sector	Ex-ante	<ul style="list-style-type: none"> Good capacity-building toward a global cap-and-trade system. 	<ul style="list-style-type: none"> Complicate decision on how to distribute the allowances. Need a clearly procedure to deal with the risk on non-compliance

Other two reforms to CDM that in fact can include those mentioned before through the expansion of CDM from project basis to a policy basis crediting are the 'policy CDM' and 'National Appropriate Mitigation Actions' (NAMAs.) One important difference of these proposals with the previous option is that policy options could be applied from mitigation, adaptation, methodology development and any kind of capacity building.

7.2.2 Policy CDM

In this variant, emission reductions that result from the introduction of a new policy (e.g. a fuel economy standard or fuel taxes) are credited in the form of certified emission reductions (CERs) to the governmental agency implementing the policy (Ellermann 2009). Also, Eligible policies could be sectoral, in which case they would be equivalent to sectoral crediting mechanisms or they could be cross-sectoral, and might include for instance renewable energy standards, (e.g. a policy of installing energy-efficient light bulbs, where would be similar to a PoA) building codes or even possibly the implementation of carbon taxes or a removal of energy subsidies (OECD 2009).

In theory one advantage of a policy CDM is that additionality may be easier to check for. However, to set an appropriate baseline and attribute observed emission reductions directly to any one explicit policy, bring concerns about the proof of additionality, furthermore, this approach would share the drawbacks of technology standards has, i.e. it would run the risk of mandating the use of specific technologies that could eventually turn out to be costlier than alternatives, and might also undermine innovation incentives. In the same vein, monitoring and verifying the emission reductions achieved from a policy could raise major methodological difficulties.

An, open question is whether electorates in developed countries would support the large, transparent payments to developing countries that would likely be involved if that option were to be used extensively (OECD 2009).

In line with the consideration of these concerns, under the COP/MOP1, by Decision 7/CMP1, was decided to ruled out policy-based CDM since: "a local/regional/ national policy or standard cannot be considered as a clean development mechanism project activity."

But with the same decision that ruled out policy-based CDM, COP/MOP1 also was decided "that project activities under a program of activities can be registered as a single clean development mechanism project." Giving room to the Program of activities (PoA) as a next step to evolve CDM with the effort to reduce transaction cost. Interestingly, the guidance for PoA explicitly refers to policies, even though these had been ruled out by the COP/MOP (Matschoss 2007).

7.2.3 Nationally Appropriate Mitigation Actions (NAMAs)

The term, Nationally Appropriate Mitigation Actions (NAMAs) was first introduced in 2007 as part of the Bali Action Plan (BAP), but its exact definition is still subject to intense discussion (Zevallos 2009), basically this option aid to stimulate investment from the private market (Xianli Zhu 2009).

NAMAs have not been well defined yet because is a broad concept which can embed different CO2 mitigation actions, the fundamentals of NAMAs are that; They must be 'nationally appropriate', meaning that they should respond to national circumstances, which also implies that each country shall determine what is 'appropriate'; they are referred to only as 'actions', so there is no definition of scale of these actions, which can be an activity, a measure, a project, program, or even a policy (then may overlap with the design of sectoral approaches); they must be carried out 'in the context of sustainable development', meaning that they should be integrated into development and poverty eradication efforts; and they must be 'supported and enabled by technology, financing and capacity-building' in a way that is 'measurable, reportable and verifiable' (MRV) (Zevallos 2009).

As a whole, the definition of NAMAs calls for certain flexibility for each country to decide how to support their NAMAs. Support for NAMAs could consist of a mix of international public support (for capacity-building at every level and sector and policy NAMAs), carbon offsets (at the project,

program and policy levels) and national finance (for win-win solutions, NAMAs that are cost-effective and have important co-benefits) (Zevallos 2009).

The main points that are currently being evaluated in order to implement NAMAs are: adaptation, sector no lose targets, Monitoring Reporting and Verification (MRV) and capabilities:

-Adaptation

Probably the main difference of NAMAs with other proposals for evolve CDM is that adaptation must be considered when planning for mitigation. NAMAs can and should contribute to effective adaptation in developing countries, which is where the concept of 'climate screening' comes in. Climate screening refers to the consideration of climate change (both mitigation and adaptation) during the planning phase of an activity or investment for example, focusing only on mitigation would probably result in a decision to expand hydro power generation, since hydro is a renewable energy source. Nevertheless, if studies of vulnerability are consulted, one could find, for instance, that water used for hydro power generation could put at risk the supply of water for agriculture (food security) and human consumption (Zevallos 2009)

- Sector no loose targets

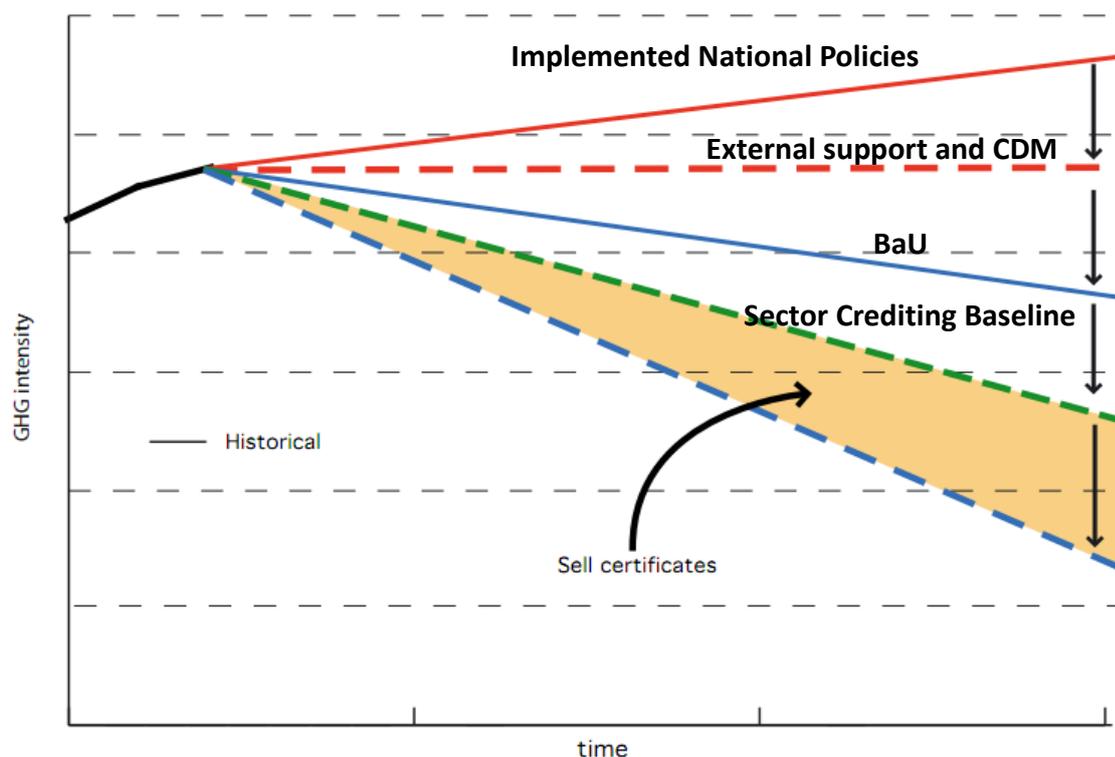
Sector no-lose targets are a form of non-binding emission target that encourage sector-wide emission reductions. The mechanism is that developing countries voluntarily propose a sector crediting baseline which is negotiated at the international level. Reductions below the baseline generate credits issued to the government, but no penalties occur if the target is not met for the whole sector. Sector crediting baselines are negotiated and set separately for each major sector and country.

The reference scenario should include currently implemented national policies and measures, as well as current external support and CDM projects that are already running, making it a real mitigation mechanism that goes beyond the offsetting of Annex I emissions (see Figure 8).

One basic precondition for the implementation of a sector no-lose target is that the historical data used are detailed and credible and the observed situation of the sector can indeed be monitored, reported and verified (MRV).

At the end the setting of the no-lose target, the sector crediting baseline, remains a political decision. It has to be taken with a view to the specific circumstances of the country and sector, and by matching the level of ambition of the NAMA with the level of international support provided (Ellermann 2009).

Figure 8: Concept of sector no-lose targets [Ecofys in (Marcu 2009)]



-Monitoring Reporting and Verification (MRV)

All NAMAs, no matter what their nature, scale or source of funding, should be quantified and registered. The first reason for this is environmental integrity, furthermore, there are many developing countries that are planning to implement NAMAs using their own resources and that need appropriate ways to quantify them in order to put them forward later as their contribution or even subtract these reductions from future mitigation targets (Ellermann 2009).

One point of conflict is that the Kyoto Protocol uses one and only one indicator as the measure of emission reduction, the tones of CO₂eq. This indicator may not be suitable for NAMAs, since, the impact of a specific policy or intervention does not necessarily result in emission reduction but is essential to create an enabling environment for businesses and individuals to take up mitigation activities, such as energy audits, training, awareness-raising and research and development (R&D) programs.

For instance, trying to attribute emission reductions for many mitigation activities taken by millions of 'long tail' entities to a specific NAMA intervention and MRV for them will pose exceptional difficulties for developing countries; some policies are easier to attribute emission reduction than others.

Fortunately, many indicators of success can also be measured in a quantitative manner and be used to monitor, report and verify the outcomes of each NAMA. The indicators of success and the MRV could be specific to each NAMA and each sector. Providing that, the indicators of a specific NAMA should be determined at the UNFCCC level to enable comparison across countries using a common base.

Another conflictive point on MRV for industry sector is about the disclosure of privacy information for bottom-up reporting level. The problem can be solved by defining the level of reporting. Only data at aggregated levels are reported. The data quality could be maintained somehow, providing that individual data are retained at the national or local level but not required to be disclosed. Verification of reported data could follow its own independent sampling and verification methodology, so that the accuracy of measurement and reporting is double-checked (Xianli Zhu 2009).

-Capabilities

Then, NAMAs aims to become a strong tool to involve developing countries and make them have a leader role in the way about how they can promote mitigation and adaptation activities considering their unique different stage of developments. These different circumstances and the different readiness of countries and of sectors within countries allow a 'nested approach', as well as South-South cooperation. The nested approach was first introduced as part of the discussions on 'Reducing Emissions from Deforestation and Forest Degradation' (REDD), but its overall concept and main features are perfectly applicable to other sectors. It basically states that, since not all countries are ready to engage in action at the national level, they could start from single projects and aggregate them to generate programs, policies, sectors and finally national targets. Similar than PoA where it is possible to aggregate facilities later after the beginning of the program (Zevallos 2009).

Since NAMAs has flexibility in the 'actions' that can host, it can include not only mitigation actions, but different policies which can be a real possibility for countries that have had little participation on CDM projects such as LDC.

7.2.4 International Mitigation Obligations (IMOs)

Interestingly one of the CAN members, 'CAN-Europe' in its document titled "From off-setting to on-setting" proposed a new post 2012 climate change mechanism the 'International Mitigation Obligation' (IMO). Even though, in this document, they explicitly manifest that the content doesn't necessarily represent the position of 'CAN-Europe' and its members, but it covers several of the points that 'CAN international' officially expressed as necessary to consider in a post-Kyoto commitment (Wyns 2009).

The International Mitigation Obligations (IMOs) is a mechanism for developing countries supported by developed countries. It is a binding and quantified mechanism to generate support for mitigation in developing countries. It works by setting a developed country target for mitigation support in developing countries. This target is set on top and independently of the developed country post 2012 reduction target. In general terms IMO is conceived as one of the successors of CDM.

IMOs take some elements from the Mexican, Norwegian and European Commission post 2012 communication

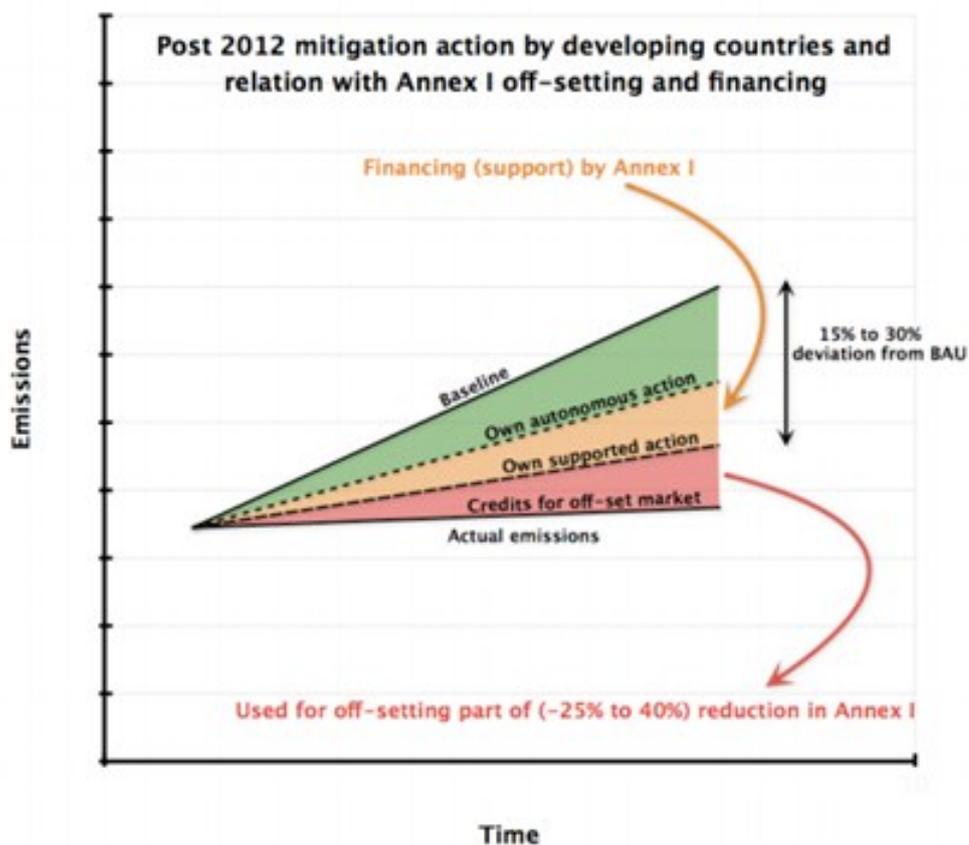
One main advantage of the IMO is that the mitigation support is truly MRV-able. Other important characteristic is that IMO is not an instrument aimed at financing adaptation to the adverse effect of climate change. However, it can be possible to expand or copy the IMO approach towards adaptation financing.

IMOs need the collection, assessment and register of Low Carbon Development Strategy/NAMAs by the developing countries which has the next characteristics:

- A plan to monitor and report greenhouse gas emissions at a national and sectoral level
 - A list of actions which require no additional financing (negative- or low-cost mitigation actions) and the expected mitigation from those actions together with a timeline for implementation and monitoring provisions, per country and per sector
 - A list of actions which do require financial support together with the estimated mitigation potential, cost, required financial support and monitoring and reporting provisions (these are the IMOs).
 - A list of (higher cost) actions which, at a sectoral level, can be implemented through carbon market mechanisms (normal offset mechanism, only these credits can count as a developed country GHG reduction).

The European Commission already proposed the idea about separate the developing countries pledges into: requiring financial support, non-requiring financial support and susceptible to be offset (Figure 9).

Figure 9: European commission’s view on post 2012 developing countries mitigation actions (Wyns 2009)



Besides of the collection, assessment and registration of NAMAs by developing countries -which will generate the total expected mitigation requiring support-, IMOs will consist of the following building blocks:

i) Agree on an effort sharing of the IMOs between developed countries. An example of this can be a sharing of IMOs according to the GDP share of industrialized nations.

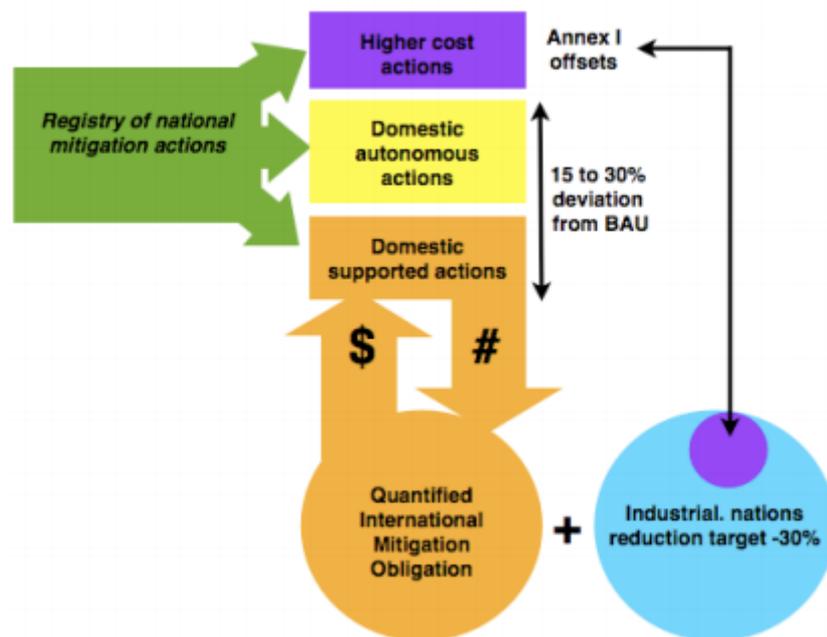
ii) Industrialized nations start fulfilling their IMOs by paying a fixed price per IMO unit expressed in tonnes CO₂-eq mitigated (for the mitigation actions identified as requiring support). The price reflects the average cost of supported mitigations actions in the registry per tonne CO₂-eq mitigated, to avoid industrialized nations picking and choosing the low hanging fruits and high quality (more expensive) actions remaining without support.

iii) Introduce a monitoring and compliance mechanism for both developing and developed countries.

Then, only the actions from the low carbon development strategies/NAMAs which require financial support are the subject of International Mitigation Obligations (see Figure 3Figure 10).

Phase-out of CDM: If a system like IMO is implemented it will require the phase-out of projects based CDM for advance developing countries such as China and India (the biggest supplier of CERs). However part of the lost revenues will be replace by IMOs. Furthermore, IMOs function is independent from economic down- or upturns and related carbon prices, therefore, it will offer a more stable environment for specific projects and actions to develop.

Figure 10: Representation of IMO proposal (Breidenich 2011)



Least Development Countries: In the case of the LDCs It should be possible to offer the option to provide “Sustainable Development Strategies” to the registry, not putting the focus on greenhouse gas mitigation actions but on actions improving sustainable development. This would offer LDCs the possibility of submitting Sustainable Development Policies and Measures (SDPAMs) to the registry. The monitoring, reporting and verification for LDC actions would, hence, focus on the successful implementation of those SDPAMs and less stringency will be required for monitoring, reporting and verifying the actual mitigation.

Status of national communications for the implementation of IMO: The very first step to implement a system like IMO is identify and quantify mitigation options in developing countries. The UNFCCC is already working on that direction, the Bali action plan calls for developing countries to implement NAMAs in a measurable, reportable and verifiable manner (MRV). How parties should measure report and verify, was agreed on COP16 in Cancun 2010. Which express that mitigation actions and national greenhouse gas (GHG) inventories of developing countries will be reported in “update reports” every two years with full national communications every four years, in accordance with guidelines to be developed by the Conference of Parties. For that purpose the UNFCCC provide financial assistance and address the differences in national capacities by setting a low bar for reporting (Breidenich 2011).

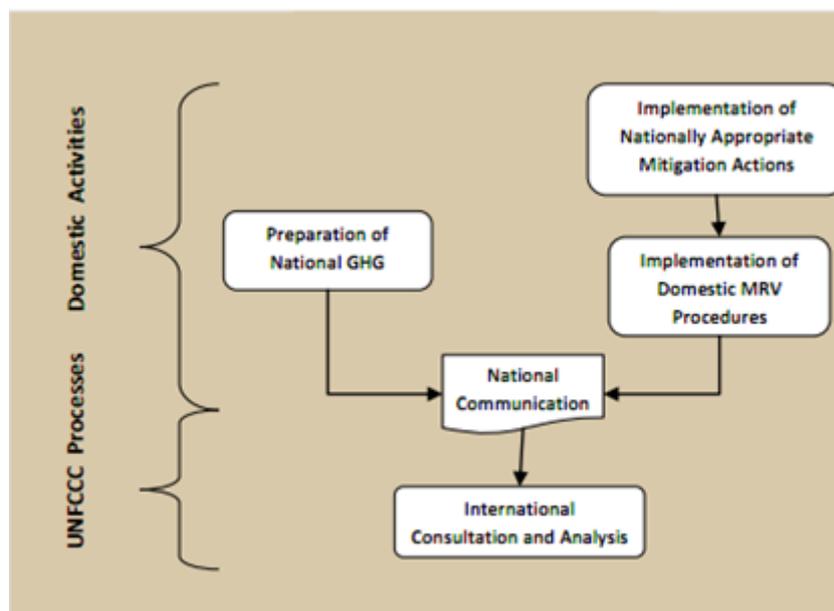
The national communication guidelines require non-Annex I Parties to report on only 3 of the 6 GHG in the inventory: carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Reporting on the other GHGs, namely hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆) is encouraged, but not required. For the first national communications it has to cover the year 1994 or 1990 and the second the year 2000 (Breidenich 2011)

To June 2011, 141 non-Annex I parties, have submitted initial national communications, 61 have submitted second national communications, 2 has submitted a third and only Mexico a fourth (UNFCCC 2011a). As a result, most non-Annex I countries have provided only one inventory to date and for only one year (1994 for most countries). In general the information provided by most non-Annex I Parties does not provide a clear picture on mitigation efforts since not all parties provided a separate chapter on mitigation.

Specifically, the lack of detailed sectoral information and documentation of methods and data sources undermines the transparency of the reported inventories, and prevents assessment of the reliability of the emission and removal estimate. These national communications will be subject to international consultation and analysis (ICA) and the autonomous mitigation actions will be subject to domestic MRV “in accordance with general guidelines” to be developed by Conference of the Parties.

Probably the most important role of reporting is to building confidence among Parties collectively that individual Parties are implementing their commitments (Breidenich 2011)

Figure 11: MRV of NAMAs and Inventories (Breidenich 2011)



As can be notice with the case of the national communications the process to build the bases where a system like IMO can operate is complicate. Therefore, will be necessary establish first an IMO starting up phase.

Pre-IMO starting up: Significant financial and technical support will be required for developing countries when preparing their Low Carbon Development Strategies/NAMAs and National greenhouse gas inventories. This means that before IMOs become operational, financial and technical support needs to be in place to create a solid institutional framework and the necessary capacity and expertise in developing countries. In fact, this capacity building support will be required whether IMOs are implemented or not.

There are different options to address the start-up cost of a framework in which IMOs become operational:

- Auctioning part of the AAUs (Norwegian proposal) before the start of the next commitment period
- Unilateral or multilateral financial pledges into a dedicated fund (Mexican proposal)
- An early action fundraising mechanism as proposed by the European Commission

In practice we propose that the International Mitigation Obligation is implemented in a linear way. This means an annual commitment of IMO going up to a certain level at the end of a commitment period.

Once every 1-2 years developed countries will have to report on the amount of IMOs achieved. At the same time we propose that the (domestic) reduction obligations for developed countries are introduced as annual commitments leading up to the required reduction at the end of a commitment period. This is different from the Kyoto architecture where reduction commitments were spread out over a period (Breidenich 2011).

7.2.5 Global Carbon Market

According with some authors offset mechanisms has always been seen as a transitional phase to a full global cap-and trade system (OECD 2009). For example, a vision of the European Union was that by 2013 all developed nations will have a cap and trade system in place, resulting in an OECD-wide carbon market by 2015 (Marcu 2009).

Outside the EU, one critical development is the shift in political attitude in the United States. The success of the Waxman-Markey Bill in the U.S. House of Representatives which proposed an ETS in US has substantially increased the likelihood that the United States will have a national cap and trade program after 2012 probably linked to the EU ETS. Others are also in the pipeline, namely Australia and New Zealand (Holm Olsen, Fenhann & Hinostroza 2009).

A well-functioning world crediting mechanisms could play four important roles:

- Improve the cost-effectiveness of GHG mitigation policies in developed countries, both directly and indirectly through partial linking of their ETS;
- Reduce carbon leakage and competitiveness concerns by lowering the carbon price in developed countries;
- Boost clean technology transfers to developing countries, and

- Facilitate the implementation of explicit carbon pricing policies in developing countries at a later stage, for instance, allowing Annex I regions to meet 20% of their commitments through reductions in non-Annex I countries is estimated to nearly halve their mitigation costs

Leveling the carbon price is probable the most obvious benefit of a global carbon market but other important benefits are the carbon leakage reduction and the end of the 'zero sum game issue' for the atmosphere

- Leveling of carbon prices

Currently, the CDM market is unstable for several reasons; first, it is a part of the emerging carbon market that suffers from price fluctuations. First, because the number of allowances CO₂ throughout the European Union has a huge bearing on the price of CERs and second, because the number of allowances that are in excess is unknown until the end of each trading period, 2007 and 2012. (Lokey 2009).

Within a linked system, it would therefore stabilize the carbon price. However, they would require frequent government intervention to be met and would imply greater uncertainty about overall emission abatement. Problems can arise when countries with higher pre-linking carbon prices gain from abating less and buying cheaper permits and countries with lower pre-linking prices benefit from abating more and selling permits, however, their economy may be negatively affected by the real exchange rate appreciation triggered by the large permit exports (the Dutch disease effect) (OECD 2009).

From an economic perspective, ensuring incentives for all emitting regions to participate in action will be challenging, because most of them are found to gain less individually from participating than from staying outside and benefiting from the abatement efforts of others ("free riding"). This is especially the case for countries where the mitigation costs from a world carbon price are relatively high and/or the expected damages from climate change are relatively low (Russia and other carbon-intensive, fossil fuel producing Eastern-European economies, Middle-Eastern countries and China). Then, it may be necessary that a set first key regions that will be willing to accept relatively minor losses (OECD 2009).

However, although direct linking across schemes could be very beneficial for mitigation costs, it also creates incentives for participating countries to relax their target for future compliance periods (in order to become a permit seller) creating a 'perverse incentive'. Some of these problems could be reduced by limiting linking for regions with low-quality permits or offsets (e.g. by imposing discount factors on sellers, allowance import quota or tariffs) (OECD 2009)

A solution to this problem would be to negotiate baselines today for the largest possible number of sectors for a sufficiently long time period (e.g. a decade. A long-term baseline would address the perverse incentive issue by ruling out the possibility that any future increase in emissions might, if offset by subsequent reductions, deliver CERs. It would also minimize the risk of leakage. It is considered that developing countries will find intensive baselines more palatable, as they allow for the possibility to growth (Marcu 2009).

The main weakness of this approach is that estimating and negotiating baselines simultaneously across a wide range of countries and sectors would involve significant methodological and political obstacles (Marcu 2009).

- Leakage reduction

If the European Union acted alone (i.e. no other countries put in place climate policies), almost 12% of their emission reductions would be offset by emission increases in other countries. For example, if the European Union cut emissions unilaterally by 50% in 2050 (over 2005 emission levels), 11.5% of this abatement effort would be wasted through carbon leakage. However, if a similar emission reduction is spread across all Annex I countries less than 2% of the reduction would be lost. There is a limit or optimal group of countries and is not necessary that all the countries are involved, however not only the magnitude but also the nature of leakage change with the size of coalition (OECD 2009).

7.3 Other policies or technologies that could have an influence on the CDM

7.3.1 Voluntary market (VM)

The two main types of carbon offset markets are the voluntary market and the CDM, and both are interlinked, they co-evolved from a common base in early 1990s, CDM credits from 'failure' or 'delayed' projects are commonly sold in the voluntary market.

The main role assigned to the voluntary market is that the voluntary market can be used as a testing ground for procedures, methodologies and technologies, before implementing a more formal crediting mechanism such as ETS.

Other advantages are:

- Possibility of Broad Participation: Enables those in unregulated sectors or countries that have not ratified Kyoto, such as the US, to offset their emissions reductions
- Cost-effectiveness that allows for deeper caps or voluntary commitments: By decreasing the costs of reductions, offsets can in principle make a compulsory mandate more politically feasible and a voluntary target more attractive
- Corporate Goodwill: Corporations can benefit from the positive public relations.
- Higher overall reductions without compromising equity concerns: Offsets might allow equity to be decoupled from efficiency, and thus enable a burden-sharing arrangement that involves wealthier countries facilitating mitigation efforts in poorer countries.
- Small projects: Voluntary markets also serve as a niche for micro projects that are too small to warrant the administrative burden of CDM or for projects currently not covered under compliance schemes.

Despite of this advantages, the same flexibility that is granted as an advantage for some is the source of many critiques for others, since the voluntary offset market in particular has been criticized for its lack of transparency, quality assurance and third-party standards, some argue that these projects rarely lead to benefits for the host community.

The lack of transparency fall into two main problems: First, under the CDM, projects are verified by third-party auditors and then reviewed, approved or rejected by the CDM Executive Board .Most voluntary offset standards doesn't certified but solely verified, since do not have such a body to review and approve the projects after the auditors have verified them, thus the difference in the name between CERs (Certified ERs) and VERs (Verified ERs.). Projects are simply approved by the auditors themselves (which are chosen and paid by a project's developer). None of the voluntary

standards have specific procedures in place to review the approved auditors or to allow for sanctions against or the discrediting of an under-performing auditor. Second, Carbon offset registries keep track of offsets and are vital in minimizing the risk of double-counting, however for the VM until 2008 there was no one single registry, notwithstanding registries for the voluntary market have been developed by governments, non-profits, and the private sector but they are still in planning stage and not operational yet. Some of the registries are tied to certain standards whereas others function independently.

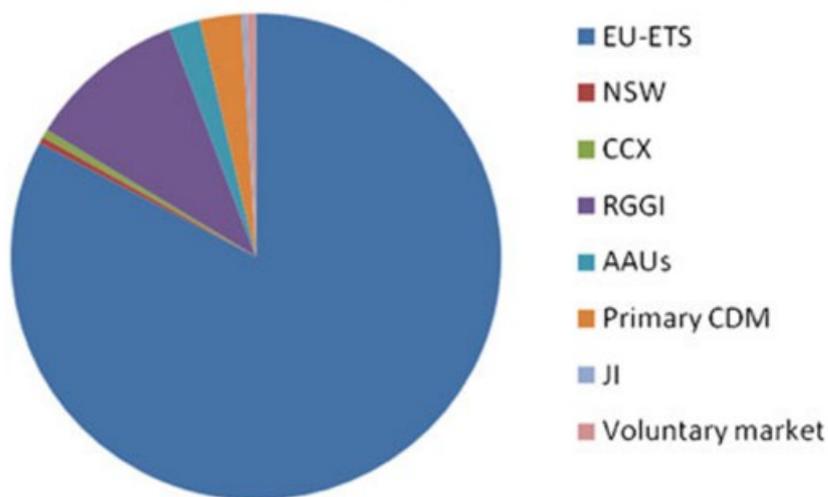
To address some of these shortcomings, over a dozen voluntary offset standards have been developed in the last years, some of the standards, such as the Voluntary Carbon Standard (VCS) and the Verified Emission Reduction plus (VER+), plan to develop performance-based additionality tools (also called benchmark tools). Studies for additionally projects have not yet been carried out for VER projects (until 2008). It is therefore not possible to know if VER standards likely have a higher or lower percentage of additional projects (Kollmuss Zink. A .H., Polycarp C. 2008).

Economic facts:

There are big differences in the amount of transactions realized under the compliance market (EU-ETS) and Voluntary market.

Despite the difference in transaction of credits, the voluntary carbon market has grown dramatically over the last years, for instance, it grew 200% between 2005 and 2006 (Kollmuss Zink. A .H., Polycarp C. 2008), in recent years continue growing but at a lower rate; 28% between 2009-2010 (World Bank 2011). However, even with this grow rate the voluntary market nowadays still represent a small share in the amount of credits trade (Figure 12)

Figure 12: Global carbon markets in 2009 by traded volume (Li 2011)



7.3.2 Reducing Emissions from Deforestation and Forest Degradation (REDD)

In December 2010, in the Outcome of the Ad Hoc Working Group on long-term Cooperative Action under the Convention (AWG/LCA) (paragraph 70) at COP16 in Cancun, The function of REDDs was defined as follow:

“Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances (Redd Monitor 2011):

- (a) Reducing emissions from deforestation;
- (b) Reducing emissions from forest degradation;
- (c) Conservation of forest carbon stocks;
- (d) Sustainable management of forest;
- (e) Enhancement of forest carbon stocks;”

REDDs can be achieved relatively cheaply, and could potentially reduce the cost of global action mitigation by 40% (although there could be an impact on land and food prices).

However, there are wide uncertainties associated with emission levels, potential cost savings and technical and methodological issues needed to be addressed before the integration of REDD in the existing carbon market can be achieved (OECD 2009)

Potential estimation reduction by REDD

There are important uncertainties associated with the emission from deforestation; some studies agree on annual emissions of about 7.3 Gt CO₂, or about 18% of world GHG emissions. Others report substantially lower estimates of just 3.5 GtCO₂. Meanwhile, the IPCC reports a central estimate of 5.9 Gt CO₂ within a very wide range (from 2.9 to 8.8 Gt CO₂) (OECD 2009)

Asia and South America together accounted for almost 80% of these emissions in 2000. Likewise, the bulk of emissions are in fact concentrated in a relatively small number of countries, including Indonesia, Brazil, Bolivia, Cameroon, Malaysia, the Democratic Republic of Congo, Ghana, and Papua New Guinea.

The main reason for these large uncertainties are that monitoring REDD requires two sets of data: i) data on the size and type of changes in land uses (for instance, from forestry land to pastures); and ii) data on the corresponding change in the carbon stock. “Bottom-up” methods (on-the-ground sampling, land-use surveys, and their statistical processing) must be combined with “top-down” methods involving a combination of satellite images, aerial photographs, and remote sensing data.

Due to the complicate monitoring system, only few countries can release reliable data. i.e. Brazil and India tend to have more reliable data than most other developing countries (OECD 2009).

Potential price of reduction

It is estimate that more than 90% of global deforestation could be stopped at a price of USD 8 per tonne of CO₂. However, these estimations are probably on the low side, because they do not include transaction and capacity building costs and the economic costs of the carbon price policies needed to make these options profitable. According to these models, half of the emissions from deforestation projected in the baseline, or 1.5 to 2.7 GtCO₂ per year, could be

avoided at a cost ranging between USD 8 and 19 per tonne of CO₂ (OECD 2009).

These estimations suggest that incorporating REDD in a global abatement programme could substantially reduce costs. For instance, based on a partial equilibrium approach, has been report on literature that allowing the full use of forestry credits within the CDM market could reduce the CDM carbon price in 2020 by 40%, from EUR 20 to EUR 12 per tonne of CO₂eq (New Carbon Finance 2009). Piris-Cabezas and Keohane (2008) report much more moderate cost reductions, with REDD credits estimated to reduce the CER price by approximately 13% (Piris-Cabezas, P. & Keohane, N. 2008). The Eliasch Review (2008) suggests that by including REDD and afforestation/reforestation options, global mitigation costs at the world level could be lowered by 25-50% and 20-40% in 2030 and 2050, respectively (Eliasch 2008).

Financing REDDs

Two key options have been proposed for financing REDD: a market-based crediting approach and a (non-market) fund-based approach. Other “hybrid” proposals combine some elements of both approaches (OECD 2009).

(i) Market Base:

market-based REDD mechanism could be introduced either via a sectoral cap-and-trade scheme or via a crediting mechanism, One advantage of the cap-and-trade approach is that it ensures compliance with the cap, and thus also provides a greater degree of certainty about the emission reductions that would be achieved.

However, at this stage, only crediting mechanisms are being considered in current REDD negotiations for the post-2012 commitment period.

In principle, these REDD credits would be equivalent to other credits such as those generated through the CDM or the allowances from EU-ETS and could be traded on the same carbon markets

A commonly-raised concern with the market-based approach is that the environmental integrity, and ultimately the credibility, of the international carbon market could be undermined if it were to be flooded with low-quality REDD credits. One option to limit this risk is to control the supply of REDD credits through a price floor, or by imposing maximum limits on supply. The supply limit could be adjusted upward if the carbon market price becomes too high

Another way to prevent low-quality REDD credits from undermining the environmental integrity of international carbon markets is to keep REDD separated (OECD 2009).

(ii) Fund Base:

Consist into create a fund, to be distributed to governments based on REDD performance. A number of funding sources have been proposed, including official development assistance (ODA), international financial institutions, and earmarking of revenues from permit auctions under ETS. Performance-based payments to governments would give them incentives to address the domestic causes of deforestation and forest degradation

The major advantage of the fund-based approach: is avoiding flooding with cheap credits a well-performing carbon market.

Other advantages are that may not require as high monitoring, reporting and verification standards as market-based approaches also provides a framework for directly financing capacity building, as well as protecting existing forests.

However, basing it on voluntary contributions might mean inadequate incentives for contributing to the fund(s), and funding levels might therefore prove to be insufficient and unsustainable (OECD 2009).

(iii) Combination of Both:

Fund-based and market-based schemes could be combined over time in a phased approach, with a first phase primarily fund-based to ensure capacity building, with REDD credits then gradually integrated into a carbon market under appropriate conditions (OECD 2009).

The permanence problem

Carbon credits may be issued for emission reductions made initially, but these might be offset by increases in the more distant future. This issue could be significant if avoided deforestation become eligible for the CDM. For instance, deforestation might be simply delayed rather than permanently avoided. This problem could be compounded by the difficulty for firms to commit, and for insurance companies to cover the risk of non-compliance, over very long periods (OECD 2009)

7.3.3 Inclusion of Carbon Capture and Storage (CCS) in CDM

In December of 2010, at the 6th conference of parties serving as the meeting of the parties to the Kyoto protocol, in Cancun, Mexico, was announced the inclusion of Carbon Capture and Storage (CCS) as an eligible carbon offset under the CDM, thought the emerge of a draft text to include CCS in CDM with the participation of all countries present on the negotiation (Global CCS Institute 2010).

However there are a number of practical and technical issues that must be addressed before a total inclusion of CCS in the CDM framework:

- **Non-permanence:** The possibility that carbon dioxide stored underground may leak and be released to the atmosphere.
- **Liability:** some parties are concerned about the lack of clarity concerning liability for leakage and migration of carbon dioxide from its storage area, especially when considering the long-term timeframe of the storage. Others have noted that it is uncertain whether insurance coverage and compensation for damages caused by leakage would extend indefinitely, and that it is unclear who would be responsible for mitigating the damage caused in these circumstances.
- **Measuring, reporting and verification:** the carbon dioxide stored by eligible projects is to be modeled not measured, which would add complexity to the determination of the number of CERs generated by projects.
- **Environmental and health impacts:** some argue that the lack of experience with CCS compared to current eligible CDM projects together with the uncertainty surrounding risks of leakage mean that the required environmental impact assessment of CCS projects will be very difficult. The potential risks to human health and safety as a result of leakages of carbon dioxide (including impurities in the gases) have also been raised as issues to be addressed.
- **Project boundaries:** many storage reservoirs will span jurisdictional boundaries, making it difficult to impose project boundaries for CCS projects.

- **International law:** international maritime treaties were drafted without having greenhouse gas storage activities in mind. A number of legal issues need to be addressed in this regard.
- **The potential for perverse outcomes:** some argue that the carbon market could be flooded by CCS CERs leading to a drop in the CER price. This could exclude other important CDM project types, such as renewable energy (Gibbs, M. & Jamieson, R. 2011). However a recent study suggest that the CER prices in the CDM are too low for the deployment of CCS in the power sector, being only the natural gas processing sector suitable for cheaper CCS projects (which dominate the currently implemented CCS projects) where CER prices can play a major financial role. The potential amount of CER generated under this kind of projects would not be enough to flood de CDM market significantly, at least, up to 2020.

Apart of these legal and technical issues, it is also important to solve the framework where the CCS projects will operated in developing countries as well as other capacity, political, awareness concerns.

The experience developing the institutional and legal framework for a responsible inclusion of CCS has been shown to be time-consuming and required substantial input from expert in research and industry. Then it is recommend that Annex-I countries make available funds to help interested developing countries to develop the necessary framework.

Other concern to address is the level of awareness on CCS among negotiators from developing countries, since, although official surveys are not available, the discussion around CCS in the CDM has in the past shown a low level of awareness of CCS among most developing countries (Bakker, de Coninck & Groenenberg 2010).

These uncertainties have led some analysts in the carbon market to question the viability of investing in CCS technology at present. The current uncertainties surrounding the introduction of a carbon price internationally or domestically, and the ability of CCS projects to rely on generating CERs, are likely to continue to undermine confidence in the CCS market (Gibbs, M. & Jamieson, R. 2011)

On the political aspect the party that opposes CCS under CDM most vocally and firmly is Brazil. Probably because Brazil base its electricity production on hydropower generation, and the inclusion of CCS in the CDM could slow down its leader position in CER issues in South America (de Coninck 2008).

On the other hand proponents of CCS under the CDM are most Annex-I countries, as well as several non-Annex I countries, such as Saudi Arabia, Qatar and China. Japan and oil producing countries are almost unconditionally for inclusion of CCS in the CDM, the European Union is in principle for, but more careful in terms of solving the technical and legal issues around CCS before allowing it in the CDM. Arguments used include the notion that CCS is new but that projects can be managed safely, and that CCS can play a role in reducing emissions in developing countries with fast-growing coal-fired power capacity (de Coninck 2008).

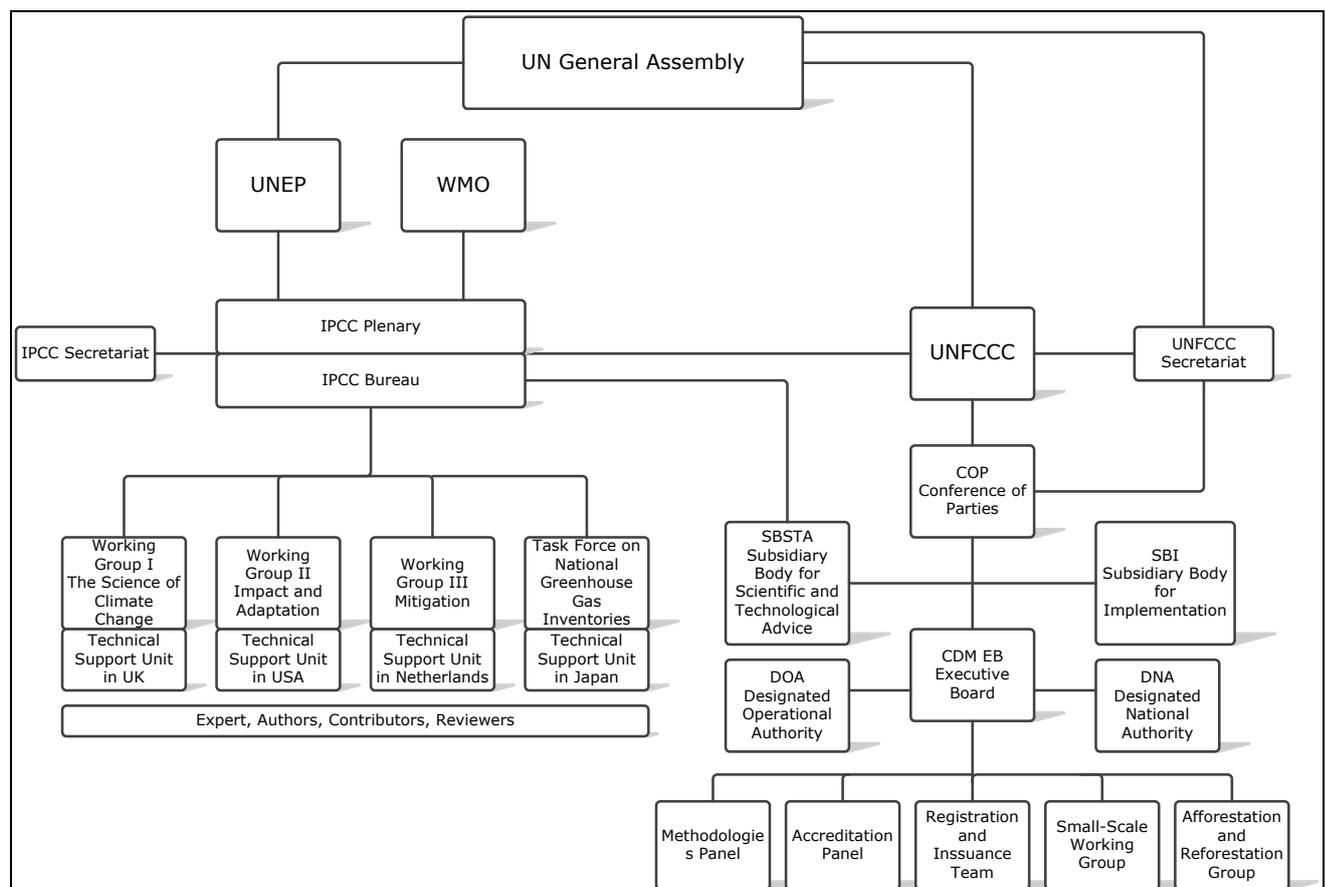
Another important argument in favor is the economic benefit in emission abatement cost, since, the International Energy Agency endorsed its view that CCS is a crucial part of the lowest-cost greenhouse gas mitigation portfolio, and that without CCS, overall costs to halve emissions by 2050 will rise by 70% (IEA 2011a).

8 Environmental Governance and Decision making rules

Global intergovernmental negotiation is highly complex since states are not monolithic, and different government departments, as well as individuals within departments, are likely to have varying views over the national positions to be taken, then, government negotiators must reach agreement at the domestic level to define their preferences before they can negotiate. In this section is explain how are negotiation perform and under which circumstances, are taken decisions which could make changes on the CDM.

The next figure detail the actors involved in the climate regime.

Figure 13: Organization of the main actors around climate change regime



8.1 Participants

The UNFCCC states that membership of the regime is open to any State member of the UN, or its specialized agencies or the International Atomic Energy Agency. The number of parties to the UNFCCC has risen from 118 at the time of COP 1, to 194 up to day (UNFCCC 2011c). The size of delegations ranges from just one or two members from many smaller developing countries to more than 20 for big countries like Canada.

8.2 Structure of governance

The Conference of the Parties (COP) shall elect at each ordinary meeting, to serve as the Bureau of the Conference of the Parties, a President and nine Vice-Presidents, one of whom shall act as Rapporteur. At the top of the pyramid is the President of the COP, typically a Minister (usually

minister of environment). Then, at the second institutional layer of the regime, come the Chairs of the **Subsidiary Body for Scientific and Technological Advice** (SBSTA) and the **Subsidiary Body for Implementation** (SBI). These three officers are formally elected by the parties to the regime, by the rules of procedure. The third institutional layer of the climate change regime are the **Chairs of informal groups** established by the COP or subsidiary bodies to negotiate specific issues for one session only, each of them with different roles and capabilities of influence in the negotiation process.

Roles in the negotiation process

The COP President tends to have a much more ceremonial role, as almost all decisions will already have been reached in the subsidiary bodies or informal groups before they are presented to the COP plenary. Although COP Presidents can choose to play an active role in promoting agreement, in practice only a small number have done so in any truly consequential way, and in some cases their efforts have even backfired. The COP president is subjected to rotation among the five UN regional groups (Africa, Asia, Central and Eastern Europe, Latin America and the Caribbean and Western Europe and Others) and is elected at the opening of the COP session that s/he will preside over. In practice, the process of election is a formality given that the presidency goes hand in hand with the COP venue, or at least with regional rotation, the identity of the President is typically known long before the COP session opens.

The subsidiary body Chairs, for their part, as the presiding officers of the main working bodies of the regime, have a very important role to play in pushing for an overall agreement on the issues under their purview. This is also the case for informal group Chairs, although these will usually be dealing with single issues. Informal group Chairs also know that they can, in the last resort, appeal back to the COP or subsidiary bodies if agreement cannot be reached. The subsidiary body Chairs are elected as part of the 11-member COP Bureau as with the COP Bureau as a whole, the positions of subsidiary body Chairs are usually decided upon through the process of regional nomination behind the scenes, and election is normally a formality. According to the rules, the Chairs of new subsidiary bodies are elected by the subsidiary bodies themselves (Rule 27.5) (Depledge 2005f).

Role of COP Bureau

The rules of procedure specify that each of the five UN regional groups must be represented on the Bureau by two officers. The eleventh post is reserved for the small island developing states, given their particularly great stake in the climate change regime.

The establishment of this dedicated seat under the rules of procedure was disputed at COP 1, with some developing country oil exporters (notably Saudi Arabia and Kuwait) arguing that they too should hold a special seat on the Bureau, on the grounds of their potential economic vulnerability to the impacts of response measures. Although no formal rule was agreed to this effect, the demands of the oil exporters have been accommodated through an informal understanding that they will be represented through one of the regional groups. In practice, this has meant that OPEC has been represented on every COP Bureau since COP 2.

The only tasks of the COP Bureau (except for the President) that are specified in the rules of procedure are to examine the credentials of representatives to negotiating sessions and submit a report on these to the COP, and for the Vice- Presidents to replace the President in case of absence (Rules 20 and 24).

The composition of the Bureau – based on the formal regional groups rather than the negotiating coalitions – means that it is used almost exclusively for procedural and organizational matters, rather than substantive negotiation.

However an important informal role of COP Bureau is to serve as a consultation forum, or early warning system, for the COP President, such as, how to handle a contentious agenda item, or on how to organize the final stages of negotiations COP. For this reason at the end, membership of the COP Bureau is highly important since, it is perceived as the inner circle of the regime, granting access to information and influence (Depledge 2005a).

Informal groups:

The Chairs of informal groups are invited to serve by the presiding officer of their convening body, usually the SBSTA or SBI, or less frequently the COP. The Chairs of informal groups are appointed for one session only, but may be re-appointed at subsequent sessions if the informal group is reconvened. The performance of these contact group Chairs in steering the negotiations therefore became as important, if not more important, than that of the subsidiary body Chairs and COP Presidents. The subsidiary body Chairs will usually give some thought prior to the session on who could chair the informal groups they are thinking of convening, and will discuss possible names with the secretariat. In this respect, a practice has emerged after Kyoto ratification of appointing Co-Chairs for contact groups, one each from an Annex I and a non-Annex I country, to try to make sure that both sets of parties feel their interests will be given due attention. This practice, however, has the disadvantage of entrenching the divide between Annex I and non-Annex I parties, while doubling the demand for effective Chairs.

Chairing skills are especially important for the presiding officers of the subsidiary bodies and informal groups, which are the bodies that carry out the Indeed, most interviewees commented that COP Presidents have very rarely possessed the necessary experience or ability to manage spontaneous, genuine bargaining or even discussion in a plenary meeting.

Arguably the most successful COPs have been those where the COP President has confined him/herself to largely ceremonial duties, focusing leadership efforts on motivation, inspiration and broad-brush consensus building, including, importantly, setting deadlines, while allowing those with most experience in the negotiations, usually the subsidiary body Chairs and informal group Chairs, to concentrate unimpeded on the detailed negotiations (Depledge 2005f).

The secretariat

The secretariat is usually the only full-time actor within a regime. In the same resolution that launched negotiations on the Convention in 1990, the secretariat was 'institutionally linked to the United Nations' (decision 14/CP.1), and thus administered under UN rules and regulations. Similar to the presiding officers, the secretariat is expected to help steer the negotiations to a successful conclusion. However, the parties do not expect the secretariat to lead, but rather to assist them and this also constitutes the public view of the secretariat.

The basic role supplied by the secretariat is a logistical one, includes, for example: ensuring the supply of sufficient appropriately sized meeting rooms; providing interpretation facilities into the six UN languages; processing documents, including translation and distribution; making venues available for informal and unofficial meetings; and identifying spaces for NGOs, other observers and indeed parties to hold side events and.

Another important function of the secretariat is that almost every decision or conclusion that is negotiated in the climate change regime is based on an original draft, or compilation, suggested by the secretariat. Another pioneering recent initiative by the secretariat has been the organization of high-level events, usually in collaboration with businesses and other NGOs, to encourage a broader discussion of climate change related issues beyond the immediate agenda (Depledge 2005g).

NGOs

A huge variety of NGOs are active in the climate change regime. This open approach was established from the outset by the United Nations General Assembly (UNGA) resolution 45/212, which launched negotiations on the Convention. The resolution explicitly 'invite relevant non-governmental organizations to make contributions to the negotiating process' with 'the understanding that these organizations shall not have any negotiating role during the process' (emphasis added).

The NGOs are arranged into 10 constituencies or aggregation, namely, Environmental NGOs (ENGOs), Business and Industry NGOs (BINGOs), Local Government and Municipal Authorities (LGMAs), Indigenous People's Organizations (IPOs) Research-oriented and Independent NGOs (RINGOs), Trade Union NGOs (TUNGO), Youth NGOs (YOUNGO), Women & Gender-based NGOs, Farmers NGOs. NGOs outside of the main constituencies but are accredited to participate are grouped under 'Others', making the 10 NGOs constituencies.

This allows for a participation of a wide spectrum of NGOs, however still exist a great disparity in representation between NGOs from OECD countries and from developing countries, where more than 75% of NGOs are still based in Annex I parties, overwhelmingly from OECD countries.

The most basic form of participation by NGOs in the climate change regime is through observation of the negotiations. This forms the basis for maintaining the transparency of the process, as well as the accountability of national delegates to their populations back home.

NGOs have always been allowed to observe COP and subsidiary body plenary meetings, however, the presiding officers of contact groups may still close the group to observers at any time.

Other way of participation for NGOs is the statements, where NGOs are granted several speaking slots during COP sessions under the standing COP agenda item. These statements, however, are almost always general and highly rhetorical in nature, then it is doubtful, whether such rhetorical NGO statements impact on the actual negotiation process in any practical way at all.

NGOs are also permitted to make statements in the subsidiary bodies, usually on the basis of demand and at the discretion of the presiding officer.

Other means for NGOs to convey their views is through private meetings with the presiding officers and secretariat. General meetings between the subsidiary body Chairs and NGO constituencies became established practice after the signing of Kyoto protocol, again, these meetings typically cover a range of issues.

One of the main obstacles to greater NGO input in plenary debates is the requirement that NGOs speak on behalf of a broader international constituency. This means that NGO delegates observing a meeting cannot spontaneously ask for the floor to respond to developments in the debate, as any statement would first need to be agreed within the constituency as a whole. Probably the more effective means of eliciting contributions from NGOs than plenary statements has been their participation in complementary forums, including the informal roundtables convened during the Kyoto Protocol negotiations, and the post-Kyoto workshops where NGOs can also exert the opportunity to lobby delegates and influence negotiations during informal conversations (Depledge 2005e)

Rules of negotiation

The Convention called on the first COP to 'adopt its own rules of procedure as well as for the subsidiary bodies' (Article 7.3). Due to disagreement over the voting rule to be applied for taking

substantive decisions, the draft rules of procedure have never been adopted. However, given that the bulk of the draft rules of procedure are not in contention, the draft rules (FCCC/CP/1996/2) have been 'applied' at each session of the COP and subsidiary bodies without controversy, except for the rule on voting (rule 42) (Depledge 2005f)

Consensus is indeed widely used as a decision-making rule in the UN system, particularly in multilateral treaties, given that 'states generally avoid the open confrontation that can come with voting'. Most theorists and practitioners agree, however, that consensus is distinct from unanimity, and is generally defined negatively to mean that there are no stated or formal objections to a decision

The problem of this is that a small group, or arguably even a single party, could formally state that there was no consensus on a particular decision, thus potentially preventing the decision from being adopted.

In practice, it is extremely rare for a single party to block a decision, as most parties are very reluctant to prevent their allies – on whose support they may depend in other multilateral arenas – from taking action. If a party does not have the support of its negotiating coalition, it is unlikely to isolate itself by blocking a decision (Depledge 2005d).

The major 6 coalitions that are constituted in the climate regime are:

- (iv) Group of 77 and China: which is the main coalition of countries; this coalition has always perceived climate change as a development issue evoking equity as the fundamental principle to address it. The basic position is that developed countries must cut their emissions before requiring the developing countries to do so.
- (v) Alliance of small island states (AOSIS): was formed in 1990 specifically to lobby on climate change, comprises 43 small island states, most of them also members of G77 coalition.
- (vi) Least Developed Countries (LDC): Located in Africa mostly, Asia and also small island, with serious problem poverty and climate adaptation.
- (vii) Organization of Petroleum Exporting Countries (OPEC): Fearing the economic repercussions of lower demand for oil, OPEC has opposed strong mitigation action. Some members have even been accused of obstructing the negotiations. It does not negotiate as a group, but coordinates very effectively informally.
- (viii) European Union: The 27 member EU almost always speaks with one voice despite differences in the national circumstances of its members. The EU views itself as an environmental leader, supporting strong commitments and with a traditionally lukewarm attitude towards market mechanisms.
- (ix) Umbrella Group: This Group's members share similar values and principles in the climate change negotiations, centered on the pursuit of flexibility and cost-effectiveness. However they are very politically diverse, And this explain why the Umbrella Group is only a loose coalition, which rarely negotiates as a single entity.

Other informal practices of the climate change negotiations are sometimes difficult to pin down, precisely because they are unwritten. They include, for example, the 'no more than two meetings' rule, whereby only two official negotiating groups may meet at any one time, along with the practice of appointing two Co-Chairs to preside over informal groups, one each from an Annex I and non-Annex I party (Depledge 2005b).

Arenas of negotiation

There are four formal arenas of negotiation, namely; formal-open, informal-open, informal-closed, unofficial.

Formal open: The central stages for the climate change negotiations are the plenary meetings of the COP and subsidiary bodies, which are typically attended by all parties present at the session and are open to non-state observers, including the media. These plenary meetings are required to adhere to all formal rules and established practices for the conduct of business, such as seating arrangements in alphabetical order. It is taken for granted in the climate change regime, (and indeed in other international forums), that plenary meetings are not conducive settings either for active debate or bargaining, given that the large number of parties present, and the admission of the media and NGOs all serve to constrain frank and spontaneous negotiation.

A public opportunity for a delegation to express itself without interruption with all procedural safeguards in place tends to be particularly important for developing countries, who can feel that they have placed their national positions on record, even if they then have limited influence in the bargaining process.

Informal open: The bulk of negotiations in the climate change regime take place in a variety of informal arenas. Their main advantage is that, because they are not bound by rules for the conduct of business, they can serve as more conducive and efficient settings for negotiation. Parties are thus able to talk more freely in informal arenas, knowing that the risks are lower as a proposal will not necessarily be taken as a commitment and no final decisions will be taken.

There are two main broad categories; the informal group, and the informal consultations. *Informal groups* are open-ended, that is, open to participation by all parties. They are not bound by traditional UN meetings times, and will often meet into the night. Negotiations are conducted in English only (interpretation has only been provided in exceptional cases) and working documents are rarely translated.

NGOs are allowed to attend open-ended contact group meetings as observers (unless at least one third of parties object).

In the case of *informal consultations*, in contrast with informal groups, which are established by the COP or subsidiary bodies. The presiding officer typically invites a delegate (sometimes two) to consult on a particular topic and report back to plenary, but advertised meetings are not held. An informal consultation is therefore a much more private process than a contact group or any other type of informal group. Hence, NGOs will not be invited, and venues and times will not be advertised.

Informal closed or friend group: Presiding officers have sometimes invited a limited number of parties to a series of private meetings aimed at advancing the negotiation process. Like informal arenas, there are no set rules governing their conduct, opening up considerable room for improvisation on the part of the presiding officer as to what kind of group s/he wishes to convene (if at all) and how to use it. Participants are limited membership bodies; that is, only invited delegates are permitted to attend, to the extent that security guards may be placed at the door to deter uninvited individuals. Negotiations always take place in English only, and meetings may be held anywhere, at any time, and at a moment's notice. NGOs are not permitted to attend, and meetings are rarely openly advertised

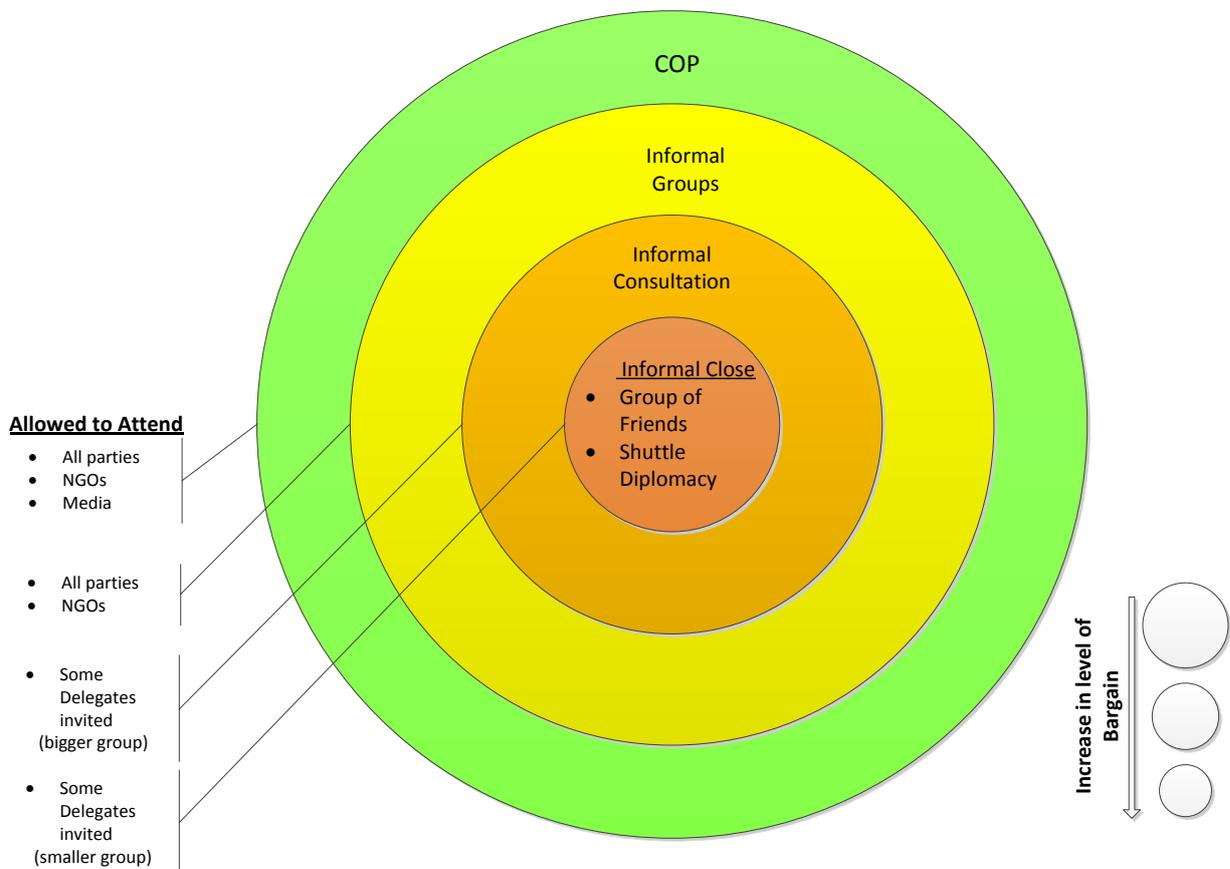
The composition of friends groups has evolved over time. In the post-Kyoto period, it has become less acceptable for a Chair or President to draw up an invitation list of parties on a 'top down' basis.

Instead, the trend has veered towards a more ‘bottom up’ process, that is, with invitations extended to the negotiating coalitions, and the coalitions themselves selecting their participants.

Convening a friends group as a consultation forum prior to each COP session has now become almost an established practice in the climate change regime. Friends groups convened as consultation forums tend to have two main purposes. Firstly, they can serve as useful forums for the President to consult on process and procedural matters. Secondly, friends groups can be used to exchange views on substantive options in the negotiation process, albeit with a clear understanding that no negotiation will take place.

The main problem with Friends groups is that can be either, too small and secretive to be legitimate and fully representative, or too large and transparent for meaningful negotiation to take place. Friends groups also suffer from the mix in participation between ministers and officials, whose differences in approach can make negotiations awkward and unproductive. An alternative to friends group is shuttle diplomacy where representatives of negotiating coalitions meet privately with the President (or other presiding officer), and therefore to talk freely without fear of losing political face, or of being accused of treachery by coalition members. Ironically, however, shuttle diplomacy is even less transparent and procedurally equitable than friends groups, given that meetings are held between just a few people, and the discussions and deals therein are kept secret.

Figure 14: Arenas of negotiation and parties allowed attending



Unofficial negotiations

It is common for parties to engage spontaneously in unofficial talks behind the scenes, to bargain and forge deals on issues of particular importance to them. Each negotiating session has its own share of unofficial negotiations in the corridors.

Although nothing can be done to prevent key players from getting together privately to make deals, and indeed such private negotiations are necessary for agreement to be reached (Depledge 2005e).

Complementary forum, roundtables

The subsidiary bodies convene workshops during negotiating sessions and because delegates are neither negotiating nor making commitments in a workshop, they can discuss a wider range of issues much more freely. Complementary forums often include presentations from experts, including from the NGO and Intergovernmental Organizations¹¹ (IGO) communities (Depledge 2005c).

Remarks on complications of the negotiations

Several factors have contributed to the complexity of the climate change negotiations due to different reasons such as an increase in the number of different issues on the negotiating agenda, furthermore, the awareness of countries on their particular national circumstances and interests has risen over time and more specific issues are being placed on the table.

This greater number of issues has encouraged specialization, so that there are fewer delegates with the big picture of the whole negotiation process (Depledge 2005b). A key challenge for the climate change negotiations since their creation has been a strong tendency to competitiveness, rather than cooperation, among the negotiating parties. This is partly the result of the concerns over national economic interests and competitiveness, as well as the long time horizon of the problem, which has led to a focus on short-term costs rather than on benefits that would only be seen in the future. The tendency to competitiveness is also a product of the North–South divide to the negotiations (Newell 2009).

8.3 BINGO's influence on the climate change regime

Together with scientists and environmental NGOs (ENGOs), business and industry NGOs (BINGOs) are considered to be among the most long-standing and active observer constituencies participating in the climate regime. The International Chamber of Commerce (ICC), which represents companies of all sizes and sectors in over 130 countries worldwide, serves as the chair of the constituency, in charge of coordinating business's activities and input to the negotiation processes. While BINGOs are by definition non-profit organizations, their members are for-profit companies, most of the BINGOs active in the climate change regime are transnational organizations targeting political processes at

¹¹ The Article 7, paragraph 6 of the UNFCCC provides that representatives of the UN system may be represented as observers at sessions, grouped as Intergovernmental Organizations (UNFCCC 2012a)

the regional and international levels. On the other hand they are unevenly geographically distributed, most members are from developed countries while members from developing and least developed countries (LDCs) are almost completely absent from the scene.

The main advantage of BINGOs for companies is their increase on legitimacy as political actors in the international arena. In this way, BINGOs serve the function of establishing and maintaining access channels to forums and negotiations to which individual companies would not otherwise have been invited. There are three main types of BINGO reported by Vormedal (2008) on the literature according with their profile for the climate change negotiations, namely; Gray, Middle Gray, Middle Green and Green.

Gray BINGOs nowadays have almost disappeared, they were known for explicitly manifest opposition to climate change and GHGs regulations, they were also known for lobbying tactics which include financial contributions to government decision-makers, or paying expenses and /or leisure trips for members of delegations. The best known example was the Global Climate Coalition (GCC), which aimed to obstruct and delay the negotiation for the Kyoto Protocol. However after the ratification of Kyoto protocol the GCC support of its core members such as British Petroleum (BP), Shell and General Motors left the organization and was finally disbanded in 2002. More recent examples of Gray BINGOs include the Australian Industry Greenhouse Network (AIGH) and the Australia Aluminium Council (AAC). These organization are also known as 'Greenhouse Mafia' since, successfully sought to undermine the Australia's ratification of the Kyoto Protocol under John Howard's liberal government from 1996 to 2007 when a change of government along with the ratification by Australia of the Kyoto Protocol marked the failure of these business group.

Middle Gray BINGOs include both sector specific and cross-sectoral interest associations such as, World Nuclear Association (WNA), the World Coal Institute (WCI), The international Petroleum Industry Energy Conservation Association (IPIECA) and the International Chamber of Commerce (ICC). Their strategy is promoting solutions that maintain or capture new markets in fossil fuel economy. Some has become greener putting more emphasis on low-emission technologies such as CCS.

Is important to remark that the ICC has in reality been dominated by the US oil giant Exxon Mobil, a company infamous for its aggressive anti-climate stance which delay and profile towards a pro-regulation stance.

BINGOs in the Middle-Green, has a greener or pro-regulation profile, with members such as, International Emission Trading Association (IETA) and the World Business Council for Sustainable Development (WBCSD). These groups anyway have a vague regulatory support for quantified targets and focus on promote fossil-fuel-friendly technologies and nuclear power.

Finally green BINGOs are organization representing business that would benefit commercially from climate change policies and has an unambiguous pro-mitigation and regulation agenda. The most prominent organization representing such industries is the Business Council for Sustainable Energy (BCSE), however, lately, actor from financial services has joint to this group, as the volume of carbon trading has increased they see opportunities to develop new financial and insurance instruments.

BINGOs situated from the middle gray to green usually use information-based lobbying tactics, providing governments with expert advice, technical reports and assisting decision-makers directly with policy formulations and writing of legal text. The aim is to make industry preferences known to decision makers, using networks established with key decision-makers in governments and international institutions. Then, currently, BINGOs tend not to provided direct financial contribution to delegates but arrange fully catered side events, dinners and other social events during negotiations as networking arenas. Making, the 'intellectual capital' of BINGOs the most important. (see case example 1 on BINGO influence in annexes) (Vormedal 2008)

8.4 ENGO's influence on the climate change regime

ENGO are normally classified into activist and advisory NGOs; advisory ENGOs have policy solutions that are more acceptable to governments or closer to governments' own positions, while, activist NGOs, typically pursue more radical and far-reaching solutions (Andresen, Gulbrandsen 2004).

The complexity of the climate issue has made the traditional activist role of the NGOs difficult to "sell" and for people to relate to. On this complex issue it may seem that intellectual capital is more important (Andresen, Gulbrandsen 2004).

One strategy used to improve access to government and therefore gain more influence, is to form alliances with other environmental NGOs, sharing information and coordinating positions. The main ENGO alliance that include nearly all environmental NGOs is the Climate Action Network (CAN), created in 1989 in order to communicate NGO positions with one voice during the climate change negotiations (Andresen, Gulbrandsen 2004).

Nonetheless, find on the literature case examples where ENGOs try to steer the climate negotiation to their position with proven positive results is difficult, and at the same time according with Andresen, L. (2004) the studies who attempted to address the question about the extent of influence of ENGOs has often confuse influence with NGO access, activities or resources in assessing policy outcome (Andresen, Gulbrandsen 2004).

Anyhow, the fact that almost all the ENGOs are organized through CAN, contributing from the advisory side to the climate negotiation, represent a clear attempt to make their voice listen. On that respect, an entire book is dedicated only to this topic titled, "ENGO Influence in International Climate Change Negotiations - Case Study of the Issue of Post-2012 during COP 11 and COP/MOP 1" by Rabbi Deloso where ENGOs are mainly referred as CAN (Deloso 2007)

9 Results

The methodology described above was used for analyze all the UNFCCC NGO's constituencies plus IGO group. Gephi can give important information of the strength of a network which is very useful to compare them. Even though, the focus of these studies was placed in identify important nodes (or NGOs in this case) within the networks, gephi networks metric can give an idea on how strong is a NGO constituency respect to others.

The next table summarizes the NGOs constituencies under analysis (including the IGO), the number of starting points and the parameters chosen for the analysis of each network.

Table 6: Parameter of analysis with Issue Crawler

	BINGO	ENGO	RINGO	LGMA	Others	IGO	Trade Union	Women & Gender	IPO	Youth	Farmers
Starting nodes	230	545	356	18	132	82	9	7	24	24	7
Mode of Analysis	Interactors	Interactors	Interactors	Interactors							
Depth	2	2	2	2	2	2	2	2	2	2	2

The next table summarizes properties from the networks obtained through gephi with the exception of 'Farmers constituency' where no network was found (the number of nodes after analysis are different than the starting nodes, since, issue crawler discard nodes that are isolated from the network).

Table 7: Definitions and values of NGOs networks metrics obtained through Gephi

	Definitions	BINGO	ENGO	RINGO	LGMA	Others	IGO	Trade Union	Women & Gender	IPO	Youth
Nodes¹	Units of the network	166	334	202	12	35	72	2	4	10	10
Edges¹	Connection links	409	917	329	20	29	198	1	1	10	11
Average Degree³	If a network has an average degree of X, means that each node, (including incoming and outgoing neighbors) has an average of X neighbors.	2.464	2.746	1.629	1.667	0.829	2.75	0.5	0.5	1	1.1
Average Weighted Degree⁴	The weight of the edges is determined for the numbers of links between nodes, then the average weighted degree is the average of the sum of all the edges connected to a node.	39.295	17.883	6.025	6.583	3.771	25.153	7	1	2.8	2.8
Network Diameter¹	Maximal length of the shortest path between any pairs of vertices in a network.	12	14	14	4	4	12	1	1	4	2
Graph Density¹	Measures how close the network is to be completed. A complete graph has all possible edges and density equal to 1.	0.015	0.008	0.008	0.152	0.024	0.039	0.5	0.5	0.111	0.122
Modularity¹	Measures how well a network decomposes into modular communities., A high modularity score indicates sophisticated internal structure	-0.012	-0.007	-0.01	-0.125	-0.035	-0.021	-0.5	-0.5	-0.123	-0.135
Connected component²	The number of connected components (i.e., clusters of vertices that are connected to each other but separate from other vertices in the graph).	4	7	4	1	11	1	1	1	2	2
Average Clustering Coefficient.¹	If every node in the neighborhood is connected to every other node in the neighborhood, then the neighborhood is complete and will have a clustering coefficient of 1. If no nodes in the neighborhood are connected, then the clustering coefficient will be 0	0.125	0.07	0.038	0.282	0.067	0.123	0	0	0.05	0.072
Average Path Length¹	Computes path length for all nodes and say how nodes are close to each other (i.e. How far apart are the two most distant nodes)	4.388	5.432	4.968	2.086	1.4	3.741	1	1	2.04	1.083

(1): Wikipedia gephi glossary (Gephi 2012)

(2): (Hansen, Schneiderman & Smith 2011)

(3): (Fu, Liu & Wang 2008)

(4): (Herraiz et al. 2006)

The next table is an adaptation of Table 7 where the NGOs network metrics from each NGO constituency are ranked according with their value, then number 1 means the higher net value, and when they has the same value, receive the same position.

Table 8: Ranking of the network metric values obtained for each NGO constituency (same ranking means same value)

	Average Degree	Average Weighted Degree	Average Path Length	Average Clustering Coefficient.	Network Diameter	Graph Density	Modularity	Connected component
BINGO	3	1	3	2	2	9	3	3
ENGO	2	3	1	5	1	10	1	2
RINGO	5	6	2	8	1	10	2	3
LGMA	4	5	5	1	3	3	7	5
Others	8	7	7	6	3	8	5	1
IGO	1	2	4	3	2	6	4	5
Trade Union	9	4	9	9	5	1	9	5
Women & Gender	9	9	9	9	5	1	9	5
IPO	7	8	6	7	3	5	6	4
Youth	6	8	8	4	4	4	8	4

Roughly, the ‘average degree’, ‘average weighted degree’, ‘average path length’ and ‘average clustering coefficient’ represent how connected is each NGOs with its ‘partners’ within each constituency. On the other hand the ‘network diameter’, ‘graph density’, ‘modularity’ and ‘connected components’, are metric that depend of the networks as a whole.

If we focus only in the ranking for the first four metrics of Table 8, which represent how connected is each NGOs in its network, there are three constituencies which are normally in the first 3 places, namely; BINGOs, ENGOs and IGOs. These NGOs constituencies can be consider as groups with its members more connected (in terms of NGO websites’ link connections).

The literature, on the other hand, report more information about how ENGOs and BINGOs try to steer to their preferences the climate change negotiation output (Vormedal 2008, Deloso 2007), and are recognized as the most actives and the first two constituencies to be present at the climate change regime since the intergovernmental Negotiating Committee, met 6 times from 1992, when the UNFCCC was signed, till 1995 when the first COP took place (Gupta 2010, Muñoz Cabré 2011).

Furthermore, there are among the most active in term of statements made during COPs meetings. The next table summarized the statements made by NGOs constituencies at the first 9 COP meetings.

Table 9: Amount of statements made by NGOs at the first 9 COP sessions adapted from (Depledge 2005e)

COP	ENGO	BINGO	LGMA	IPO	RINGO	YOUNGO	Other
1	√	√	√			√	
2	√√	√√	√√				
3	√√	√√√	√			√	√ ¹
4	√√√	√√√	√√				√
5	√√√ ²	√√√	√√				√ ³
6	√√√ ²	√√√	√	√			√ ³
7	√√	√√√		√		√	
8	√	√√√	√	√	√	√	
9	√√√	√√	√	√	√	√	

Note 1: Scientist for global responsibility

Note 2: International Union for the conservation of nature

Note 3: European Landowners' Organisation.

The two or three statements per COP by ENGOs and BINGOs also reflect the efforts made by those constituencies to include locally-based members, as well as representatives of their international chapters. In the case of the BINGOs, it also reflects differences in perspective among their members, who would therefore be unable to agree on a common statement (Depledge 2005e, Vormedal 2008).

Taking into account that the literature normally study NGO influence on climate change negotiation in term of BINGOs and ENGOs actions and the more active participation that these two constituencies have had from the beginning of the climate change regime; was preferred to study these two constituencies in detail in terms of their position and/or proposal for the future of CDM.

9.1 ENGOs position

The next two tables show the ENGOs analyzed in search for their position about the future of CDM using the Google syntax proposed. Table 10 shows the first 21 ENGOs with the highest number of inlinks which were analyzed; the ENGO 22nd presented an important difference in number of inlinks with the previous one (cleanwateraction.org with 73 inlinks), and was not analyzed

Similarly, Table 11 shows the first 13 ENGOs with the highest value of betweenness centrality which were analyzed, before an important difference was produced in ENGO 14th (usgbc.org, betweenness centrality 3387).

The column 'Information' represent if information about the future of CDM was found (yes) or not (no) using the proposed methodology. Is important to remark that, for some ENGOs information was found, but this was general about critiques to CDM or Climate Change but not a clear position or proposal for CDM improvements. The complete tables of ENGOs inlinks and betweenness centrality ranking can find in in page 85.

Table 10: ENGOs analysis ranked by inlinks

Name	Website	Inlinks	Betweenness Centrality	Information
Climate Action Network International	climatenetwork.org	221	6335	Yes
Earth Justice	earthjustice.org	173	346	No
The Royal Society for the Protection of Birds	rspb.org.uk	151	0	No
Climate Action Network Canada	climateactionnetwork.ca	150	3092	Yes
World Development Government	wdm.org.uk	147	5192	No
Environment and Development Action	enda.sn	144	96	No
Le Réseau Action Climat-France	rac-f.org	141	4003	Yes
CEE Bankwatch Network	bankwatch.org	140	2295	No
Utvikilingsfondet	utviklingsfondet.no	138	0	no
Climate Action Network Australia	cana.net.au	138	923	Yes
Artist Project Earth	apeuk.org	138	0	No
Climate Action Network Latin America	can-la.org	137	0	Yes
350	350.org	137	7851	Yes
Tear Fund	tearfund.org	135	0	Yes
UK Youth Climate Coalition	ukycc.org	132	5502	No
Climate Outreach and Information Network	coinet.org.uk	132	335	No
Third World Network	twinside.org.sg	127	2130	No
ACT Alliance	actalliance.org	114	97	No
Centro Mexicano de Derecho Ambiental	cemda.org.mx	96	911	No
Green Peace	greenpeace.org	95	1286	Yes
Centro del Derecho Ambiental y de los Recursos Naturales	cedarena.org	95	0	No
Clean Water Action	cleanwateraction.org	73	0	---

Table 11: ENGOs analysis ranked by betweenness centrality

Name	Website	Inlinks	Betweenness Centrality	Information
Natural Resources Defense Council	nrdc.org	41	9943	Yes
350	350.org	137	7851	Yes
Earth Island Institute	earthisland.org	8	7206	No
The Green Belt Movement International	greenbeltmovement.org	33	6881	No
Stop Climate Chaos Coalition	stopclimatechaos.org	11	6869	Yes
The European Climate Foundation	europeanclimate.org	50	6774	Yes
Climate Action Network International	climatenetwork.org	221	6335	Yes
World Resources Institute	wri.org	72	5600	Yes
UK Youth Climate Coalition	ukycc.org	132	5502	No
World Development Government	wdm.org.uk	147	5192	No
Climate Action Network Europe	caneurope.org	3	4706	Yes

Name	Website	Inlinks	Betweenness Centrality	Information
Client Earth	clientearth.org	3	4609	No
Le Réseau Action Climat-France	rac-f.org	141	4003	Yes
The U.S. Green Building Council	usgbc.org	12	3387	----

Climate Action Network (CAN):

CAN is arranged into regional units for different continents or countries within its members includes, well-known ENGOs such as Greenpeace, World Wildlife Fund (WWF) and the World Resource Institute (WRI). This can explain that CAN is on the first place of ENGO with more inlinks, and also was not a surprise that within the list in Table 11 were found 4 regional/national units of CAN network apart from the international main website in the first place, namely: CAN Canada (climateactionnetwork.ca), CAN France (rac-f-org), CAN Australia (cana.net.au) and CAN Latin America (can-la.org).

In line with one might expect, the more clear position and proposals for a future of CDM were found within the CAN network constituting the base for the ENGO proposals and position.

In general terms, the main ENGO's concern is about how to bring the mitigation gap, in order to have a real chance to limit the rise of global temperature to no more than 2°C. On this respect the evolution of the CDM as a way in which developing countries can really engage in mitigation actions is an important topic for ENGOs. Some of the main general points that they state on this respect are presented below.

9.1.1 Mitigation Gap and Pledges:

- Allocate the gap: At the next session in Qatar (COP18 in 2012), Parties should request a Technical Paper that combines current pledges by developed and developing country Parties to assess the scale of the gigatonne gap between current pledges. Developed country parties with low ambition should indicate which other developed country should compensate for their low pledges by making higher cuts instead.
- Such targets would need to be accompanied by MRV support to help participate developing countries in achieve those targets
- Baselines: The threshold has to be substantially below conservative BAU emission projections and also supplementary to domestic emission reductions.
- Developing country Parties should provide clarity on their net domestic emissions in 2020 resulting from current pledges/NAMAs, including assumptions such as baseline projections and underlying key factors such as energy use, economic growth, population trajectories etc.
- Developing countries that are in a position to do so should further strengthen existing pledges/NAMAs. what proportion of their pledges (and which NAMAs) they are planning to undertake unilaterally, and what proportion are dependent on the provision of finance, technology and capacity building support, and identify the level and type of support required to implement their pledged mitigation actions (CAN International 2011).

9.1.2 Reform to CDM

- Project-base: They consider very important to departure from project base mechanism, since, so far have been shown that is almost impossible to accurately assess the additionality of emission reductions.

- Low-hang fruits: Any new market-based mechanism must not lead to the deprivation of negative or low cost mitigation opportunities for developing countries by crediting such mitigation actions and being purchased by developed countries, as is happening so far with the current CDM.
- No CCS inclusion: CAN does not believe that including CCS in CDM is an appropriate way forward.
- Small-Scale Projects: CDM should make it easier for the smallest projects to register with modifications such as, (i) Simplified registration procedures for micro projects (<15,000 tonnes CO₂eq/year) in rural areas and at the household level, (ii) improve funding conditions for community- or household-based projects, e.g. by creating a CDM bank providing up-front funding, guaranteeing fixed and high CER prices and grants for transaction costs.
- Process time: Accrediting specialized certifiers to ensure a timely validation and verification process (CAN International 2011).
- Double counting: The use of CDMs cannot be counted twice: once as emissions reduction in the North and once as financial support (MRV) for developing countries emissions reduction actions (Blavier et al. 2009)

9.1.3 Sustainable Development criteria

- Projects shall demonstrate specific co-benefits as a requirement for registration. CDM projects must meet social and environmental standards such as those laid out in the CDM Gold Standard.
- The assessment of the sustainable development contribution of projects should be undertaken by independent institutions such as DOEs (if selected and paid by UNFCCC) (CAN International 2009)

9.1.4 Sectoral Approach

- International Transport: Adopt a decision on international transport under 'Sectoral Approaches' that gives guidance to the IMO and ICAO on how to include the principle of CbDR/RC and ensure no net incidence on developing countries (CAN International 2011).
- Over supply of credits: By 2009, the financial flows paper by the Secretariat projects the demand for credits in 2020 to be between 0.5-1.7 Gt CO₂eq. By contrast, the mitigation potential in 2020 for developing countries is estimated at about 7 Gt CO₂eq. If not designed carefully, a post-2012 regime with weak Annex I targets and a wide scope for sectoral mechanisms could easily result in a drastic oversupply of the carbon market (CAN International 2009).
- The quantification of emissions and reductions at the sectoral level would have to rely on a solid understanding of the current and expected trends in the emissions of the sector in order to ensure the target is established well below business as usual.
- Sectoral targets alone are not likely to be enough to create incentives for significant low carbon development (CAN International 2011)

9.1.5 NAMAs

- Inclusion of NAMAs on CDM: CDM only promotes short term and measurable greenhouse gas reductions and thus would leave out many forms of NAMAs including capacity building, research and development that are crucial, especially in least developed countries (LDC) (CAN International 2009).
- Reporting: Separately: the Natural Resources Defense Council (NRDC) (one CAN's member), see NAMAs as a mechanism that can go from national policy goals or specific mitigation

measures, to other activities that indirectly contribute to mitigation, such as education and public-awareness raising. This diversity makes a challenge to develop reporting guidelines that are detailed and standardized, then, reporting requirements must provide flexibility to accommodate the wide range of possible mitigation actions. Therefore, reporting on implementation of NAMAs should be mandatory for non-Annex I Parties in a separate chapter on mitigation and organized by sector in the national communication including those that are implemented with international support or eligible for crediting via the market-mechanisms, a particular emphasis should be given to autonomous mitigation actions.

- Actions that are under consideration but not yet implemented, or for which a Party is seeking funding, may be included in the mitigation chapter, but should be reported under a separate section and clearly distinguished from NAMAs that are underway.
- NAMAs Indicators: It may be feasible to develop a list of standard indicators for some common NAMAs that are adopted by a large number of Parties, but for the most part selection of performance indicators will be up to the discretion of the Party. These indicators should measure the effects of NAMAs rather than its effort and should be performance indicators that are quantifiable; however, this quantification need not be only in terms of emission reductions (Breidenich 2011).

9.1.6 Financing Climate Change:

Share of proceeds: CAN believes that a share of proceeds levy should be applied to the trade of all units generated by any new market-based mechanisms, set at a non-distortionary, but nevertheless effective rate. Proceeds generated by this levy should flow through the UNFCCC's Green Climate Fund (GCF).

9.2 BINGOs position

The next two tables show the BINGOs analyzed in search for their position about the future of CDM using the Google syntax proposed. Table 12 shows the first 8 ENGOs with the highest number of inlinks which were analyzed; the analysis was cut at the 9th NGO which presented an important difference in number of inlinks with the previous one (epia.org with 63 inlinks).

Table 13, on the other hand, shows the first 2 BINGOs with the highest value of betweenness centrality which were analyzed, before an important difference was produced in the third BINGO (erec.org, betweenness centrality 2212).

Likewise, the column 'Information' represent if information about the future of CDM was found (yes) or not (no). For some BINGOs, even though information was found, this was general. i.e. about Climate Change statement and not a clear position or proposal for CDM improvements was presented.

Table 12: BINGOs analysis ranked by inlinks

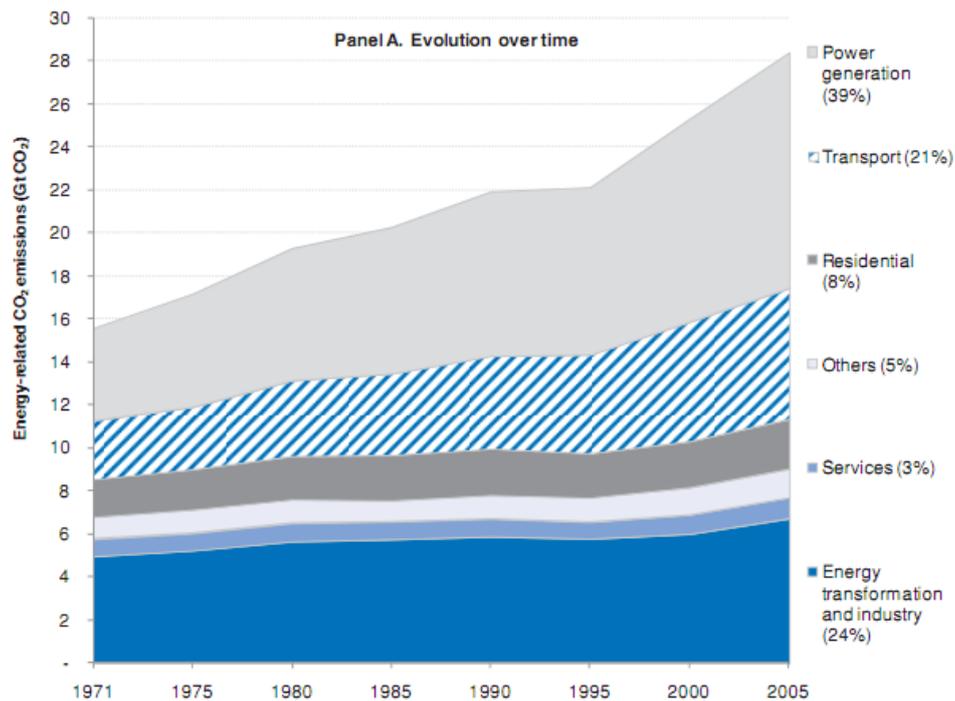
Name	Website	Inlinks	Betweenness Centrality	Information
Business Europe	businessseurope.eu	454	0	Yes
Confederation of European Paper Industries	cepi.org	319	0	No
European Confederation of woodworking industries	cei-bois.org	314	402	No
The European Wind Energy Association	ewea.org	199	1193	Yes
International Unions of Railways	uic.org	161	0	No
World Business Council on Sustainable Development	wbcsd.org	113	5712	Yes
The International Petroleum Industry Environmental Conservation Association	ipieca.org	100	711	Yes
The International Air Transport Association	iata.org	94	238	Yes
European Photovoltaic Industry Association	epia.org	63	33	----

Table 13: BINGOs analysis ranked by betweenness centrality

Name	Website	Inlinks	Betweenness Centrality	Information
World Business Council on Sustainable Development	wbcsd.org	113	5712	Yes
The Business and Industry Advisory Committee to the OECD	biac.org	29	4099	No
The European Renewable Energy Council	erec.org	51	2212	----

Since BINGOs network include different industry sectors which can embed different positions on climate change, the analysis was extended to BINGOs in lower positions in the ranking looking for sectors with high emissions (see Figure 15) such as power generator, metal, cement and transport industry, according with their literature (Figure 15)

Figure 15: World energy-related CO2 emissions trends by sector 1971-2005 (OECD 2009)



The next table shows BINGOs from which relevant information was found and the members that they represent.

Table 14: Statement of representation from BINGOs.

BINGO	Statement of representation
Business Europe	BUSINESSEUROPE's members are 40 central industrial and employers' federations from 34 countries, working together to achieve growth and competitiveness in Europe. Represent more than 20 million small, medium and large companies in Europe, employing over 106 million people. Active in European affairs since 1958.
Global Sustainable Electricity Partnership (GSEP)	The Partnership electricity companies are the largest electric utility companies in the world, operating in all major regions. The number of members from a single country is limited to a maximum of two (2). The company must be the largest, or among the two largest companies, in the country that is under consideration. Some members are: RWE, Electrobras, American electric power, Enel, etc.
The European Wind Energy Association (EWEA)	The European Wind Energy Association (EWEA) is the voice of the wind industry. It now has over 700 members from almost 60 countries including manufacturers with a leading share of the world wind power market, plus component suppliers, research institutes, national wind and renewables associations, developers, electricity providers, consultants, finance and insurance companies.
World steel association (WSA)	World steel association: represents approximately 170 steel producers (including 17 of the world's 20 largest steel companies), national and regional steel industry associations, and steel research institutes. World steel members represent around 85% of world steel production.
World Business Council on Sustainable Development (WBCSD)	The WBCSD is a CEO-led organization of forward-thinking companies that galvanizes the global business community to create a sustainable future for business, society and the environment. It was in 1992 for the Rio Earth Summit to ensure the business voice was heard at the forum.

BINGO	Statement of representation
The Environmental Markets Association	The Environmental Markets Association consists of more than 270 members from 190 companies world-wide. Its aim is to promote market- based trading solutions for environmental control.
The International Air Transport Association (IATA)	IATA is an international trade body, created over 60 years ago by a group of airlines. Today, IATA represents some 240 airlines comprising 84% of total air traffic. The organization also represents leads and serves the airline industry in general.
The International Aluminum Institute (IAI)	The IAI is the Global Forum of the world's Aluminium Producers. The Institute has 27 Member companies and they are represented on the IAI Board of Directors by their CEO's. Together the IAI Member Companies are represented for more than 80% of world primary aluminum production.
The World Economic Forum	The World Economic Forum encourages businesses, governments and civil society to commit together to improving the state of the world. Our Strategic and Industry Partners are instrumental in helping stakeholders meet key challenges such as building sustained economic growth, mitigating global risks, promoting health for all, improving social welfare and fostering environmental sustainability.

9.2.1 Mitigation Gap and Pledges:

The business NGO in general recognize the importance to reduce emission in order to avoid global warming beyond 2°C. They also agree on the fact that the longer the reductions are made the more difficult would be to maintain the rise on temperature in the future. However the way and urgency on how to reach the necessary GHG reduction is approached under different perspectives by the Business NGOs.

For Business Europe, a pragmatic approach is needed, which includes all major emitting regions in an international agreement which encourage cost-efficient emission reduction.

All developed economies must agree to binding absolute emission reductions by 2020 which reach a 30% global reduction taking into account their national circumstances. Advanced developing countries must commit to starting discussions before 2020 on setting their own binding emission targets, based on CbDR/DC¹². Ultimately, the world must move towards an international carbon market, in order to get there. (Business Europe 2008) On that respect they welcome the conditional position taken by the European Council whereby a decision to increase the 20% EU reduction target will be taken only if other industrialized countries commit to comparable emission reductions and if emerging countries put in place appropriate measures to fight climate change in line with their respective capacities (Business Europe 2011b).

The reason to hold this position is that the European industry and energy sectors account for only 6.5% of global emissions (Business Europe 2008) and that the Durban outcome seems to confirm that the EU is likely to remain almost on its own in making significant emissions reductions until at least 2020 (Business Europe 2011b)

The Business Europe position contrast with the position of The European Wind Energy Association (EWEA), since they support a 30% cut by 2020 as a crucial first step for the commitment agreed in 2009 by the European leaders to cut the EU emissions by 80-95% in 2050 agreed by the Heads of State of the European Commission, which is essential in industrialized countries to avoid the global temperature rise to 2°C level. EWEA urge that decision makers must act now, since after 2020 there is a gap of only 30 years and a fossil fuel power plants have a long lifetime (35-45 years for coal and

¹² In fact this is happening since in 2011 at the Durban conference a new agreement that would be binding all participating countries was reached but is expected to be complete in 2015 and enter into force in 2020 (Mäkelä)

30-35 years for gas) which means that no new carbon-emitting plants should be built after 2015 to meet the 2050 greenhouse gas commitments (EWEA 2010b).

Furthermore, they argue that, the current European target (a 20% cut) has become easy to meet because of the recession, since by 2010 have been already reached 17% emission reductions (EWEA 2010c).

Other benefits for Europe to move to a European pledge to 30% according with EWEA are (EWEA 2010a):

- The cost of moving to 30% GHG reductions (€81billion), is just €11billions more than the initial estimation to reach 20%.
- They estimate a gross domestic product (GDP) growth of +0.6% compared to reference (provided adequate use of auctioning/tax)
- Net job creation of 1 million (+0.7% compared to reference, with use of auctioning/tax)
- And improved energy security through less oil and gas imports (€40bn in 2020)
- Health benefits and pollution savings of between €12.6bn and 22bn/year

Business Europe, on the other hand think that making emissions peak by 2020 will only be possible if emission reductions also start taking place in advanced developing economies. Then a revised EU strategy on climate change should focus in providing opportunities for European businesses to be world leaders in environmentally sound technologies developed in Europe and marketed global (Business Europe 2010a), otherwise there is a real risk of carbon and job leakage caused by the cumulative cost of all energy policies. Adding up that the economic crisis has not made it easier for Europe to achieve higher emission reduction targets (Business Europe 2010b).

Business Europe, acknowledge the urgency to act now, since the longer reductions are delayed, the deeper they will have to be in the future. But they suggest that available technologies exist with low or even “negative” cost such as, energy-efficiency solutions, new building insulation, household appliances or industrial motors. Deforestation measures and nuclear energy are further examples of low-cost abatement opportunities. According with Business Europe up to 70% of emission reductions required until 2030 can be met with existing or near-commercial technologies (Business Europe 2008).

9.2.2 Reform to CDM

Business Europe, Thinks that Clean Development mechanism (CDM) should be maintained, improved and expanded, since they see the CDM as the first step toward a global carbon market (Business Europe 2010c). They are awareness that the CDM so far does not match the scale of the challenge so the scope should be expanded to support essential reduction opportunities such as forestation, nuclear energy, renewable, clean coal projects(EWEA 2010a) (Business Europe 2008) and CCS (Business Europe 2010b). Then reforms of CDM should be envisaged such as sectoral, programmatic, technology-based or policy-based CDM (Business Europe 2008).

The Global Sustainable Electricity Partnership (GSEP) see that the CDM should be improved to streamline its procedures and increase its capacity to mobilize larger volumes of capital investment in low-emitting power infrastructure and projects with significant emissions reduction potential including nuclear, large hydro and other renewables, clean coal and energy efficiency (GSEP 2009).

For EWEA on the other hand, was not found specific information where they address the future of CDM but in general they think that Including other renewables, and potential efficiency reductions,

makes it clear that a 30% reduction is achievable, even without including international offsets, as GHG reductions delivered by wind power are domestic EU reductions (EWEA 2010a). Therefore not adopting a specific position on the future of the CDM.

The World Business Council on Sustainable Development (WBCSD), in a document that was prepared for them but not officially signed at that moment by all its members, acknowledge the importance of the Programmatic CDM (“Programme of Activities”), as an important step along the road to scaling up the CDM. However they see that implementation of this methodology in real-world projects has been much less successful, largely because of continued concerns from the DOEs about the degree of liability they are expected to take across the whole programme. Therefore to be really effective, there must be mechanisms that achieve investment in whole sectors and whole countries (WBCSD 2010b).

At the same time they call for a stronger private involvement on CDM, especially at the managerial level since:

- There is no direct communication between the EB or its panels and project participants. There is not even a guarantee that private entities will be informed about deliberations regarding their projects.
- Currently, the private sector act as observer to the CDM Executive Board meetings, and does not play any role in the decision making process.
- Access to judicial redress (appeals process): Project participants and stakeholders concerned may be given the opportunity to challenge decisions of the Executive Board that have a bearing on their rights. An independent body would be in charge, following a request from the individual/private entity concerned, of examining an Executive Board decision against its legal consistency; and it would have the power to annul a decision (WBCSD 2010a).

9.2.3 Sustainable Development criteria

With the methodology used was not found proposals or comment from the BINGOs perspective related to the sustainable development criteria for CDM projects.

9.2.4 Sectoral Approach

Business Europe propose that sectoral approach must be designed to avoid as far as possible distortion of competition between regions for globally traded goods (Business Europe 2011a). In general their position is that carbon markets must continue to be developed to establish a global carbon market with the aim of establish a level playing field for industry throughout the world where all large emitters and all sectors of society must contribute to climate protection (Business Europe 2008).

The GSEP, see sectoral approach, should be tailored to the electricity sector's specific needs, being designed to enable the sharing of technological expertise and best practices among developed, emerging and developing countries. The electricity sector can effectively contribute through a sectoral discussion that will help build a common understanding of the electricity sector's challenges and perspectives, scale-up technology transfer and enhance technological cooperation (GSEP 2009).

The Environmental Markets Association, believe that the sectoral pledge approach provides a highly promising option for reducing GHG emissions post-2012, since, provides a clearly defined, innovative and increasingly popular recommendation for both developed and developing nations. It addresses

concerns about competition, by encouraging the participation of all the major operators in a sector (in both developed and developing countries) (The Environmental markets association 2006).

The International Air Transport Association (IATA), have adopted an important reduction target, where the whole aviation industry committed to stop the growth of their emissions from 2020 and to halve emissions by 2050 compared to 2005 levels (IATA 2009b). Since they made this pledge as a whole industry sector, they suggest that it can only be met if the industry and governments jointly achieve infrastructure and technology advances. (IATA 2009b). Then according with them In a post-Kyoto framework, aviation CO₂ emissions should be addressed through a global sectoral approach, accounting for emissions at a global level, not by state. Specially because CO₂ for a typical flight is emitted over several different countries and over international waters and even different continents (IATA 2009a). IATA also remarks that in July 2009, the G8 leaders supported the IATA position for a global sectoral approach to deal with aviation emissions (IATA 2009b).

The World Steel Association (WSA): Is in the process of a voluntary CO₂ data collection programme. The data collection programme is at the core of the 'steel industry's global steel sectoral approach to climate change'. Based on a common methodology, definitions and agreed boundaries, the data collection programme enables individual steel plants to compare themselves against both average and best performance and identify its scope for improvement. The data is held in the strictest confidence and will be known only to the company or site itself and world steel project staff.

The certificate allows the recipient to use the special Climate Action Member logo on any of their materials, for example, letterhead, other stationery items, publications, and marketing and advertising materials (World steel association 2010).

This is the first step in order to commit to reduce CO₂/t of steel, facilitate technology transfer and solutions to save energy. They express that they should work within the UNFCCC framework (even though is not essential for them a special agreement for steel in the UNFCCC), respect the principle of CbDR/DC and avoid market and competition distortions (World steel association 2010).

The International Aluminum Institute (IAI): The aluminum industry claim to have more than ten years' experience in the development and implementation of a global sectoral approach. With the objective to reduce drastically the perfluorocarbons (PFC), promote the energy reduction and recycle of material as well as drive continuous improvements by benchmarking facilities. By 2008 they claim to have collected data from the 64% of the total primary aluminium production in the world (The international Aluminium Insittute 2008).

The WBCSD, is pushing ahead the Cement Sustainability Initiative (CSI), which involve the first step to create a sectoral approach to reducing CO₂ emissions for the Cement industry. CSI is a voluntary business initiative involving 73% of the production in Annex I Parties. A number of reports were issued in 2009, including 'Getting the Numbers Right', in which producers report on their energy and CO₂ performance. (See case example in page 100) [WBCSD, 2009, cited in (Gregory, Ponsard 2011)]

9.2.5 NAMAs

Business Europe think that NAMAs, should offer adequate incentives to encourage the direct involvement of private entities (Business Europe 2011a). At the same time to establish a robust MRV, the experience of EU companies with MRV of emissions through the EU-ETS and its Monitoring and Reporting Guidelines should serve as a basis for MRV in an international agreement (Business Europe 2010c)

For the WBCSD, the concrete design of the NAMA framework will largely determine the possibilities of private sector involvement (WBCSD 2010c). The private sector could support the MRV process for actions by providing information on availability of data to design the MRV framework. However Within the UNFCCC, there is no formalized consultation mechanism for engaging the private sector on NAMAs (WBCSD 2010a).

Once a country proposes a NAMA it could be reviewed as a mandatory step in the process making use of the already existing UNFCCC roster of experts. This roster could be expanded to specifically include private sector expertise. A process could be established to improve the data basis in the different sectors through collaboration with stakeholders. This process could be established using the experiences and structures of the Cement Sustainability Initiative (CSI) "Getting the Numbers Right (WBCSD 2010c).

9.2.6 Financing Climate Change:

The WBCSD remarks -in a communicate prepare for them but not officially signed yet by all its members- that comparing the amount of financial support for climate change with what suggested some studies as the necessary amount, important differences are found. For instance, IEA estimates that average annual investment of approximately \$820 billion¹³ will be needed over the period 2021-2030 for CO2 mitigation measures in the energy sector [IEA 2009, in (WBCSD 2010a)]. According to McKinsey, If other measures to reduce GHG and to increase carbon sequestration by forests and agricultural soils are considered, annual investment needed between 2026-2030 could be approximately \$1064 billion¹⁴, [McKinsey in (WBCSD 2010a)]

The limited resources available will need to address adaptation, mitigation, capacity-building and technology cooperation needs of developing countries. Adaptation and capacity-building will rely mostly on funds from public sources.

Hence under the view of WBCSD, the estimates of financial needs indicate that only through private sector investment will the needed mitigation efforts be implemented. Noticed that already the private investment is much more than the public, since, estimates show that between \$10 and \$15 billion per year in public investment is currently provided to developing countries for climate purposes, mostly for mitigation (ranging from 70% to 90%). This funding is a mix of grants, concessional loans and revenue from the sale of emission reduction credits. A comparison of these figures with private clean energy investments in developing countries, which were \$50 billion in 2009, indicates that private investments were triple the amount channeled through public finance (WBCSD 2010a).

Therefore, Bilateral and multilateral financial institutions should focus their efforts in leveraging private capital rather than funding directly investments that often crowds out private investors. For instance, \$1 of public finance can leverage \$3 to \$15 of private investment. Hence, public resources spent on risk-mitigation (in the form of guarantees, insurance and risk- hedging instruments) appear

¹³ Equivalent to c\$936 billion with an average conversion factor of 1.14182 c\$/US\$ in 2009, source: x-rates.com

¹⁴ Equivalent to c\$1.215 billion with an average conversion factor of 1.14182 c\$/US\$ in 2009, source: x-rates.com

to have greater impact by leveraging private sector investment than resources spent on direct financing (i.e. grants, concessional loans, etc.) (WBCSD 2010a).

An important case example have been seen, in the negotiations by developing countries where have pressed for “direct access” to international funding as a way to speed up the decision making process and reduce administrative costs, this has been agreed for the Adaptation Fund. A developing country ministry of finance, which is accredited as meeting international fiduciary standards, can submit proposed projects to the Fund. By 2010 only one project has been awarded to a developing country, so it is not yet possible to assess the effectiveness of direct access (WBCSD 2010a).

Business also offers resources not necessarily available at government and/or international organization (such as the UNFCCC Secretariat) level: technical, logistic, experience, know-how and lessons learnt to share.

Therefore they remark the inability of the existing Kyoto mechanisms to scale up the provision of private finance to emissions reductions in developing countries, which should turn into a real determination to create a new market mechanism with greatly enhanced capabilities. It should be taken forward the NAMA idea and create a path whereby a NAMA mechanism can be turned into a practical means of attracting new private finance (WBCSD 2010b). It will be important that rules for NAMAs facilitate private investment, since NAMA would be eligible for international financial support. Given that international financial support will be limited, the private investment will be needed to finance a large share of the mitigation actions (WBCSD 2010a).

The World Economic Forum remarks that the US\$ 100 billion fund that was announced in Cancun for carbon reduction in developing countries was not intended to come simply out of government coffers, but relies on significant private participation as well, then is important that corporations have clear rules of the game (weforum 2011)

For the Business Europe, the Green Climate Fund (GCF) should act as catalysts and promoting measures must seek to encourage the greatest possible release of further private investments. Also, the GCF should be effectively linked with the new Technology Mechanism (Business Europe 2010c).

The Technology Mechanisms created by the Copenhagen Accord in 2009 must be defined and specified, to trigger development, transfer and deployment of technology (Business Europe 2010c). Since, apart from deploying existing technologies, massive public sector investments are necessary to promote rapid development and demonstration of new technologies, e.g. in the renewable energy sector or clean coal technologies, given that coal use is expected to increase by 70% between 2005 and 2030 (Business Europe 2008). Hence, a strong involvement of the private sector at all levels, in particular, the regional networks, will be vital (Business Europe 2010c).

In order to encourage the greatest possible release of further private investments, the Intellectual Property Rights (IPR) protection must have top priority in the technological sphere. Only where companies can operate within a legal framework which secures the protection of intellectual property and is compatible with the world trade organization (WTO) rules, can new technologies be developed and technology transfer take place (Business Europe 2011a). Global rules on IPR have proved their worth and should not be discussed and weakened in the framework of UN climate negotiations (Business Europe 2010c)

10 Discussion

10.1 Deciding the right Methodology

When researching in policy science is important to bear in mind that the literature on this field get outdated faster than the advance in political decisions, policy science is highly dynamic, this characteristic is special significant when one study the carbon market, considering that COP meetings are held once a year along with all the possible options to follow and actors involved.

For that reason at the beginning of this thesis, the initial idea was to complement information found on the literature with interviews to experts trying to have a broad context of opinions and bring conclusion that are the most objective possible.

On that respect, it becomes ideal to interview people who have direct involvement on the negotiation such as, delegates of the parties or the COP secretariat staff which has indirect participation but are highly informed.

One initial problem is to have access to these highly informed actors on the climate change negotiation, a second problem is that the most important decision in the negotiation are taken behind doors outside of the presence of observers or other stakeholders and with no official release documents.

This is because the negotiators feel more comfortable bargaining in a close arena than in the presence of observers where could feel either weak when change from an initial position or that have to stick to a position which brings a better image (Depledge 2005e).

Therefore, in order to have a broad an objective view of the future of the CDM and at the same time a view that is more transparent and willing to be maintained in the time it was preferred to change the approach and turn into the study of the observer positions specifically the NGO's opinions involved in the climate negotiations.

10.2 Limitations of the Methodology

10.2.1 Issue Crawler:

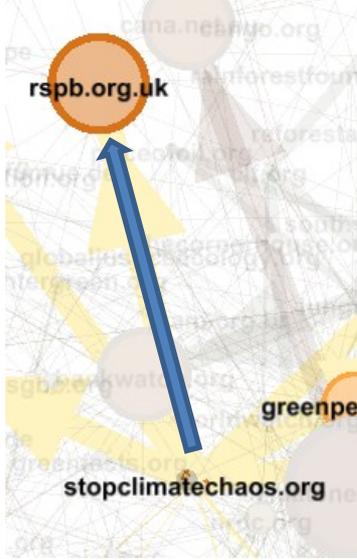
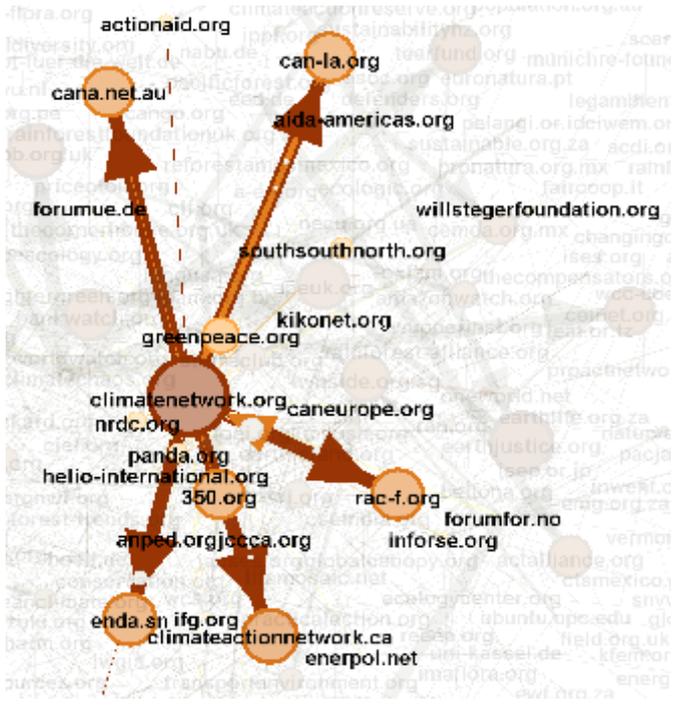
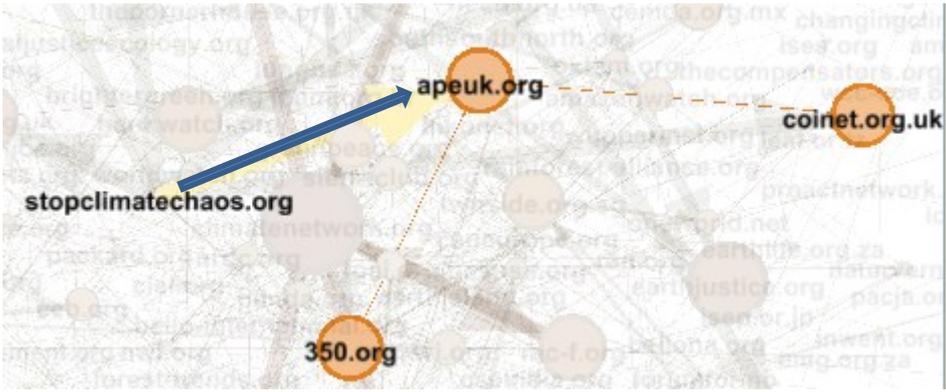
The methodology can be considered as a good map to navigate into a “sea” of stakeholders and actors with different positions, notwithstanding, the number of inlinks that a website receive or the importance in betweenness centrality as an indicator of which NGOs help to connect sub-groups, is not necessarily an indicator that the same happen in reality. Hence, it is important to check and confirm if what the network map is representing is a “mirror” of the reality.

The inlinks parameter can be a ‘tricky’ parameter as an indicator of importance of a node (or NGO in this case), since issue crawler search for links between the nodes in different layers of a website (depth of the search). Therefore if one website place a link to another website, this can also happen in all the subpages, in consequence, increase the position of inlink ranking of that website, independently if receive links from only one website.

That is exactly what happened with ENGOs like ‘the Royal Society for the protection of Birds’ (rspb.ork.uk), ‘Artist Project Earth’ (apeuk.org) and Tear Fund (tearfund.org) with position, 3rd. 11th and 14th respectively in the ENGO inlink ranking (Table 10).

This is possible to appreciate clearly with gephi maps, where the thick of the edges is directly related to the number of links received from the same source. The next table presents some examples of this remark showing sections of ENGO network map.

Table 15: Links exchange between some ENGOs

<p>the Royal Society for the protection of Birds' receiving several links from stopclimatechaos.org (blue arrow)*</p>	<p>CAN giving and receiving several links among their regional units (brown arrows)</p>
 <p>A network map showing a blue arrow pointing from stopclimatechaos.org to rspb.org.uk. Other nodes visible include greenpeace.org and various other environmental organizations.</p>	 <p>A network map showing brown arrows connecting various Canadian regional units. Key nodes include can-la.org, cana.net.au, forumue.de, aida-americas.org, southsouthnorth.org, kikonet.org, greenpeace.org, climateactionnetwork.org, nrdc.org, panda.org, helio-international.org, 350.org, anped.org, jocca.org, enda.sh, ifg.org, climateactionnetwork.ca, enerpol.net, caneurope.org, rac-f.org, forumfor.no, and inforse.org.</p>
<p>Artist Project Earth NGO receiving several links from stopclimatechaos.org (blue arrow)</p>	
 <p>A network map showing a blue arrow pointing from stopclimatechaos.org to apeuk.org. Other nodes visible include 350.org, coinnet.org.uk, and various other environmental organizations.</p>	

*the blue arrow is used for the purpose of remark the real arrow but was not generated by the program used.

In the case of Betweenness Centrality, it didn't bring new important actors that the inlinks ranking already did. This can be explained because both BINGOs and ENGOs network are big and highly interconnected with an average degree value (average number of neighbors for each node) of 2.4 and 2.7 respectively (the highest of all the constituencies), making the parameter of betweenness centrality less relevant.

10.2.2 Google search syntax:

In the Universe of the World Wide Web, exist what is called “Deep Web” which corresponds to the websites that common search engines such as Google that not reach. The “deep web” contain information that is estimate to be many times larger than the “surface web” such as: academic studies and papers, scientific research, government publications, electronic books, bulletin boards, mailing lists, online card catalogs, articles, directories, many subscription journals, archived videos, images and more (Herrick 2012). To put this in numbers, in August of 2005 Google claim to have indexed 8.2 billions websites, however, according to Mike Bergman, chief technology officer at BrightPlanet Corp., more than 500 times as much information as traditional search engines "know about" is available in the deep Web. [Mike Bergman in, (Kay 2005)]

Hence always exist the chance that important information is “ignored” by Google search and not accessible through this methodology.

10.3 Changes required to CDM and stage of solutions offered

When the CDM was proposed, it was expected to accomplish two main objectives, (i) Bring co-benefits in terms of sustainable development to the host country and (ii) serve as a way get cheap mitigation options for developed countries to achieve part of their mitigation pledge in a most cost-effective way (Lecocq, F., & Ambrosi, P. 2007).

Nowadays, the focus of the climate change negotiation is put on solve the mitigation gap, in a specific time frame which is ideally peak GHG emissions as soon as possible to reduce the higher cost and uncertainties that a ‘delayed action scenario’ in meet the gap can generate (Vliet, Elzen & Vuuren 2010). Altogether, means for some authors a call to “a quick expansion of the carbon market” (Hepburn 2007, Schneider 2009).

This call for an expansion match with what can be observed on the climate change negotiation, since the necessary first steps are already being performed. (i) First was establish on the discussion agenda mechanisms to expand the carbon market, (ii) Second the commitment of developing countries to start reporting their GHG emissions sources, their options for mitigations and their needs for capacity building to the UNFCCC . And finally (iii) the beginning of the discussion on the necessary financial requirements to make the expansion a reality (at COP 15 and COP16).

Another change in concept that have been observed in the climate change discussion is that the group of ‘developing countries (non-Annex-I)’ needed to be re-define. Since developing countries are developing at a different step, now is mentions the group of ‘Advance developing countries (ADC)’ and the ‘Least developing countries (LDC)’ as a way to acknowledge the different develop state of these countries and apply the principle of CbDR/DC in a better way. For instance, Ott H.E. (2004) classified non-annex-I into four new groups [Ott H.E., 2004 in (Sterk 2008)].

These new dimensions on climate change problems help to understand the new direction in the carbon market that can change or complement the CDM while, solve critiques presented during its function.

- 'Classic CDM': So far only the IMO proposal contemplate a phase-out of classic CDM, other proposals tackle other problems not covered or covered incompletely by CDM. Then it is unlikely that in the near future the 'classic CDM' stop to function, since by the moment CDM is going to complement other proposal more than being replaced. The ban to the use of CER coming from the destruction of HFC by the EU in 2013 (Climate Connect 2011), and the incorporation of CCS in CDM are the most important policies changing the classic CDM in the near future. The ban of HFC, can have an important effect on the share of CDM CERs, possibly pushing renewable energy projects (second in participation after HFC) in CDM (Figure 6). On the other hand the inclusion of CCS on CDM need to solve the framework for operation which is expected to take some time (Gibbs, M. & Jamieson, R. 2011).
- Bundling and PoA mechanism, represent the first expansion to 'classic CDM' to include small emission sources but, so far, have had a low impact on the carbon market. However it is possible to notice that the basic ideas under these mechanisms are going to continue existing, specially under NAMAs, since NAMAs contemplate the implementation of 'autonomous mitigation actions' which can be an action at the project or policy level and it is likely that developing countries start these 'autonomous mitigation actions' with cost-effective options such as; light efficiency, code building and building isolation, fuel-switch, and other forms of energy efficiency. This will imply the bundling of small emission sources and/or for instance, the application of policies which mean the continuation of PoA ideas but under a different framework (as part of a national policy but not necessarily to generate carbon credits given the difficulties presented in the implementation of these mechanisms).
- Sectoral Approach, has the potential to help significantly to reduce the mitigation gap, since some sector account for large share of world GHG emissions (particularly the power sector) (OECD 2009). Since it is focused on whole industry sectors, it is not in principle replacing the scope of 'classic CDM'. If sectoral approach is well implemented and cover important emitting sectors will give important amount of credits to the host country or installations. It is not decided yet if the credits generated by sectoral approach will go to the host government or to the companies participating, therefore, it is difficult evaluate to what extend it will contribute to the financial development of the host country and the implications that this can have. On the other hand given the necessary strong institutionalism from the host government to adopt sectoral approach it is likely that advance developing countries (ADC) can implement it at the beginning.
- NAMAs on the other hand can range from small to large mitigation actions can include forms of bundling, PoA, sectoral approach and mitigation policies. However in order to have a trusty MRV, it will require a strong institutionalism from the developing country implementing NAMAs. It will be possible to start NAMAs 'mitigation actions' by developing countries before NAMA system start officially working, which will be accounted as autonomous actions later when the developing country pledges will be defined in 2015, on that respect in 2011 at COP17 was decided to create a NAMA registration platform administrated by UNFCCC. a NAMA database with the latest registered actions, was created by Ecofys (Ecofys 2012).
- IMO similarly than NAMAs include a wide range of 'mitigation actions' that can be performed. Then the effect of IMO closing the gap is similar than NAMAs and the main difference with both system is the way on how is going to be financed. NAMA mainly through the carbon market and IMO mainly through government assistant.

Both NAMAs and IMOs could potentially incorporate other indicators apart from “One tonne CO2 equivalent” to evaluate the effectiveness of an ‘action’ taken to avoid global warming. New indicators would be more suitable for Least Developing Countries (LDC) with weak institutionalism and therefore less attractive to investors in mitigation projects. However it is something that still is under discussion. At the same time the requirements for MRV ‘actions’ could be less for LDC. Then NAMAs and IMOs could allow a better incorporation of developing countries at different stages of development if they offer this ‘flexibility’.

How the proposed alternatives to CDM will solve specific critiques presented during the function of CDM

- Small-Scale projects inclusion and high transaction cost per projects.

The small-scale projects inclusion in a post-Kyoto commitment will be very important, however it is highly possible that will be included as policies financed through NAMAs or IMOs given that the experience with the bundling and PoA demonstrates that brings several complications to investors and or less interest.

- Problem of additionality and perverse incentive.

The problem to demonstrate additionality is reduced when the scale of mitigation action is bigger because it is less probable that one policy in a developing country promotes large mitigation scale projects or ‘actions’ unless have financial assistance. On that respect PoA can be a first step which reduces additionality concern since can involve policies for small emission units and/or energy efficiency which is less likely that happened without financial assistance of the carbon market, but it is with sectoral approach, NAMAs, IMOs, and a Global Carbon Market that the additionality concern could be eliminated. It is important to notice that the emission reduction target would need to be allocated well down from the BAU emission baseline, otherwise could still exist the question of additionality in case of a weak emission reduction baseline.

One solution to this concern is the ‘sector no loose targets’, included in the NAMAs discussion, there is an additional baseline which is the ‘crediting baseline’ (set below BAU baseline), below that baseline it is possible to start to gain carbon credits for the mitigation actions. This could be a good definite solution to the set of weak BAU baselines.

IMOs are obligated mitigation actions by developed countries in developing countries that by definition have to take into account previous policies and ‘autonomous actions’ in the host country meaning that all of them would be additional.

A Global Carbon Market would work with an initial set of limits to mitigate in each participating country. Then if the cap is set well below BAU and projections on global economy problems, it would be a system that will make real additional mitigation actions.

In the case of the perverse incentive there will be still present a form of perverse incentive, since the baselines or caps, can be politicized when are discussed in order to make them higher and therefore, make easier to gain credits staying below the baseline or cap. In the case of IMOs the assignments of the ‘mitigation obligations’ can be a problem if developed countries ‘fight’ in order to assume less obligations or they want to gain first the obligations easier to meet.

- Unequal distribution of projects, geographically and by CER type.

An expansion of the carbon market through NAMAs, IMOs, sectoral approach or a Global Market, does not necessarily will imply an immediate solution to these problems. They certainly will bring an

improvement but to make long term changes would be necessary that the governments control the address of these problems.

For instance to address the problem of geographical distribution would be necessary to give more alternatives and flexibility for countries with less intensive industry such as LDC. In the case of distribution of CERs, the ban of HFC by Europe is an important advance, but the CDM-EB has not taken a decision on this respect yet.

- Sustainable Development Criteria

So far only the CDM gold standard offer a real solution to the problem of the quality in contribution to the sustainable development of the host country. NAMAs and IMOs could also offer a solution to this problem if they incorporate flexibility in terms of allow projects that focus more in the contribution to sustainable development of the host country than in the mitigation actions. But so far that is part of the discussion.

- Zero sum game to the atmosphere

Any expansion to the carbon market, involve the incorporation of developing countries in net mitigation actions which will bring a net GHG reduction in the atmosphere.

10.4 ENGO position

The next table summary the main demands of CAN network compared with the main characteristic of the IMO proposal .

Table 16: Comparison: CAN positions and IMO proposal

	CAN	IMO
Pledge	<ul style="list-style-type: none"> • Baseline: considerable below BAU • Clarity by developing countries in their pledges • Assess the scale of Gt gap between current pledges 	<ul style="list-style-type: none"> • The target is intended to be established at least 15-30% below the BAU baseline for developing countries and 30% for developed.
Equity	<ul style="list-style-type: none"> • The principle of CbDR/RC, must be respected. 	<ul style="list-style-type: none"> • It respects the principle of CbDR/RC through the use of different mitigation actions.
	<ul style="list-style-type: none"> • Low cost action in non-Annex I, should not be no eligible for flexible mechanism 	<ul style="list-style-type: none"> • Only the higher cost mitigation actions are eligible for flexible mechanism
	<ul style="list-style-type: none"> • Advance Non-Annex I countries should stretch their pledge 	<ul style="list-style-type: none"> • LDCs provide “Sustainable Development strategies” with focus on Sustainable Development not on mitigation.
	<ul style="list-style-type: none"> • MRV support to help participating developing countries achieve those targets. 	<ul style="list-style-type: none"> • IMO will help developing countries to reduce their emissions below BAU with truly-MRVable actions.
Climate Change Finance	<ul style="list-style-type: none"> • Share of proceeds levy should be applied to all credit traded by any new market-based mechanisms and go to GCF. 	<ul style="list-style-type: none"> • Finance for pre-IMO starting phase is not completely defined.
		<ul style="list-style-type: none"> • Finance for the operation of IMO comes from developed countries, developing countries and market mechanism.

	CAN	IMO	
Registration	<ul style="list-style-type: none"> • NRDC (member of CAN), calls for flexibility into register mitigation actions when implement NAMAs, making a separate chapter for the state of implementation and differentiate those with international support or autonomous initiative. 	<ul style="list-style-type: none"> • Include a separate record of all the three mitigation actions forms (supported, non-supported and market). 	
Future CDM	<ul style="list-style-type: none"> • CDM shall contribute to a substantial deviation of BAU in developing countries • Departure from project-base mechanism • CER not counted twice as emission reduction and financial support from Annex-I 	<ul style="list-style-type: none"> • IMO contemplate a phase-out of CDM being totally replaced by this system (however maintaining a form of carbon market between developing and developed countries for high cost offsetting) 	
	<ul style="list-style-type: none"> • Projects must demonstrate specific SD co-benefits. 	<ul style="list-style-type: none"> • It is implicit that only projects in LDC are subject of demonstrate specific SD co-benefits. 	
	<ul style="list-style-type: none"> • Non CCS inclusion on CDM • Assessment of SD criteria should be taken by independent institutions such as DOE • Simplify registration procedure for micro-projects at household level and with improvement of funding conditions for this kind of projects. • No include NAMAs as part of CDM 	<ul style="list-style-type: none"> • Does not make specific reference to this issue. 	
Sectoral Approach	<ul style="list-style-type: none"> • Control that the supply of CER doesn't overcome the demand. 	<ul style="list-style-type: none"> • IMOs function independent from economic down- or upturns and related carbon prices 	
	<ul style="list-style-type: none"> • Sectoral Approach on international transport should ensure no incidence in developing countries, and generate funds for mitigation and adaptation. • Sectoral approach is not enough to create a low carbon development 	<ul style="list-style-type: none"> • IMO include sectoral approach as a basis on its function. • Sectoral approach is only one part of the mitigation IMO system. 	
NAMA	<ul style="list-style-type: none"> • Ensure that NAMA include support to capacity building. 	<ul style="list-style-type: none"> • Pre-IMO starting up will include finance for capacity building 	

As can be seen in the summary table above, IMO is a system that matches with most of the demands that 'CAN international' state, basically, IMO is a mechanism that aim to ensure the close of the mitigation gap. On that purpose is doesn't rest on the function of the carbon market to solve the mitigation gap problem, instead, it aim to guarantee the solution of the problem with 'mitigation obligations' of developed countries in developing countries which will close the gap and almost eliminate (in theory) the uncertainties generated by a market mechanism which is today the main tool to solve the mitigation gap problem. Therefore IMO contemplate a phase-out of CDM and will rely mainly in the implementation of NAMAs and some form of sectoral approach by developing countries with and without financial assistant.

If a system like IMO is implemented there will be still some unclear points to solve:

- It doesn't put too much emphasis on the sustainability criteria or co-benefits from projects and small-scale inclusion, which is something important for ENGOs. It only refers to measure NAMAs in LDC in terms of its implementation rather than mitigation achievements.
- The use of NAMAs as part of the IMO system means that developing countries has autonomous decision on their 'non-supported mitigation actions' to reduce their emissions. And they could make use of Nuclear Energy or CCS which are technologies that ENGOs doesn't support and are not incorporate as well in the current carbon market system (CCS is likely to be incorporated in the near future). For instance Morocco submitted in 2009 the

construction of two nuclear plants as a NAMA action to the COP15, (World Nuclear Association 2010).

- IMO is defined as a mitigation mechanism and not an adaptation mechanism, however the author manifest that can be adapted to fulfill an adaptation role but not further details are provided
- Finally, another unclear point is how to finance the IMO system especially how to create the capacity building in developing countries to have a trustful MRV system. They propose some possibilities for a “pre-starting IMO phase” but don’t go further on the discussion.

Even though, this mechanism is innovative and susceptible to have strong support within ENGOs and probably parties from developing countries in the climate change negotiation. There was not found other studies in academic literature or ENGOs documents that analyze or suggest further improvements to IMO. Only a comment from an ENGO members in line with IMO concept was found; ‘Stop Climate Chaos Scotland’ claims that, buying carbon credits from overseas projects means spending public funds overseas and therefore not investing them in emissions-reducing activities in Scotland, emphasizing that, financial support to developing countries must happen in addition to, not instead of, domestic emissions reductions in wealthier nations (Stop Climate Chaos Scotland 2009). This can be interpreted as a claim to reduce the overseas carbon market and look for other alternatives.

10.5 BINGO position

The next table summarizes the main positions of Business NGOs on the issues expose for them, relevant to the climate change negotiation.

Table 17: Summary of BINGO proposals

	Business Europe	EWEA	GSEP	Environmental Markets	IATA	WBCSD	The World Economic Forum
Pledge	<ul style="list-style-type: none"> • Support EU position to increase the 20% reduction target only if other industrialized and emerging countries make appropriate mitigation, considering CbDR/DC • EU industry and energy sectors account for only 6.5% of global emissions. 	<ul style="list-style-type: none"> • A 30% cut by 2020 is a crucial first step to the 80-95% emissions cut by 2050 agreed by the Heads of State • Current European target (a 20% cut) has become easy to meet because of the recession EU already reached 17%. 	Not found specific comments on this issue (NSC)				
Future of CDM	<ul style="list-style-type: none"> • CDM should be maintained and improved, however the world must move toward an international carbon market 	NSC	<ul style="list-style-type: none"> • CDM should increase its capacity to mobilize large volume of capital investment in low-emitting infrastructure. 	NSC	NSC	<ul style="list-style-type: none"> • They call for a stronger private involvement in the decision making process of CDM 	NSC
Financing Climate change	<ul style="list-style-type: none"> • The GCF should act as catalysts to encourage the greatest possible release of private investments. 	NSC	NSC	NSC	NSC	<ul style="list-style-type: none"> • The GCF falls well short if we compare with the IEA estimations of financial needs 	<ul style="list-style-type: none"> • The GCF was not intended to come simply out of government coffers, but

	Business Europe	EWEA	GSEP	Environmental Markets	IATA	WBCSD	The World Economic Forum
						<ul style="list-style-type: none"> for climate change. • Governments should focus their efforts in leveraging private capital rather than funding directly investments that often crowds out private investors. 	relies on significant private participation.
Sectoral Approach	<ul style="list-style-type: none"> • Seen as an option of expansion. 	NSC	<ul style="list-style-type: none"> • Sectoral approach in electricity sector should enable share of technology expertise and best practices. 	<ul style="list-style-type: none"> • Sectoral pledge approach for both developing and developed countries provide a promising option for reducing GHG post-2012. 	<ul style="list-style-type: none"> • In a post-Kyoto framework, aviation CO2 emissions should be addressed through a global sectoral approach, not by state. 	<ul style="list-style-type: none"> • There must be mechanisms that achieve investment in whole sectors and whole countries. • A process could be established to improve the data basis in the different sectors through collaboration with stakeholders 	NSC
NAMAs	<ul style="list-style-type: none"> • It should offer adequate incentives to encourage the direct involvement of private entities. Including use the extensive experience of EU companies on MRV of emissions reductions 	NSC	NSC	NSC	NSC	<ul style="list-style-type: none"> • NAMA mechanism can be turned into a practical means of attracting new private finance. 	NSC
Technology Mechanisms & IPR	<ul style="list-style-type: none"> • In order to encourage the greatest possible release of further private investments, the Intellectual Property Rights (IPR) protection: must have top priority in the technological sphere 	NSC	NSC	NSC	NSC	NSC	NSC

It is possible to distinguish three areas where BINGOs make their position more clear; the level of pledge committed by EU, sectoral approach and the finance of climate change.

- The focus on new policies about the use of the Green Climate fund (GCF) has significant support, since important groups of business (Business Europe, WBCSD, and the economic forum) see the GCF as an initial step to catalyst private investment to tackle financial needs to address climate change. They don't see that governments should/could reach enough funds to boost the changes needed to achieve the necessary level of mitigation.

- On the other hand, the GSEP, Environmental Markets and IATA have strong support for Sectoral approach as a way to achieve important mitigation actions but in doing so, it is important for them to be cautious about balance competition, avoid leakage and facilitate best practices and technologies. The Aluminum industry (IAI), Steel industry and Cement Industry goes further than only advocate for sectoral approach, since they already started an autonomous plan for gathering data on the industry sector emission searching for opportunities to save energy and mitigation comparing with the best performance companies in each of these sectors.
- EWEA, meanwhile, focus its action primarily in the EU level of emission reduction, since a more stringent pledge for Europe will boost the investment in wind energy, helping the wind industry to compete better with American and Chinese manufacture which are increasing their markets according with them.

They argue that the current target of EU (20% reduction by 2020) has become easy to meet due to EU economic recession.

In fact the EWEA argument is in the same line with the EU document “Roadmap for moving to a competitive low carbon economy in 2050” where is stated that: “The analysis shows that with existing policies, the EU will achieve the goal of a 20% GHG reduction domestically by 2020. If the revised Energy Efficiency Plan would be fully and effectively implemented meeting the 20% energy efficiency target, this would enable the EU to outperform the current 20% emission reduction target and achieve 25% reductions.” (European Commission 2011).

Furthermore, EWEA forecast important increase in job creation, GDP grow and energy security to mention some. Meanwhile Business Europe who oppose the most to an increase in mitigation reduction in Europe argue that it can generate carbon leakage and unemployment.

The argument of EWEA seems to have better chance to be supported, especially considering that developing countries are moving to declare formal pledges for CO2 reductions by 2020 (Mäkelä). And that the European leaders committed to cutting carbon emissions in the EU by 80-95% by 2050.

Nonetheless in reference to developing countries adopting formal pledges, this seems to be a slow and complicate motion, since less than a half of the developing countries has submitted a second national communication (61 from 141 non-Annex I parties). Furthermore, according with Clare Breidenich (2011), some non-Annex I Parties have resisted improvements to reporting of inventories and mitigation actions because they see these as linked to mitigation commitments (Breidenich 2011).

11 Conclusions

11.1 Methodology:

The methodology has been used as a valid and interesting option to visualize the organization of website networks which help to remark important actors within the networks. Most of the NGOs positioned in the first places claim to represent not only other NGOs or individuals members but also other federation or aggrupation around the world.

The parameter of Betweenness Centrality correlates with the number of inlinks for the high ranked NGOs, and therefore, in general it didn't bring different NGOs with clear positions than the ones that were already high ranked on the inlink list.

The key words selected to look for information through Google in the NGOs websites was effective in highly relevant information respect to the keywords.

11.2 CDM critiques:

Most of the critiques to the function of the CDM are in some form covered by the mechanisms proposed for a future CDM, especially in case of expansion of carbon market , however the 'Sustainable Development Criteria' which is one of the two main reason -which trigger the acceptance of CDM by developing countries (Lecocq, F., & Ambrosi, P. 2007) , have been largely ignored. This also was expressed by Elizabeth Lokey -an expert on CDM with vast experience in the function of CDM in South America-, stating that, "I doubt that the sustainable development goal will be addressed or clarified for a second Kyoto Compliance Period (if there is one). CDM discussions at COPs have revolved around how to reform technical aspects of CDM rather than how to clarify this goal" (Lokey 2011).

The communications by ENGOs and BINGOs also doesn't put too much emphasis on this critic and then it is likely that a future of CDM continue to focus mainly on mitigation. Anyhow this concept is still "on the air" through NAMAs.

Another critique on CDM that could still not be completely solved and even increased is the "perverse incentive", since developing countries will have to negotiate the baselines (in case that an offsetting system is the main way to achieve emission reductions) . Only in the case to implement a system like IMO where offsetting constitutes a small part of the emission reduction package, it would be possible to reduce importantly the perverse incentive, but as long as a new system rely on carbon credits (monetary incentives) this problem will persist.

11.3 The convergence of positions, ENGOs and BINGOs:

It is likely to expect that ENGOs and BINGOs have different position on the future of CDM, however in this study was notice that they have more points of agreement than disagreement. One example of this is the little real support found on literature of a system like IMO, because IMO is a system that cover most of the CAN requirements (see, Table 16), which rely mainly in direct financial assistance from developed countries to developing countries and because ENGOs firmly advocate for the principle of CbDR/DC, one would expected a strong support of a system like this, but in reality that was not observed.

Both ENGOs and BINGOs are calling for an urgent clarification in terms of developing countries mitigation pledges, this has been attribute to the “apocalyptic aura in which climate change negotiation is embedded” (Anshelm, Hansson 2011). Taking this into account both constituencies also call for an expansion of CDM where it should departure from project-base mechanism. CAN international make specific statements about the importance to include international transport into sectoral approach which is the same that IATA is calling for the air transport industry. A slightly difference position on sectoral approach is that for ENGO, sectoral approach is not enough to create a low carbon development, meanwhile BINGOs almost completely point to this mechanism as an expansion option for CDM.

Neither ENGOs nor BINGOs oppose directly to NAMA proposal but they call for some issues that need to be clarified. ENGOs call to build the necessary capacity in developing countries for its implementation and correct MRV. And BINGOs call for clarification on investment opportunities within NAMA system.

One point that in principle seems conflictive in future negotiations and positions between ENGOs and BINGOs is about how to finance the expansion of CDM. BINGOs are very clear on the importance of private investment to expand the carbon market mainly through sectoral approach and technology transfer. At the same time they remark the know-how that private sector has, making together an important argument for the involvement of private sector in an expansion of CDM. CAN, on the other hand, doesn't support directly a strong involvement of private sector in the climate change finance, but they call for apply a levy to all the credit traded by a new market mechanism which would go directly to the GCF.

This can be interpreted as a support to the expansion of the carbon market and therefore a recognition that private sector is going to be a relevant actor for this expansion where part of the profits will have to go to a common fund.

CAN call especially for support to MRV and therefore to build the necessary capacity where developing countries can receive help to achieve their targets. It is not specified the extend of this help, but because they also call for “Advance non-annex I countries” to stretch their pledge, it is likely that this support would be targeted primarily to the LDC countries.

On the light of these arguments the way to finance a future expansion of the carbon market seems more complementary by ENGOs and BINGOs position than opposed. This tendency to complementary positions between ENGOs and BINGOs has also been reported on the literature (Anshelm, Hansson 2011). However, the substantial difference on these financial alternatives is that the GCF is administrated by governments for mitigation and adaptation actions, while, BINGOs want to limit the role of governments finance only to improve the investment conditions of private parties.

The main difference in position between ENGOs and BINGOs were found on the inclusion of specific technologies in a future carbon market such as CCS and nuclear power, where BINGOs support them and ENGOs does not.

12 Further Recommendations

The methodology used was effective in study the position of two big constituencies of the climate change negotiations about the future of the CDM. However the potential that the methodology has for study these constituencies can be used better after some preliminary treatment of the constituencies.

On that respect, Miquel Muñoz performed a study in August of 2011 where he re-classified 345 NGOs participating at COP15, into new groups or constituencies according with their mission statement on their websites. He classified these NGOs into 22 new groups namely: Built Environment, Business & Industry, Climate Change, Development, Education & capacity building, Energy, Environment & conservation, Food, soil & agriculture, Forest, Indigenous people, Legal practices, Religious, Rights & Justice, Science & Engineering, Sustainable Development, Think tank, Transport, University, Water, ocean & fisheries and Youth & children (Muñoz Cabré 2011).

That study demonstrates the range of profiles that NGOs can have even in the same constituency, especially in big constituencies such as ENGOs and BINGOs. Therefore would be very interesting to allocate these two constituencies into new sub-groups according with their mission.

Then apply the interactor analysis with issue crawler for each of these sub-groups, and analyze them with gephi to get network metrics. One could compare them and find out for instance; to what extend one node is connected to any other node in their neighborhood (average cluster coefficient), and the strength of the network (graph density) to mention some. Which will allow identifying important nodes within this sub-groups and at the same time which of these subgroups is more connected and probably more likely to influence the constituency.

Finally would be interested to perform with the sub-groups a “co-link” analysis with issue crawler, where it is possible to see actors outside of the initial sub-group that receive links from the sub-group under analysis. This can be used as a correction tool to discover NGOs that were allocated to other sub-group but that indeed are related more to another. Also it would be possible to see, for instance, who finance these sub-groups, in case one financial institution receive several links from one sub-group and in general identify any external institution that for some reason receive several inlinks from the sub-group under study and raise the question of why it is important this institution for the subgroup.

This study can give deep insight on NGOs which influence their own constituencies, and also important actors that are outside the constituency which can influence it. Get information about the influences currents inside the two main constituencies (ENGO and BINGO) will be highly valuable to understand how and why they want to steer the climate negotiations to a specific outcome.

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14 Annexes

14.1 Issue Crawler Maps

Map's concepts:

Size of the node: The size of the node is related with the number of inlinks received. The bigger the node the more inlinks from the networks has been received.

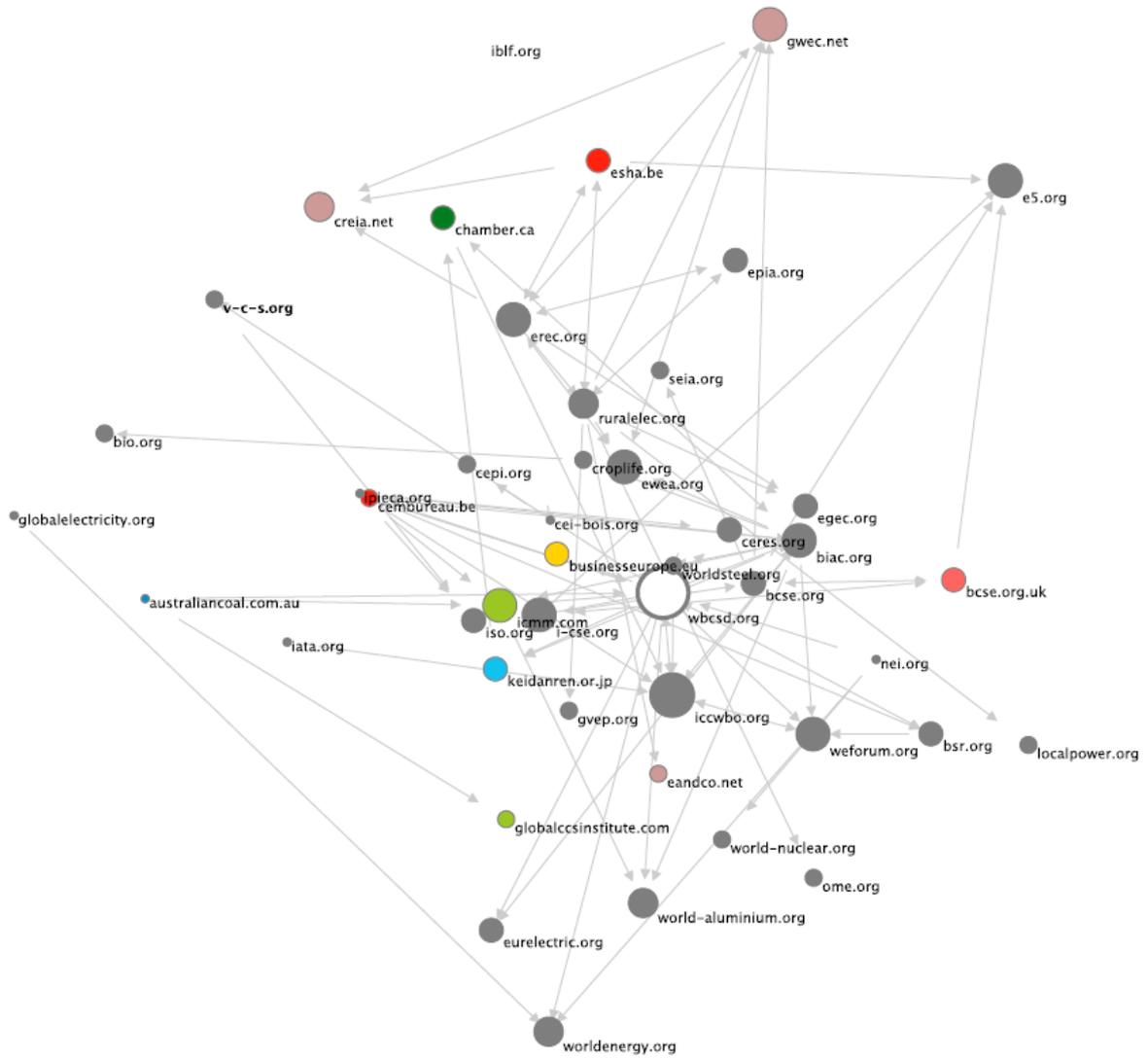
Color of the node: The color of the node assigned to each web domain (.org, .com, .net, etc.) that is present in the network (each map can have a different color for the same domain).

Arrows: The arrows between nodes indicate the predominant patterns of interlinkage showing which sites are predominantly origins and which sites are mostly destinations for Web traffic. It is important to note that one or more connection between the same pair of nodes are represented only for one arrow.

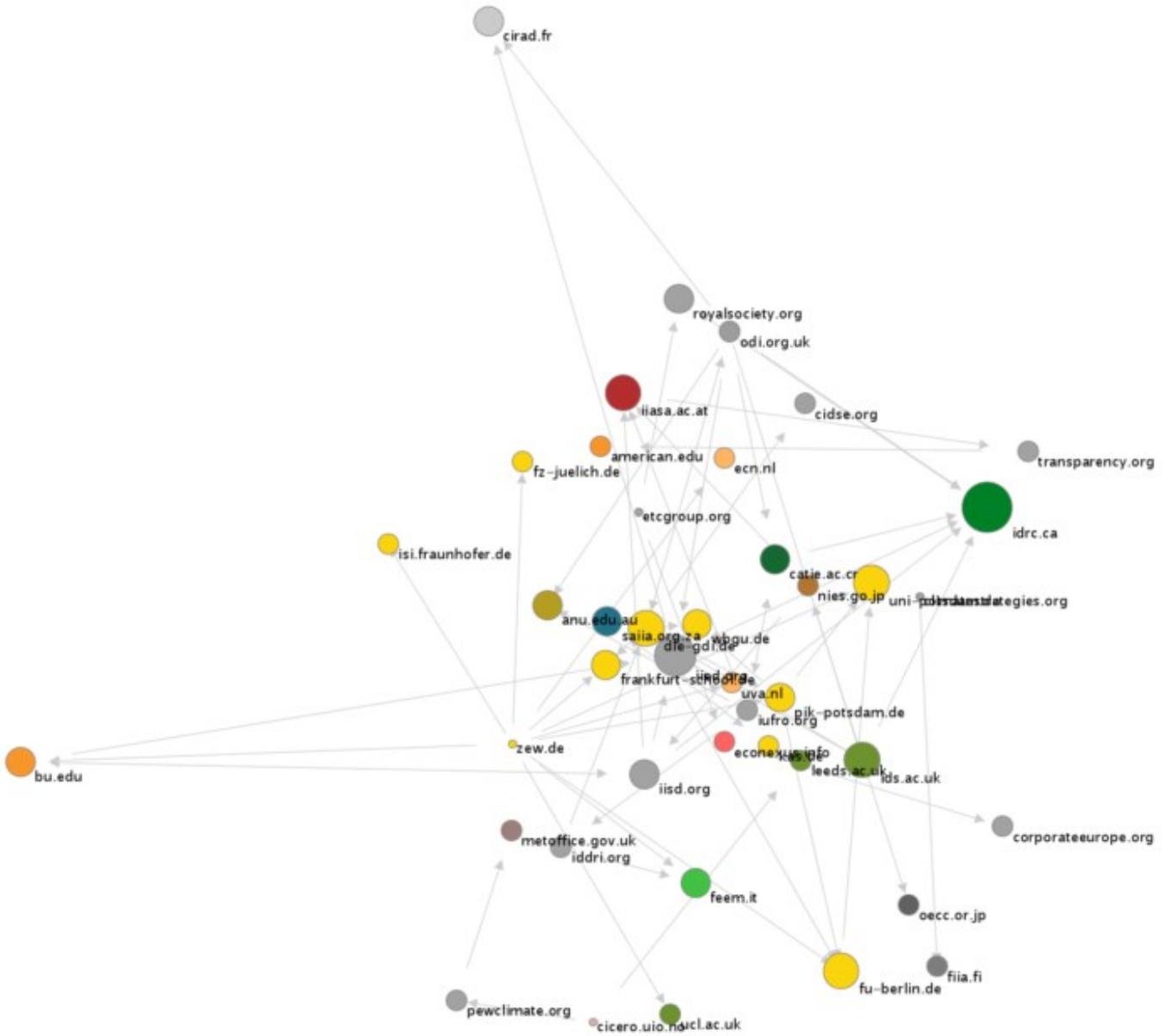
Circle not totally filled: Close to the center of the maps there is one circle not totally filled. It doesn't has any special meaning, only represent the circle which was selected at the moment of print the map but can be any of the nodes on the map, and does not represent a higher degree of importance or other special characteristic.

Legend of the node: By defect the website NGO or name of the node is depicted in the lower-right part of the node or circle. Then it is easier to know which node correspond to which NGO even if they are close to each other.

2- BINGO



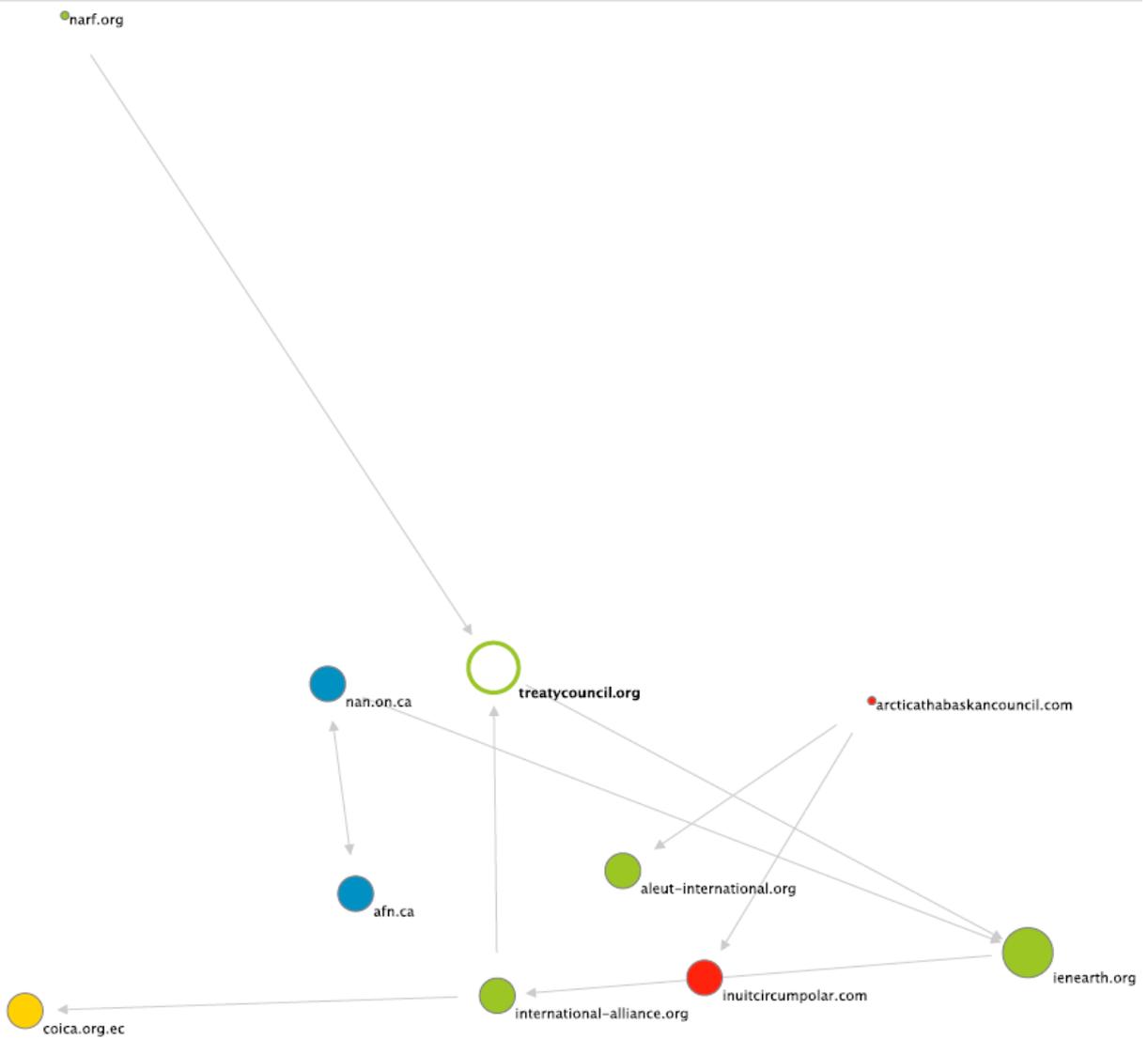
3- RINGO



6- Trade Union



7- IPO



8- Women & Gender



9- Youth



10- Farmers

No network

11- Others



14.2 Tables of Gephi

The tables ranks the first 50 NGOs of each constituency by inlinks received in the first table and the by betweenness centrality second table.

1- ENGO

ENGOS Ranked by inlinks

Label	Inlinks	Betweenness Centrality	Information found
climatenetwork.org	221	6335	Yes
earthjustice.org	173	346	No
rspb.org.uk	151	0	No
climateactionnetwork.ca	150	3092	Yes
wdm.org.uk	147	5192	No
enda.sn	144	96	No
rac-f.org	141	4003	Yes
bankwatch.org	140	2295	No

utviklingsfondet.no	138	0	no
cana.net.au	138	923	Yes
apeuk.org	138	0	No
can-la.org	137	0	Yes
350.org	137	7851	Yes
tearfund.org	135	0	Yes
ukycc.org	132	5502	No
coinet.org.uk	132	335	No
twinside.org.sg	127	2130	No
actalliance.org	114	97	No
cemda.org.mx	96	911	No
greenpeace.org	95	1286	Yes
cedarena.org	95	0	No
cleanwateraction.org	73	0	---
wri.org	72	5600	--
sierraclub.org	71	1136	--
amazonwatch.org	68	1695	--
eeb.org	67	0	--
envirosecurity.org	66	779	--
transportenvironment.org	58	869	--
lead.org.pk	57	210	--
ieep.eu	55	338	--
foei.org	54	2265	--
southsouthnorth.org	51	1798	--
europeanclimate.org	50	6774	--
unep.or.kr	45	0	--
panda.org	44	0	--
wetlands.org	42	0	--
oneworld.net	42	0	--
nrdc.org	41	9943	--
ucsusa.org	39	0	--
oxfam.org	39	2697	--
nature.org	36	0	--
greenbeltmovement.org	33	6881	--
conservation.org	30	959	--
actionaid.org	28	0	--
naturvern.no	23	0	--
ippf.org	23	232	--
worldwatch.org	22	1391	--
edf.org	22	2	--
pembina.org	22	914	--
packard.org	22	767	--

NGOs Ranked by betweenness centrality

Label	Inlinks From crawl	Betweenness Centrality	Information Found
nrdc.org	41	9943	Yes
350.org	137	7851	Yes
earthisland.org	8	7206	No
greenbeltmovement.org	33	6881	No
stopclimatechaos.org	11	6869	Yes
europeanclimate.org	50	6774	Yes
climatenetwork.org	221	6335	Yes
wri.org	72	5600	Yes
ukycc.org	132	5502	No
wdm.org.uk	147	5192	No
caneurope.org	3	4706	Yes
clientearth.org	3	4609	No
rac-f.org	141	4003	Yes
usgbc.org	12	3387	----
climateactionnetwork.ca	150	3092	--
nwf.org	21	2954	--
oxfam.org	39	2697	--
helio-international.org	8	2582	--
fern.org	3	2472	--
bankwatch.org	140	2295	--
foei.org	54	2265	--
boell.de	16	2227	--
globaljusticeecology.org	6	2200	--
inforse.org	14	2174	--
twinside.org.sg	127	2130	--
eed.de	5	1983	--
ifg.org	14	1935	--
brightergreen.org	1	1924	--
greenfacts.org	13	1876	--
southsouthnorth.org	51	1798	--
amazonwatch.org	68	1695	--
thecornerhouse.org.uk	13	1467	--
populationaction.org	3	1459	--
worldwatch.org	22	1391	--
noharm.org	12	1356	--
isep.or.jp	13	1327	--
greenpeace.org	95	1286	--
forest-trends.org	11	1283	--
pelangi.or.id	2	1192	--
practicalaction.org	20	1183	--
ciel.org	11	1136	--

sierraclub.org	71	1136	--
kiconet.org	11	1131	--
wupperinst.org	10	1008	--
e3g.org	5	972	--
conservation.org	30	959	--
rightsandresources.org	15	956	--
cana.net.au	138	923	--
pembina.org	22	914	--
cemda.org.mx	96	911	--

2- BINGO

BINGOs Ranked by inlinks

Label	Inlinks From crawl	Betweenness Centrality	Information Found
businessseurope.eu	454	0	Yes
cepi.org	319	0	No
cei-bois.org	314	402	No
ewea.org	199	1193	Yes
uic.org	161	0	No
wbcd.org	113	5712	Yes
ipieca.org	100	711	Yes
iata.org	94	238	Yes
epia.org	63	33	----
globalelectricity.org	62	119	----
gwec.net	60	373	----
esha.be	60	198	----
i-cse.org	56	790	----
erec.org	51	2212	----
e5.org	51	234	----
icwbo.org	48	1831	----
ruralelec.org	47	242	----
iso.org	37	74	----
world-nuclear.org	33	0	----
biac.org	29	4099	----
environmentalmarkets.org	29	0	----
fepec.or.jp	27	94	----
epeglobal.org	27	1	----
weforum.org	24	459	----

icmm.com	21	486	----
egec.org	20	0	----
globalccsinstitute.com	18	21	----
bcse.org	17	669	----
worldenergy.org	16	1149	----
bsr.org	14	819	----
worldsteel.org	13	477	----
localpower.org	13	77	----
ome.org	13	0	----
eandco.net	13	0	----
ari.org	13	0	----
ceres.org	12	83	----
gvcp.org	12	0	----
bcse.org.uk	11	403	----
world-aluminium.org	11	136	----
eurelectric.org	10	0	----
creia.net	10	0	----
chamber.ca	9	793	----
ase.org	9	144	----
bio.org	9	100	----
world-petroleum.org	9	55	----
keidanren.or.jp	8	1565	----
cembureau.be	8	462	----
v-c-s.org	8	251	----
croplife.org	8	190	----
australiancoal.com.au	8	147	----

BINGOs Ranked by betweenness centrality

Label	Inlinks From crawl	Betweenness Centrality	Information Found
wbcds.org	113	5712	Yes
biac.org	29	4099	No
erec.org	51	2212	----
iccwbo.org	48	1831	----
keidanren.or.jp	8	1565	----

eccj.or.jp	4	1214	----
ewea.org	199	1193	----
worldenergy.org	16	1149	----
di.dk	5	857	----
euroheat.org	3	845	----
bsr.org	14	819	----
chamber.ca	9	793	----
i-cse.org	56	790	----
acore.org	2	750	----
eurogas.org	7	746	----
ipieca.org	100	711	----
bcse.org	17	669	----
aign.net.au	3	668	----
igu.org	1	655	----
worldcoal.org	6	581	----
icmm.com	21	486	----
worldsteel.org	13	477	----
cembureau.be	8	462	----
weforum.org	24	459	----
ieta.org	5	453	----
cewep.eu	1	413	----
bcse.org.uk	11	403	----
cei-bois.org	314	402	----
tusiad.org	4	389	----
ccsassociation.org	1	374	----
gwec.net	60	373	----
uschamber.com	4	332	----
eurima.org	3	278	----
jema-net.or.jp	7	266	----
worldpgas.com	3	252	----
v-c-s.org	8	251	----
ruralelec.org	47	242	----
canadiansteel.ca	5	242	----
bca.com.au	2	241	----
iata.org	94	238	----
e5.org	51	234	----
bec.org.hk	1	230	----
nei.org	3	218	----
esha.be	60	198	----
croplife.org	8	190	----
pigeo.org.pl	3	190	----
aluminium.org.au	6	173	----
worldbioenergy.org	1	166	----
mining.ca	3	156	----
jaif.or.jp	5	152	----

3- RINGO

RINGOs Ranked by inlinks

Label	Inlinks From crawl	Betweenness Centrality
iied.org	101	983
iisd.org	69	452
leeds.ac.uk	47	0
fairtrade.net	46	0
kas.de	37	1
teriin.org	30	0
cicero.uio.no	28	191
pewclimate.org	18	478
feem.it	18	0
corporateeurope.org	18	0
idrc.ca	17	541
iiasa.ac.at	14	357
cirad.fr	14	795
climatestrategies.org	11	94
odi.org.uk	10	993
etgroup.org	10	95
bu.edu	10	934
royalsociety.org	10	295
ids.ac.uk	10	56
econexus.info	10	3
metoffice.gov.uk	10	0
fz-juelich.de	10	0
iufro.org	9	1071
pik-potsdam.de	9	367
nies.go.jp	9	83
wbgu.de	9	0
iddri.org	8	750
isi.fraunhofer.de	8	0
zew.de	7	671
die-gdi.de	7	1254
transparency.org	7	375
nrel.gov	6	504
american.edu	6	0
uni-potsdam.de	6	0
ecn.nl	6	0
catie.ac.cr	5	998

cidse.org	5	74
ceps.eu	5	2
worldfuturecouncil.org	5	0
ucl.ac.uk	5	0
nyu.edu	5	0
anu.edu.au	5	0
oecc.or.jp	4	1
wvi.org	4	73
frankfurt-school.de	4	59
fiaa.fi	4	6
ed.ac.uk	4	90
uva.nl	4	0
uni-tuebingen.de	4	0
uni-bonn.de	4	0

RINGOs Ranked by betweenness centrality

Label	Inlinks From crawl	Betweenness Centrality
die-gdi.de	7	1254
iufro.org	9	1071
catie.ac.cr	5	998
odi.org.uk	10	993
iied.org	101	983
bu.edu	10	934
cirad.fr	14	795
bioversityinternational.org	2	794
iddri.org	8	750
zew.de	7	671
fanrpan.org	1	628
ucar.edu	2	552
ccap.org	1	544
idrc.ca	17	541
nrel.gov	6	504
pewclimate.org	18	478
utexas.edu	3	478
iisd.org	69	452

purdue.edu	2	442
transparency.org	7	375
pik-potsdam.de	9	367
iiasa.ac.at	14	357
royalsociety.org	10	295
psu.edu	3	215
fairtrade.org.uk	2	202
cicero.uio.no	28	191
fni.no	3	165
iges.or.jp	3	146
etcgroup.org	10	95
climatestrategies.org	11	94
ed.ac.uk	4	90
nies.go.jp	9	83
cidse.org	5	74
saiia.org.za	3	74
lse.ac.uk	2	74
wvi.org	4	73
rutgers.edu	3	61
frankfurt-school.de	4	59
amazon.org.br	1	57
ids.ac.uk	10	56
panap.net	2	48
uni-jena.de	1	32
fu-berlin.de	3	25
utoronto.ca	1	15
fii.fi	4	6
gispri.or.jp	2	5
fara-africa.org	2	5
carnegieendowment.org	3	4
ouranos.ca	1	4
econexus.info	10	3

4- IGO

IGOs Ranked by inlinks

Label	Inlinks From crawl	Betweenness Centrality
oecd.org	543	0
thecommonwealth.org	339	132
ramsar.org	133	94
sadc.int	101	0
adb.org	77	74
iucn.org	54	85
caricom.org	32	41
caribbeanclimate.bz	28	5
cifor.cgiar.org	24	0
forumsec.org	22	0
iadb.org	17	0
afdb.org	15	7
esa.int	14	0
caf.com	13	0
comunidadandina.org	12	374
eib.org	11	12
iom.int	10	0
africa-union.org	10	0
iea.org	9	480
helcom.fi	9	207
commonwealthfoundation.com	8	0
saarc-sec.org	7	63
ebrd.com	7	280
comesa.int	7	0
worldagroforestrycentre.org	6	87
opec.org	6	112
ofid.org	6	163
norden.org	6	96
gbif.org	6	28
coe.int	6	17
sica.int	5	270
oecs.org	5	0
nefco.org	5	167
irena.org	5	0
ilri.org	5	67
encharter.org	5	0
assembly.coe.int	5	0
oss-online.org	4	1

inbar.int	4	2
oapecorg.org	3	27
ifrc.org	3	53
gwpforum.org	3	0
efi.int	3	0
boad.org	3	0
sprep.org.	2	225
southcentre.org	2	34
sacep.org	2	27
cilss.bf	2	0
apm.org.mt	2	0
maghrebarabe.org	1	2

IGOs Ranked by betweenness centrality

Label	Inlinks From crawl	Betweenness Centrality
iea.org	9	480
comunidadandina.org	12	374
ebrd.com	7	280
sica.int	5	270
sprep.org.	2	225
helcom.fi	9	207
itto.int	1	182
nefco.org	5	167
ofid.org	6	163
thecommonwealth.org	339	132
opec.org	6	112
norden.org	6	96
ramsar.org	133	94
worldagroforestrycentre.org	6	87
iucn.org	54	85
adb.org	77	74
ilri.org	5	67
saarc-sec.org	7	63
ifrc.org	3	53
caricom.org	32	41
southcentre.org	2	34
gbif.org	6	28
sacep.org	2	27
oapecorg.org	3	27
coe.int	6	17
eib.org	11	12
afdb.org	15	7

caribbeanclimate.bz	28	5
maghrebarabe.org	1	2
comifac.org	1	2
inbar.int	4	2
oss-online.org	4	1
oecd.org	543	0
sadc.int	101	0
cifor.cgiar.org	24	0
forumsec.org	22	0
iadb.org	17	0
esa.int	14	0
caf.com	13	0
iom.int	10	0
africa-union.org	10	0
commonwealthfoundation.com	8	0
comesa.int	7	0
oecs.org	5	0
irena.org	5	0
encharter.org	5	0
assembly.coe.int	5	0
gwpforum.org	3	0
efi.int	3	0
boad.org	3	0

5- LGMA

LGMA's Ranked by inlinks

Label	Inlinks From crawl	Betweenness Centrality
klimabuendnis.org	16	10
iclei.org	11	27
klimabuendnis.at	9	0
climatealliance.it	8	4
fcm.ca	5	0
eurometrex.org	4	0
usmayors.org	2	0
energy-cities.eu	2	0
cities-localgovernments.org	1	23
a21italy.it	1	0
cleanairworld.org	0	0
nrg4sd.org	0	0

LGMA's Ranked by betweenness centrality

Label	Inlinks From	Betweenness Centrality
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	crawl	
iclei.org	11	27
cities-localgovernments.org	1	23
klimabuendnis.org	16	10
climatealliance.it	8	4
klimabuendnis.at	9	0
fcm.ca	5	0
eurometrex.org	4	0
usmayors.org	2	0
energy-cities.eu	2	0
a21italy.it	1	0
cleanairworld.org	0	0
nrg4sd.org	0	0

6- Trade Union

Trade Union Ranked by betweenness centrality

Label	Inlinks From crawl	Betweenness Centrality*
ituc-csi.org	13	0
lo.no	0	0

*No betweenness centrality since there are only two NGOs making the network.

7- IPO

IPOs Ranked by inlinks

Label	Inlinks From crawl	Betweenness Centrality
afn.ca	4	0
nan.on.ca	3	4
aleut-international.org	2	0
ienearth.org	2	10
treatycouncil.org	2	4
inuitcircumpolar.com	2	0
international-alliance.org	2	8
coica.org.ec	1	0
arcticathabaskancouncil.com	0	0
narf.org	0	0

IPOs Ranked by betweenness centrality

Label	Inlinks From crawl	Betweenness Centrality
-------	--------------------	------------------------

iearth.org	2	10
international-alliance.org	2	8
nan.on.ca	3	4
treatycouncil.org	2	4
afn.ca	4	0
aleut-international.org	2	0
inuitcircumpolar.com	2	0
coica.org.ec	1	0
arcticathabaskancouncil.com	0	0
narf.org	0	0

8- Women & Gender

Women & Gender NGOs Ranked by inlinks

Label	Inlinks From crawl	Betweenness Centrality
wedo.org	1	0
apwld.org	0	0

*No betweenness centrality since there are only two NGOs making the network.

9- Youth

Youth Ranked by inlinks

Label	Inlinks From crawl	Betweenness Centrality
youthforum.org	5	0
scout.org	4	1
sciint.org	4	0
wagggsworld.org	2	0
ifmsa.org	1	0
advocatesforyouth.org	1	0
earthchildinstitute.org	0	0
ifsa.net	0	0
sustainus.org	0	0
wyf.org.my	0	0

Youth Ranked by betweenness centrality

Label	Inlinks From crawl	Betweenness Centrality
scout.org	4	1
youthforum.org	5	0
sciint.org	4	0

wagggsworld.org	2	0
ifmsa.org	1	0
advocatesforyouth.org	1	0
earthchildinstitute.org	0	0
ifsa.net	0	0
sustainus.org	0	0
wyf.org.my	0	0

10- Farmers

NO NETWORK

11- Others

Others NGOs Ranked by inlinks

Label	Inlinks From crawl	Betweenness Centrality
dfg.de	28	0
chinadialogue.net	22	3
rff.org	10	0
svn.cz	8	0
religionsforpeace.org	4	0
internationalrivers.org	4	6
eceee.org	3	2
climateworks.org	3	0
asil.org	3	0
utwente.nl	2	0
sec.org.sg	2	0
greencity.de	2	0
evb.ch	2	0
washington.edu	1	0
rri.org	1	4
nice.nnov.ru	1	0
naruc.org	1	0
iwoe.unisg.ch	1	0
ieee.org	1	0
ictsd.org	1	1
climatechangecentral.com	1	0
agritrade.org	1	0
aacc-ceta.org	1	0
centre-cired.fr	0	0
fedarene.org	0	0
firemarshals.org	0	0
gci.org.uk	0	0
ili.org	0	0

international-alert.org	0	0
ncsf.ru	0	0
tenpes.or.jp	0	0
umc-gbcs.org	0	0
umverkehr.ch	0	0
uni-muenster.de	0	0
usclimatenetwork.org	0	0

Others NGOs Ranked by betweenness centrality

Label	Inlinks From crawl	Betweenness Centrality
internationalrivers.org	4	6
rri.org	1	4
chinadialogue.net	22	3
eceee.org	3	2
ictsd.org	1	1
dfg.de	28	0
rff.org	10	0
svn.cz	8	0
religionsforpeace.org	4	0
climateworks.org	3	0
asil.org	3	0
utwente.nl	2	0
sec.org.sg	2	0
greencity.de	2	0
evb.ch	2	0
washington.edu	1	0
nice.nnov.ru	1	0
naruc.org	1	0
iwoe.unisg.ch	1	0
ieee.org	1	0
climatechangecentral.com	1	0
agritrade.org	1	0
aacc-ceta.org	1	0
centre-cired.fr	0	0
fedarene.org	0	0
firemarshals.org	0	0
gci.org.uk	0	0
ili.org	0	0
international-alert.org	0	0
ncsf.ru	0	0
tenpes.or.jp	0	0
umc-gbcs.org	0	0

umverkehr.ch	0	0
uni-muenster.de	0	0
usclimatenetwork.org	0	0

14.3 Case Examples

14.3.1 Case example 1: BINGO persuasion on Africa parties to include CCS in CDM.

A good area where BINGOs influence can be observed is reported by Vormedal (2008), through the case of the inclusion of CCS in CDM. BINGOs see CDM as an important way to provide incentives for investments in development and commercialization of CCS. In terms of government support around CCS there was already a clear division, some parties notably major oil and gas producing countries such as Norway, OPEC countries and European Union expressed their support, and, Brazil and other Latin American countries not, others as China and African countries were rather neutral. The next case example gives further details on the way BINGOs tend to influence negotiation nowadays.

Prior to the Nairobi conference in 2006 (COP 12/MOP 2) IETA and IPIECA wrote to the EU Presidency and UNFCCC Secretariat, urging them to promote the approval of CCS as a CDM project activity. Then a group of experts on CCS from the BINGO constituency also wrote a position paper entitled “Ad-Hoc Expert Group Statement on Carbon Capture and Geological Storage (CCS) in the Clean Development Mechanism (CDM),” which was widely distributed at the conference.

Throughout the two weeks of negotiations, IETA and IPIECA also lobbied several delegations directly, including the EU, Norway, the Latin American delegations and some African delegations. The EU and Norway assured them that they would promote CCS as CDM methodology in the informal consultations, and encouraged the BINGOs to approach other delegates to demonstrate that carbon can be safely stored and monitored in the long term and that a rejection of CCS would affect technological development negatively. BINGO efforts to persuade the Latin Americans, however, were unsuccessful. Apparently, these delegations had brokered a deal with Brazil to oppose CCS in the CDM prior to the negotiations.

However, lobbying the African delegations proved relatively successful. When the issue was first raised in the plenary, several African delegations spoke out against CCS in the CDM, and expressed concern over the inequitable geographical distribution and high costs of CDM projects. In the contact groups, however, the African countries refrained from opposing approval of CCS, which indicated a shift in their position. At the end of the Nairobi meeting the decision on CCS in the CDM did not make a final ruling. While it requested the CDM Executive Board to continue to consider CCS projects, it did not yet allow the Board to approve them.

Between the Nairobi and the Bali meeting, two workshops called “CCS and CDM: A Capacity Building Effort in Africa” were held in Senegal in September 2007. Shell and Statoil established the workshops upon the suggestion of the Energy Research Centre of the Netherlands (ECN), which was responsible for implementing the workshops.

According to the ECN, the main objective of the workshops was to provide African delegates, companies and NGOs with reliable information about CCS technologies, in order for them to make an informed decision about CCS in the CDM. However, the underlying expectation was that the workshop would influence African delegates to support the approval of CCS in the CDM. According to Shell, the workshops made a significant contribution to the shift in position from Nairobi to Bali. Notwithstanding, no African delegate was willing to comment on the degree to which business actors influenced the change in position.

While the BINGOs did not achieve their ultimate goal of CCS approval their efforts may be read as relatively successful compared to the ENGOs who wanted CCS ruled out. As IETA argued, “business achieved what it could achieve, which means that CCS is still on the agenda... [due to the opposition from ENGOs and some prominent Parties] it was certainly expected that there was a serious risk that there would be a very negative response... that CCS would be ruled totally out.” (Vormedal 2008)

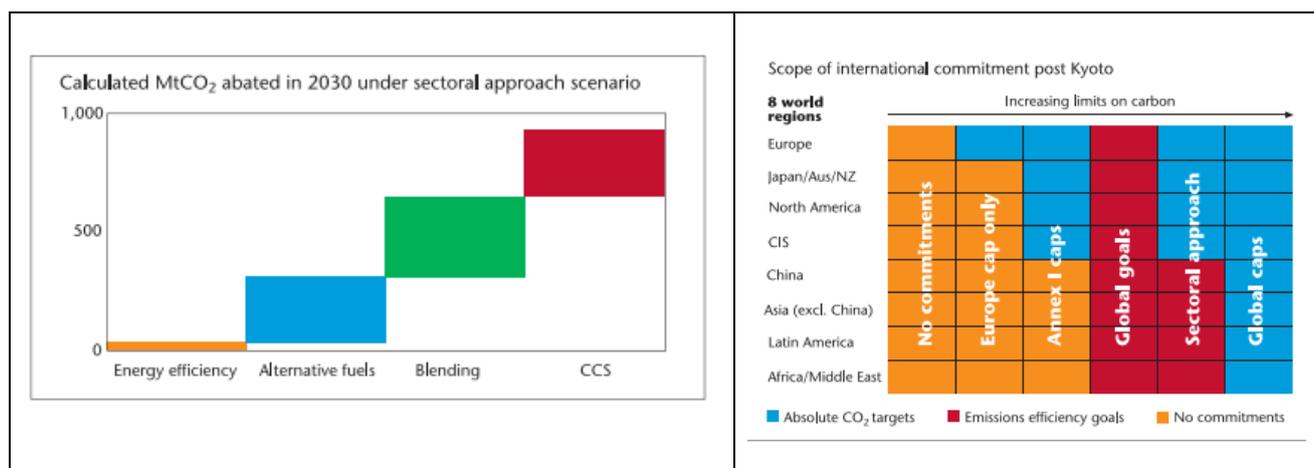
14.3.2 Case example 2: The Cement Sustainability Issue (CSI)

The cement industry has been active in promoting a form of sectoral approach to reducing CO₂ emissions through the Cement Sustainability Initiative (CSI). CSI is a voluntary business initiative involving the major multinational cement producers, including some Chinese producers. It covers around 30% of world production (and 73% of the production of Annex I Parties). The CSI started operations in 2000 with a research phase, and in 2002 developed an agenda for action with measurable targets and individual company commitments. A number of reports were issued in 2009, including 'Getting the Numbers Right', in which producers report on their energy and CO₂ performance, to elaborate a Technology Roadmap for cement and the conclusions of the Sectoral Approach modeling project [WBCSD, 2009, cited in (Gregory, Ponsard 2011)]

What makes the cement sector suitable for sectoral approach is that, the cement sector is a relatively homogeneous traded commodity, and has been identified to be potentially at risk from competitiveness and leakage impacts [Dermally and Quirion, 2008; Ponsard and Walker, 2008 in (Gregory, Ponsard 2011)] and at the world level is, the industry is fairly concentrated. Hence, the world cement industry may thus be seen as a network of regional oligopolies [Ghemawat and Thomas, 2008 in (Gregory, Ponsard 2011)], where major cement firms, such as Cemex, Holcim and Lafarge, typically operate a large number of plants.

The CSI contemplate scenarios where explore possible responses by the global cement industry over the period 2005–2030 assuming future demand in the various world regions, available technologies, and including present and future abatement opportunities (e.g. energy efficiency, fuel switching, increased blending, carbon capture), production and transport costs (Gregory, Ponsard 2011).

Figure 16: Abatement opportunities and scope scenario for CSI adapted (WBCSD 2010d)



Six different policy scenarios are explored with a wide spread of carbon limits, ranging from “no commitments” to a full global cap on absolute CO₂ emissions from the sector. A sectoral approach was modeled as a combination of fixed emission limits (caps) in Annex I countries, with emissions efficiency goals in non-Annex I countries – although this is only one of a number of possible policy combinations (WBCSD 2010d)

The next table summarizes the main advantage and disadvantage for the implementation of CSI:

Table 18: Advantage and disadvantage of CSI (WBCSD 2010d)

Advantages	Disadvantages
<ul style="list-style-type: none"> • Greater speed of implementation due to small number of parties • Faster technology development and deployment (particularly for CCS) • Address better competitive issues resulting for different policies in countries 	<ul style="list-style-type: none"> • New and untrusted • Require cooperative agreement • An effective crediting system is important for countries and will be a challenge.

14.4 CAN Member list

Source: http://climatenetwork.org/about/members_list

Organization	Country	Regional Node
Aidwatch	Australia	CAN-Australia
Arid Lands Environment Centre	Australia	CAN-Australia
Association for Berowra Creek	Australia	CAN-Australia
Australian & New Zealand Solar Energy Society	Australia	CAN-Australia
Australian Conservation Foundation	Australia	CAN-Australia
Australian Marine Conservation Society	Australia	CAN-Australia
Australian Religious Response to Climate Change	Australia	CAN-Australia
Australian Student Environment Network	Australia	CAN-Australia
Australian Youth Climate Coalition	Australia	CAN-Australia
Bathurst Climate Action Network	Australia	CAN-Australia
Cairns and Far North Environment Centre	Australia	CAN-Australia
Caritas Australia	Australia	CAN-Australia
Catholic Earthcare Australia	Australia	CAN-Australia
Central West Environment Council	Australia	CAN-Australia
Climate Action Coogee	Australia	CAN-Australia
Climate Action Newcastle	Australia	CAN-Australia
Climate Action Newtown	Australia	CAN-Australia
Climate Action Now Wingecarribee	Australia	CAN-Australia
Climate Action Pittwater	Australia	CAN-Australia
Climate Action Tomaree	Australia	CAN-Australia
Climate Change Australia	Australia	CAN-Australia
Climate Change Balmain Rozelle	Australia	CAN-Australia
Climate change research cluster, School of Health and Social Development, Deakin University	Australia	CAN-Australia
Climate Emergency Network	Australia	CAN-Australia
Conservation Council of South Australia	Australia	CAN-Australia

Organization	Country	Regional Node
Conservation Council of the ACT and Region	Australia	CAN-Australia
Conservation Council of Western Australia	Australia	CAN-Australia
Edmund Rice Centre	Australia	CAN-Australia
Environment Centre of the Northern Territory	Australia	CAN-Australia
Environment East Gippsland	Australia	CAN-Australia
Environment House	Australia	CAN-Australia
Environment Tasmania	Australia	CAN-Australia
Environment Victoria	Australia	CAN-Australia
Environmental Defender's Office New South Wales (Ltd) (Assoc. Member)	Australia	CAN-Australia
GetUp!	Australia	CAN-Australia
Greenpeace Australia Pacific	Australia	CAN-Australia
Institute for Sustainable Futures, University of Technology Sydney (Assoc. Member)	Australia	CAN-Australia
Institute of Environmental Studies, University of NSW	Australia	CAN-Australia
Jubilee Australia	Australia	CAN-Australia
Mineral Policy Institute	Australia	CAN-Australia
Moreland Energy Foundation	Australia	CAN-Australia
National Parks Association of NSW	Australia	CAN-Australia
Nature Conservation Council of New South Wales	Australia	CAN-Australia
North Coast Environment Council	Australia	CAN-Australia
Orange Climate Action Now	Australia	CAN-Australia
Oxfam Australia	Australia	CAN-Australia
ParraCAN (Parramatta Climate Action Network)	Australia	CAN-Australia
Rising Tide Newcastle	Australia	CAN-Australia
Sisters of Mercy - Earth Link	Australia	CAN-Australia
Sisters of the Good Samaritan	Australia	CAN-Australia
Social Action Office	Australia	CAN-Australia
South East Region Conservation Alliance	Australia	CAN-Australia
Sunshine Coast Environment Council	Australia	CAN-Australia
Sustainable Living Tasmania	Australia	CAN-Australia
Tear Australia	Australia	CAN-Australia
The Australia Institute	Australia	CAN-

Organization	Country	Regional Node
		Australia
The Climate Institute (Assoc. Member)	Australia	CAN-Australia
The Wilderness Society	Australia	CAN-Australia
Total Environment Centre	Australia	CAN-Australia
Uniting Church, The Justice and International Mission	Australia	CAN-Australia
UnitingJustice Australia	Australia	CAN-Australia
Urban Ecology Australia	Australia	CAN-Australia
Wollongong Climate Action Network	Australia	CAN-Australia
World Vision Australia	Australia	CAN-Australia
WWF - Australia	Australia	CAN-Australia
Albanian Ecological Club - KLubi Ekologjik Shiqiptar	Albania	CAN-CEE
Green Action - Zelena Akcija	Croatia	CAN-CEE
Centre for Transport and Environment - Centrum pro dopravu a energetiku CDE	Czech Republic	CAN-CEE
Renewable Energy Centre - Energiakeskus - TAASEN	Estonia	CAN-CEE
Green Alternative - Mtsvane Alternativa	Georgia	CAN-CEE
Energy Club - Energia Klub	Hungary	CAN-CEE
Center for Environmental Policy	Lithuania	CAN-CEE
NGO Bios - ONG Bios	Moldova	CAN-CEE
Polish Ecological Club - Polski Klub Ekologiczny - PKE	Poland	CAN-CEE
Alma-Ro Association	Romania	CAN-CEE
Earth Friends	Romania	CAN-CEE
Terra Millennium III - Terra Mileniul III	Romania	CAN-CEE
Socia-Ecological Union	Russia	CAN-CEE
Foundation for Alternative Energy - Fond pre alternativne energie - FAE	Slovakia	CAN-CEE
Focus Association for Sustainable Development	Slovenia	CAN-CEE
Slovenski E-forum	Slovenia	CAN-CEE
National Ecological Centre of Ukraine	Ukraine	CAN-CEE
Forum for Environment	Ethiopia	CAN-Eastern Africa
PHE Ethiopia Consortium	Ethiopia	CAN-Eastern Africa
Climate Action for Sustainable Development	Kenya	CAN-Eastern Africa
Kenya Young Greens	Kenya	CAN-Eastern Africa
Rwanda Rural Rehabilitation Initiative	Rwanda	CAN-Eastern Africa
Institute of Environmental Studies	Sudan	CAN-Eastern Africa
AGENDA for Environment and Responsible Development	Tanzania	CAN-Eastern Africa
the Centre for Energy, Environment, Science and Technology (CEEST) Foundation	Tanzania	CAN-Eastern Africa
Energetikayi ev shrdghaka mighavairi khohrdatvakan hasarakakan kazmakerputyun – ECOTEAM	Armenia	CAN-Europe

Organization	Country	Regional Node
Global 2000 – Umweltschutzorganisation - Global 2000 Environmental organisation (FoE)	Austria	CAN-Europe
Association for the Promotion of Renewable Energies - Association for the Promotion of Renewable Energies	Belgium	CAN-Europe
Bond Beter Leefmilieu – BBL Flemish Umbrella organisation of Environmental Groups	Belgium	CAN-Europe
CIDSE	Belgium	CAN-Europe
Friends of the Earth Europe	Belgium	CAN-Europe
Greenpeace European Unit	Belgium	CAN-Europe
Inter-Environnement Wallonie – IEW Inter-Environment Wallonia	Belgium	CAN-Europe
Oxfam International	Belgium	CAN-Europe
Seas at Risk	Belgium	CAN-Europe
Vlaams Overleg Duurzame Ontwikkeling – VODO - Flemish Platform on Sustainable Development	Belgium	CAN-Europe
World Wide Fund for Nature- WWF Europe Unit	Belgium	CAN-Europe
Centrum pro dopravu a energetiku - Centre for Transport and Energy	Czech Republic	CAN-Europe
Danmarks Naturfredningsforening – DN - Danish Society for the Conservation of Nature – DN	Denmark	CAN-Europe
Det Økologiske Råd - Danish Ecological Council	Denmark	CAN-Europe
Folkekirkens Nødhjælp DCA - DanChurchAid	Denmark	CAN-Europe
Nepenthes	Denmark	CAN-Europe
The Danish Organization for Renewable Energy - OVE	Denmark	CAN-Europe
WWF Verdensnaturfonden - WWF – Denmark	Denmark	CAN-Europe
FINLAND WWF Finland	Finland	CAN-Europe
Luonto-Liitto r.y. - Nature League of Finland	Finland	CAN-Europe
Maan ystävät ry – MY Friends of the Earth – Finland	Finland	CAN-Europe
Suomen Luonnonsuojeluliitto - Finnish Association for Nature Conservation	Finland	CAN-Europe
Association 4D	France	CAN-Europe
Association Détente	France	CAN-Europe
Comité de Liaison Énergies Renouvelables (CLER)	France	CAN-Europe
Energies et territoires	France	CAN-Europe
Fédération Nationale descAssociations d'Usagers des Transports (FNAUT)	France	CAN-Europe
France Nature Environnement - FNE	France	CAN-Europe
Greenpeace France	France	CAN-Europe
Helio International	France	CAN-Europe
HESPUL	France	CAN-Europe
Les Amis de la Terre – AT France - Friends of the Earth France	France	CAN-Europe
Réseau “sortir du Nucléaire”	France	CAN-Europe
Réseau Action Climat France – RAC - France Climate Action Network France	France	CAN-Europe
WWF FRANCE	France	CAN-Europe
Brot fuer die Welt - Bread for the World	Germany	CAN-Europe
Bund für Umwelt und Naturschutz Deutschland – BUND - Friends of the Earth Germany	Germany	CAN-Europe

Organization	Country	Regional Node
Deutscher Naturschutzring – DNR - German League for nature and Environment	Germany	CAN-Europe
Ecologic Centre for European and International Environmental Research	Germany	CAN-Europe
Evangelischer Entwicklungsdienst e.V. (EED) Church Development Service	Germany	CAN-Europe
Germanwatch	Germany	CAN-Europe
GERMANY Forum Umwelt und Entwicklung - German NGO Forum on Environment and Development	Germany	CAN-Europe
International Council of Local Environment Initiatives - ICLEI	Germany	CAN-Europe
Klima – Bündnis Climate Alliance of European Cities with Indigenous Rainforest Peoples	Germany	CAN-Europe
LIFE - Frauen entwickeln Ökotechnik LIFE - Women develop Eco-Techniques	Germany	CAN-Europe
Naturschutzbund – NABU (Birdlife) - German Union for Nature Conservation	Germany	CAN-Europe
Öko Institut – Institut für angewandte Ökologie - Institute for Applied Ecology	Germany	CAN-Europe
Third Generation Environmentalism (E3G)	Germany	CAN-Europe
Weltwirtschaft, Ökologie and Entwicklung e.V. – WEED World Economy, Ecology and Development	Germany	CAN-Europe
Women in Europe for a Common Future	Germany	CAN-Europe
Wuppertal Institut für Klima, Umwelt, Energie GmbH Wuppertal Institute	Germany	CAN-Europe
WWF Deutschland - WWF – Germany	Germany	CAN-Europe
Greenpeace Greece	Greece	CAN-Europe
SOS MEDITERRANEAN SOS Network	Greece	CAN-Europe
Energia Klub Környezetvédelmi - Energy Club Environmental Association	Hungary	CAN-Europe
Levegő Munkacsoport Clean Air Action Group	Hungary	CAN-Europe
Náttúrúverndarsamtök íslands - Iceland Nature Conservation Association – INCA	Iceland	CAN-Europe
Earthwatch FoE Ireland	Ireland	CAN-Europe
GRIAN Greenhouse Ireland Action Network	Ireland	CAN-Europe
Trocaire - Trócaire	Ireland	CAN-Europe
Amici della Terra Italia - Friends of the Earth Italy	Italy	CAN-Europe
Legambiente League for the Environment	Italy	CAN-Europe
World Wide Fund for Nature Italia - WWF Italia - WWF Italy	Italy	CAN-Europe
Aplinkos apsaugos politikos centras - Center for Environmental Policy	Lithuania	CAN-Europe
Mouvement Ecologique Luxembourg – MECO Friends of the Earth Luxembourg	Luxembourg	CAN-Europe
Moviment għall-Ambjent-MghA - Movement for the Environment, Friends of the Earth (Malta)	Malta	CAN-Europe
Nature Trust Malta	Malta	CAN-Europe
Both ENDS Environment and Development Service for NGOs	Netherlands	CAN-Europe
Centrum voor Energiebesparing en Schone Technologie - Center for Energy Conservation and Environmental Technology	Netherlands	CAN-Europe
Concerned Citizens against Climate Change	Netherlands	CAN-Europe

Organization	Country	Regional Node
Humanistische Organisatie voor Ontwikkelings Samenwerking (HIVOS) - Humanist Organisation for Development Cooperation (HIVOS)	Netherlands	CAN-Europe
Interchurch Organisation for Development Cooperation	Netherlands	CAN-Europe
Stichting ETC	Netherlands	CAN-Europe
Stichting Natuur en Milieu – SNM - The Netherlands Society for Nature and Environment	Netherlands	CAN-Europe
Vereniging Milieudefensie – VMD - Friends of the Earth Netherlands	Netherlands	CAN-Europe
Wereld Natuur Fonds – WWF-NL - WWF Netherlands	Netherlands	CAN-Europe
Forum for utvikling og miljø – ForUM - The Norwegian Forum for Development and Environment	Norway	CAN-Europe
Framtiden i våre hender Future in our Hands	Norway	CAN-Europe
Natur og Ungdom - Nature and Youth (FoE youth)	Norway	CAN-Europe
Norges Naturvernforbund - Friends of the Earth Norway	Norway	CAN-Europe
Norwegian Church Aid - NCA	Norway	CAN-Europe
Rainforest Foundation Norway	Norway	CAN-Europe
Utviklingsfondet DF - Development Fund	Norway	CAN-Europe
Associação Nacional de Conservação da Natureza – QUERCUS - National Association for Nature Conservation	Portugal	CAN-Europe
Centro Para o Direito Ambiental e Desenvolvimento Sustent – EURONATURA - Centre for Environmental Law and Sustainable Development	Portugal	CAN-Europe
Energia e Ambiente - Energy Group University of Coimbra – ISR	Portugal	CAN-Europe
Grupo de Estudos de Ordenamento do Territorio e Ambiente – GEOTA - Study Group of Environment and Land Use Management	Portugal	CAN-Europe
Fokus drustvo za sonaraven razvoj - Focus Association for Sustainable Development	Slovenia	CAN-Europe
Amigos de la Tierra Espana - Friends of the Earth Spain	Spain	CAN-Europe
Ecologistas en Accion - Ecologist Association for Nature Defense	Spain	CAN-Europe
Internationella Försurningssekretariatet - Swedish NGO Secretariat on Acid Rain	Sweden	CAN-Europe
Svenska Naturskyddsforeningen - Swedish Society for Nature Conservation	Sweden	CAN-Europe
International Society of Doctors for the Environment	Switzerland	CAN-Europe
myclimate	Switzerland	CAN-Europe
NOE21 - New Orientation for the Economy in the 21st century	Switzerland	CAN-Europe
World Council of Churches	Switzerland	CAN-Europe
World Wide Fund for Nature – WWF Schweiz - WWF Switzerland	Switzerland	CAN-Europe
TEMA	Turkey	CAN-Europe
ActionAid UK	United Kingdom	CAN-Europe
Campaign against Climate Change UK	United Kingdom	CAN-Europe
Christian Aid	United Kingdom	CAN-Europe

Organization	Country	Regional Node
Council for the Protection of Rural England - CPRE	United Kingdom	CAN-Europe
Energy and Environment Programme – EEP / RIIA	United Kingdom	CAN-Europe
Foundation for International Environmental Law - FIELD	United Kingdom	CAN-Europe
Friends of the Earth - England, Wales and Northern Ireland	United Kingdom	CAN-Europe
Green Alliance	United Kingdom	CAN-Europe
Greenpeace-UK	United Kingdom	CAN-Europe
Institute for Environmental Policy, London - IEEP	United Kingdom	CAN-Europe
International Institute for Energy Conservation – Europe IIEC – Europe	United Kingdom	CAN-Europe
National Trust for England, Wales and Northern Island	United Kingdom	CAN-Europe
Oxford Climate Policy (OCP)	United Kingdom	CAN-Europe
Practical Action	United Kingdom	CAN-Europe
Royal Society for the Protection of Birds – RSPB	United Kingdom	CAN-Europe
Sinkswatch	United Kingdom	CAN-Europe
Stamp out Poverty	United Kingdom	CAN-Europe
Tearfund	United Kingdom	CAN-Europe
Transport 2000 - T 2000	United Kingdom	CAN-Europe
VERTIC	United Kingdom	CAN-Europe
Wildlife Trust	United Kingdom	CAN-Europe
World Development Movement	United Kingdom	CAN-Europe
World Wide Fund for Nature UK -WWF UK	United Kingdom	CAN-Europe
CANGO	China	CAN- International
Environment Friendly Charity Association	China	CAN- International
Friends of Nature	China	CAN- International
Global Village of Beijing	China	CAN- International
Institute for Environment & Development	China	CAN- International
Shan Shui Conservation Centre	China	CAN- International
Pohnpei Women's Club	Federated States of Micronesia	CAN- International
CARE International	International	CAN- International
Caritas International	International	CAN- International
Christian Aid	International	CAN- International
Cook Islands Climate Action Network	International	CAN- International
GAIA	International	CAN- International
Global Witness	International	CAN- International
Greencross International	International	CAN- International
Greenpeace International	International	CAN- International
Kiribati Climate Action Network	International	CAN- International
Oxfam International	International	CAN-

Organization	Country	Regional Node
		International
Pacific Islands Climate Revolution	International	CAN-International
Save the Children International	International	CAN-International
Tuvalu Climate Action Network	International	CAN-International
WWF International	International	CAN-International
IndyACT	Lebanon	CAN-International
CASA(Citizen's Alliance for Saving the Atmosphere and the Earth)	Japan	CAN-Japan
FOE Japan	Japan	CAN-Japan
Greenpeace Japan	Japan	CAN-Japan
ISEP(Institute for Sustainable Energy Policies)	Japan	CAN-Japan
JACSES(Japan Center for Sustainable Environment and Society)	Japan	CAN-Japan
Kiko Network	Japan	CAN-Japan
Office Ecologist	Japan	CAN-Japan
Oxfam Japan	Japan	CAN-Japan
Rainforest Action Network Japan	Japan	CAN-Japan
WWF Japan	Japan	CAN-Japan
Foro del Buen Ayre	Argentina	CAN-LA
Fundación Biosfera	Argentina	CAN-LA
Fundação Grupo Esquel Brasil	Brazil	CAN-LA
Vitae Civilis Instituto para Desenvolvimento Meio Ambiente e Paz	Brazil	CAN-LA
Acción Ecológica	Chile	CAN-LA
Asociación Chilena de ONGs ACCIÓN	Chile	CAN-LA
Haiti Survive	Haiti	CAN-LA
Fundación MDL de Honduras	Honduras	CAN-LA
Ciudadanía Sustentable A.C.	Mexico	CAN-LA
Presencia Ciudadana Mexicana A.C.	Mexico	CAN-LA
Centro Alexander Von Humboldt.	Nicaragua	CAN-LA
Fundación Moisés Bertoni	Paraguay	CAN-LA
Fundación San Marcos para la Ciencia y el Desarrollo	Peru	CAN-LA
Instituto Andino y Amazónico de Derecho Ambiental	Peru	CAN-LA
Centro de Estudio Uruguayo de Técnicas Alternativas	Uruguay	CAN-LA
Sociedad Amigos del Viento meteorología ambiente desarrollo	Uruguay	CAN-LA
Federación de Organizaciones y Juntas Ambientalistas de Venezuela: "FORJA"	Venezuela	CAN-LA
Act for the Earth	Canada	CAN-RAC
Algonquin Wildlands League	Canada	CAN-RAC
Aquatic Ecosystem health and Management Society (AEHMS)	Canada	CAN-RAC
Assembly of First Nations	Canada	CAN-RAC
Association québécoise de lutte contre la pollution atmosphérique (AQLPA)	Canada	CAN-RAC
Baha'I Community of Canada	Canada	CAN-RAC
Bathurst Sustainable Development	Canada	CAN-RAC
British Columbia Sustainable Energy Association	Canada	CAN-RAC
Canadian Association for Renewable Energies C.A.R.E.	Canada	CAN-RAC
Canadian Association of Physicians for the Environment	Canada	CAN-RAC

Organization	Country	Regional Node
Canadian Centre for Policy Ingenuity	Canada	CAN-RAC
Canadian Environment Network and Steering Committee (NLEN)	Canada	CAN-RAC
Canadian Labour Congress	Canada	CAN-RAC
Canadian Union of Public Employees	Canada	CAN-RAC
Changing Climates Educational Society	Canada	CAN-RAC
Citizens Environment Alliance	Canada	CAN-RAC
Clean Air Partnership	Canada	CAN-RAC
Clean North	Canada	CAN-RAC
Clean Nova Scotia Foundation - Climate Change Centre	Canada	CAN-RAC
Climate Change Lawyers Network	Canada	CAN-RAC
Coalition for a Green Economy	Canada	CAN-RAC
Coalition Québec-vert-Kyoto	Canada	CAN-RAC
Community Based Environmental Monitoring Network	Canada	CAN-RAC
Conseil Régional de l'Environnement-capitale nationale	Canada	CAN-RAC
Conservation Council of New Brunswick	Canada	CAN-RAC
Conserver Society of Hamilton and District	Canada	CAN-RAC
David Suzuki Foundation	Canada	CAN-RAC
ECO5 Inc.	Canada	CAN-RAC
Ecology Action Centre	Canada	CAN-RAC
Ecology North	Canada	CAN-RAC
Edmonton Friends of the North Environmental Society	Canada	CAN-RAC
Eneract - Energy Action Council of Toronto	Canada	CAN-RAC
Environmental Coalition of PEI	Canada	CAN-RAC
ENvironnement JEUnesse Inc.	Canada	CAN-RAC
Équiterre	Canada	CAN-RAC
ETC Group	Canada	CAN-RAC
Faith and the Common Good	Canada	CAN-RAC
For Our Grandchildren	Canada	CAN-RAC
Friends of the Earth - Canada	Canada	CAN-RAC
Green Communities Canada	Canada	CAN-RAC
Greenpeace	Canada	CAN-RAC
Helios Center	Canada	CAN-RAC
HOOFF&CYCLE - Active Transport Workers Guild	Canada	CAN-RAC
JustEarth	Canada	CAN-RAC
KAIROS - Canadian Ecumenical Justice Initiatives	Canada	CAN-RAC
Manitoba Wildlands	Canada	CAN-RAC
National Union of Public and General Employees (NUPGE)	Canada	CAN-RAC
Nature Canada	Canada	CAN-RAC
Nature Saskatchewan	Canada	CAN-RAC
New Brunswick Lung Association	Canada	CAN-RAC
Oxfam Canada	Canada	CAN-RAC
Pacific Peoples' Partnership	Canada	CAN-RAC
Pembina Institute	Canada	CAN-RAC
Resource Conservation Manitoba	Canada	CAN-RAC
Sage Centre	Canada	CAN-RAC
Saskatchewan Environmental Society	Canada	CAN-RAC
Science for Peace	Canada	CAN-RAC
Sierra Club of Canada	Canada	CAN-RAC
Sierra Youth Coalition	Canada	CAN-RAC
Sustainability Solutions Group Workers Cooperative	Canada	CAN-RAC
Sustainablity Solutions Group Workers Cooperative	Canada	CAN-RAC

Organization	Country	Regional Node
Toronto Climate Campaign	Canada	CAN-RAC
Toronto Environmental Alliance	Canada	CAN-RAC
United Church of Canada	Canada	CAN-RAC
United Steelworkers of America	Canada	CAN-RAC
Vegetarians and Vegans of Alberta	Canada	CAN-RAC
VTACC - Voters Taking Action on Climate Change	Canada	CAN-RAC
West Coast Environmental Law	Canada	CAN-RAC
Windfall Ecology Centre	Canada	CAN-RAC
World Federalist Movement-Canada	Canada	CAN-RAC
World Wildlife Fund Canada	Canada	CAN-RAC
Yukon Conservation Society	Canada	CAN-RAC
AOSED	Bangladesh	CAN-South Asia
Bangladesh Centre for Advanced Studies (BCAS)	Bangladesh	CAN-South Asia
Bangladesh Disaster Preparedness Centre (BDPC)	Bangladesh	CAN-South Asia
Bangladesh Environmental Lawyers Association (BELA)	Bangladesh	CAN-South Asia
Bangladesh Institute for Development - BIDS	Bangladesh	CAN-South Asia
Bangladesh Rural Advancement Committee (BRAC)	Bangladesh	CAN-South Asia
Bangladesh University for Engineering and Technology - BUET	Bangladesh	CAN-South Asia
Bangladesh Unnayan Parishad (BUP)	Bangladesh	CAN-South Asia
Caritas - Bangladesh	Bangladesh	CAN-South Asia
Centre for Coastal Environmental Conservation (CCEC)	Bangladesh	CAN-South Asia
Christian Aid - Bangladesh	Bangladesh	CAN-South Asia
Church of Bangladesh Social Development Programme	Bangladesh	CAN-South Asia
Concern Bangladesh	Bangladesh	CAN-South Asia
Grameen Bank	Bangladesh	CAN-South Asia
IUCN - Bangladesh	Bangladesh	CAN-South Asia
Oxfam - Bangladesh	Bangladesh	CAN-South Asia
Practical Action - Bangladesh	Bangladesh	CAN-South Asia
Proshika Manobik Unnayan Kendrea - PMUK	Bangladesh	CAN-South Asia
ROYAL SOCIETY FOR PROTECTION OF NATURE	Bhutan	CAN-South Asia
AFPRO - Action for Food Production	India	CAN-South Asia
Centre for Ecological Sciences - CES	India	CAN-South Asia
Centre for Global Environment Research	India	CAN-South Asia
Centre for Science & Environment (CSE)	India	CAN-South Asia
Consumer Unity & Trust Society CUTS	India	CAN-South Asia
Deccan Development Society	India	CAN-South

Organization	Country	Regional Node
		Asia
Development Alternatives (DA)	India	CAN-South Asia
Integrated Research and Action for Development (IRADe)	India	CAN-South Asia
International Energy Initiative - IEI	India	CAN-South Asia
Jawaharlal Nehru University	India	CAN-South Asia
Kalpavriksh - Environment Action Group	India	CAN-South Asia
Pasumai Thaayaham (Green Mother Land)	India	CAN-South Asia
TATA Energy Research Institute	India	CAN-South Asia
Winrock International India	India	CAN-South Asia
World Wide Fund for Nature - India	India	CAN-South Asia
Clean Energy Nepal (CEN)	Nepal	CAN-South Asia
Himalayan Climate Centre	Nepal	CAN-South Asia
LI-BIRD, Nepal	Nepal	CAN-South Asia
Nepal Water Conservation Foundation	Nepal	CAN-South Asia
NGO Federation of Nepal	Nepal	CAN-South Asia
Practical Action, Nepal	Nepal	CAN-South Asia
Support Activities for Poor Producers of Nepal (SAPPROS Nepal)	Nepal	CAN-South Asia
Winrock International, Nepal	Nepal	CAN-South Asia
IUCN - Pakistan	Pakistan	CAN-South Asia
Pakistan Institute of Labour Education & Research - Karachi - PILER	Pakistan	CAN-South Asia
Stand Organise Unite Lead - SOUL	Pakistan	CAN-South Asia
Sustainable Development Policy institute (SDPI)	Pakistan	CAN-South Asia
Water Resource Research Institute	Pakistan	CAN-South Asia
Energy Forum Sri Lanka	Sri Lanka	CAN-South Asia
Environmental Foundation Ltd. - EFL	Sri Lanka	CAN-South Asia
Munasinghe Institute for Development (MIND)	Sri Lanka	CAN-South Asia
Action for Community Transformation (ACT)	Uganda	CAN-Uganda
Action for Women & Rural Development (AWRD)	Uganda	CAN-Uganda
Adjumani Women Forum	Uganda	CAN-Uganda
AFIEGO	Uganda	CAN-Uganda
African Agency for Integrated Development (AAID)	Uganda	CAN-Uganda
Agroforestry and Sustainable Agriculture	Uganda	CAN-Uganda
Akukurunatu	Uganda	CAN-Uganda
Aminanaza SACCO	Uganda	CAN-Uganda
Arua District Farmers Association (ARUDIFA)	Uganda	CAN-Uganda
Arua District NGO Network (ADINGON)	Uganda	CAN-Uganda

Organization	Country	Regional Node
Arua District Union of Peoples with Disability (ADUPD)	Uganda	CAN-Uganda
ARUDA JATHO	Uganda	CAN-Uganda
Awake Ankole Bushenyi	Uganda	CAN-Uganda
Bakusekamajja Women's Development Association	Uganda	CAN-Uganda
BINTECH	Uganda	CAN-Uganda
BRPS	Uganda	CAN-Uganda
Bulvespa	Uganda	CAN-Uganda
Bunyoro Kingdom Cultural Development Troupe	Uganda	CAN-Uganda
Bunyoro Kitara Diocese Duhaga	Uganda	CAN-Uganda
Bushenyi District CSO Forum (BUDCOF)	Uganda	CAN-Uganda
Busiu Development Foundation	Uganda	CAN-Uganda
CARE International in Uganda	Uganda	CAN-Uganda
CCOD Mbarara	Uganda	CAN-Uganda
CCRI	Uganda	CAN-Uganda
Christ the King Health Support Care	Uganda	CAN-Uganda
CLADA	Uganda	CAN-Uganda
Community Alert	Uganda	CAN-Uganda
CUAMM	Uganda	CAN-Uganda
Development Foundation for Rural Areas (DEFORA)	Uganda	CAN-Uganda
Eastern and Southern Small Scale Farmers Association (ESSFA)	Uganda	CAN-Uganda
Ecological Christian Organization	Uganda	CAN-Uganda
Efforts Integrated Development Foundation	Uganda	CAN-Uganda
Emesco Development Foundation	Uganda	CAN-Uganda
Environment Teachers Association (ENVITA)	Uganda	CAN-Uganda
Environmental Management for Livelihood Improvement	Uganda	CAN-Uganda
Environmental Protection and Reduction of Extreme Poverty (EPAREP)	Uganda	CAN-Uganda
Enyau Environmental Friendly Car Washing Bay (EFCWB)	Uganda	CAN-Uganda
FORESKO (U) LTD	Uganda	CAN-Uganda
Forum for NGOs in Rakai District (FONIRAD)	Uganda	CAN-Uganda
FOSID	Uganda	CAN-Uganda
Foundation for Rural Development (FORUD)	Uganda	CAN-Uganda
Friend of Disabilities (COMBRID)	Uganda	CAN-Uganda
Friends of Environment Rakai	Uganda	CAN-Uganda
Grassland Foundation	Uganda	CAN-Uganda
Heart of Merges Uganda (HOMU)	Uganda	CAN-Uganda
HEWASA	Uganda	CAN-Uganda
Hoima District Association of the Blind (HODAB)	Uganda	CAN-Uganda
Hope for African Women	Uganda	CAN-Uganda
Hope for Orphans	Uganda	CAN-Uganda
HURUD	Uganda	CAN-Uganda
IDEA	Uganda	CAN-Uganda
IFAPIC	Uganda	CAN-Uganda
JOFFED	Uganda	CAN-Uganda
Joint Effort to Save the Environment	Uganda	CAN-Uganda
Kabale Farmers Networking Association (KFNA)	Uganda	CAN-Uganda
KADCF	Uganda	CAN-Uganda
Kagadi Women Development Association (KWDA)	Uganda	CAN-Uganda
Kaliro Youth Forum	Uganda	CAN-Uganda
Kamwokya Community Health and Environmental Protection Association (KACHEPA)	Uganda	CAN-Uganda
Kasiira Foundation	Uganda	CAN-Uganda
KDF	Uganda	CAN-Uganda
Kibaale Youth and Women Development Agency (KYAWDA)	Uganda	CAN-Uganda
Kirimani Foundation	Uganda	CAN-Uganda
Kisoro District NGO/CBO Forum	Uganda	CAN-Uganda

Organization	Country	Regional Node
Kisoro NGO	Uganda	CAN-Uganda
KK Expedition Theatre Group (KETG)	Uganda	CAN-Uganda
Koboko United Women Association (KUWA)	Uganda	CAN-Uganda
KTWDG	Uganda	CAN-Uganda
Kumi Human Rights Initiative (KHRI)	Uganda	CAN-Uganda
Kyetume CBHC Programme	Uganda	CAN-Uganda
Kyosiga Community Christian Association	Uganda	CAN-Uganda
LACWADO	Uganda	CAN-Uganda
Logiri Community Action for Development (LOCADE)	Uganda	CAN-Uganda
Lutheran World Federation	Uganda	CAN-Uganda
Lwengo Rural Development Support Organization - Uganda	Uganda	CAN-Uganda
Manyakabi	Uganda	CAN-Uganda
Maracha Action for Development (MAFORD)	Uganda	CAN-Uganda
Maracha Women Forum (MWF)	Uganda	CAN-Uganda
Masiyompo Elgon Movement	Uganda	CAN-Uganda
Mbarara Carpenter Association	Uganda	CAN-Uganda
Mbarara Women Development Association	Uganda	CAN-Uganda
MECDEF	Uganda	CAN-Uganda
MICDO	Uganda	CAN-Uganda
MIRAC	Uganda	CAN-Uganda
Moyo NGO Forum	Uganda	CAN-Uganda
Multi-Community Based Development Initiative (MUCOBADI)	Uganda	CAN-Uganda
NABO	Uganda	CAN-Uganda
Ndeeba Parish Youth Association	Uganda	CAN-Uganda
Nebbi NGO Forum	Uganda	CAN-Uganda
Nile Rural Advocacy Program for Community Development (NIRAPROCED)	Uganda	CAN-Uganda
NWASEA	Uganda	CAN-Uganda
Nyanyakabi Association Isingiro	Uganda	CAN-Uganda
NYARWODA	Uganda	CAN-Uganda
ODS	Uganda	CAN-Uganda
Offaka United Development Association (OUDA)	Uganda	CAN-Uganda
PACAIP	Uganda	CAN-Uganda
Pallisa Allied Commercial Farmers Association	Uganda	CAN-Uganda
Pallisa Women Group Association	Uganda	CAN-Uganda
Participatory Initiative for Real Development (PIRD-U)	Uganda	CAN-Uganda
PRDO	Uganda	CAN-Uganda
Pro Biodiversity Conservation in Uganda	Uganda	CAN-Uganda
Quba United Development Association (QUDA)	Uganda	CAN-Uganda
RECPA	Uganda	CAN-Uganda
Rock Spring Uganda	Uganda	CAN-Uganda
Rukararwe PWRD	Uganda	CAN-Uganda
Rural Country Development Organization (RUCODE)	Uganda	CAN-Uganda
Rural Welfare Improvement for Development (RWIDE)	Uganda	CAN-Uganda
RUSFERA	Uganda	CAN-Uganda
Rwenkuba Hills Conservation Association	Uganda	CAN-Uganda
Rwerere Women in Development	Uganda	CAN-Uganda
Slum Women's Initiative For Development (SWID)	Uganda	CAN-Uganda
St Joseph's Vocational Training Centre Munteme	Uganda	CAN-Uganda
Strategic Sustainable Consult Ltd	Uganda	CAN-Uganda
Tanganyika Women Activity Development (TWAD)	Uganda	CAN-Uganda
The Good Samaritan Action Ministries (TGSAM)	Uganda	CAN-Uganda
THETA	Uganda	CAN-Uganda
TONASO	Uganda	CAN-Uganda
Tooro Development Agency (TDA)	Uganda	CAN-Uganda
UGADOSS	Uganda	CAN-Uganda
United Humanitarian Development Association (UHDA)	Uganda	CAN-Uganda

Organization	Country	Regional Node
URWA	Uganda	CAN-Uganda
Vision for Africa's Transformation Organization (VATO)	Uganda	CAN-Uganda
Women in Small Scale Enterprises (WSSE)	Uganda	CAN-Uganda
World Wide Fund for Nature (WWF)	Uganda	CAN-Uganda
YASI Moyo	Uganda	CAN-Uganda
Yumbe NGO Forum	Uganda	CAN-Uganda
Initiatives for Sustainable and Integrated Development (IDID)	Benin	CAN-WCN Africa
Naturama	Burkina Faso	CAN-WCN Africa
ADEID	Cameroon	CAN-WCN Africa
Environment Recherche Action Cameroun	Cameroon	CAN-WCN Africa
Foundation for Environment and Development (FEDEV)	Cameroon	CAN-WCN Africa
HATOF Foundation	Ghana	CAN-WCN Africa
Morabi	Cape Verde	CAN-WCN Africa
AGUIPER	Guinea	CAN-WCN Africa
Guinee Ecologie	Guinea	CAN-WCN Africa
Energy & Environment for Rural Development (EDER)	Niger	CAN-WCN Africa
Climate Change Network Nigeria (CCNN)	Nigeria	CAN-WCN Africa
Nigerian Environmental Study/Action Team (NEST)	Nigeria	CAN-WCN Africa
Réseau Environment & Développement - CONGAD	Senegal	CAN-WCN Africa
Environment Development Action in the Third World (ENDA TM)	Senegal	CAN-WCN Africa
Actions en faveur de l'homme et de la nature (AFHON)	Togo	CAN-WCN Africa
Young Volunteers for Environment (JVE)	Togo	CAN-WCN Africa
Association Lead Tchad	Chad	CAN-WCN Africa
Envisciences	Ivory Coast	CAN-WCN Africa
Institute for Essential Service Reform (IESR)	Indonesia	CANSEA
Pelangi Indonesia	Indonesia	CANSEA
WWF - Indonesia	Indonesia	CANSEA
Centre for Environment, Technology and Development, Malaysia	Malaysia	CANSEA
Environmental Protection Society, Malaysia	Malaysia	CANSEA
Malaysian Nature Society	Malaysia	CANSEA
Haribon Foundation	Philippines	CANSEA
Legal Rights & Natural Resources Center/Kasama sa Kalikasan	Philippines	CANSEA
Lingkod Tao Kalikasan	Philippines	CANSEA
Miriam Public Education & Awareness Campaign for the Environment	Philippines	CANSEA
Mother Earth Foundation	Philippines	CANSEA
Philippine Rural Reconstruction Movement	Philippines	CANSEA
Soljuspax/ Sol Justitae Pax	Philippines	CANSEA

Organization	Country	Regional Node
Tanggal Kalikasan	Philippines	CANSEA
Upholding Life and Nature	Philippines	CANSEA
YAMOG Renewable Energy Development Center	Philippines	CANSEA
Renewable Energy Institute of Thailand Foundation	Thailand	CANSEA
Agir Pour l'environnement	France	RAC-France
Alofa Tuvalu	France	RAC-France
Centre National d'Information Indépendante sur les déchets (CNIID)	France	RAC-France
Dossiers et Débats pour le Développement Durable (4D)	France	RAC-France
EcoZac de Rungis	France	RAC-France
EcoZac des Batignolles	France	RAC-France
Energies Durables en Ile-de-France (EDIF)	France	RAC-France
Energies Solidaires	France	RAC-France
Fédération Française des Usagers de la Bicyclette (FUBicy)	France	RAC-France
Gret	France	RAC-France
Ligue de Protection des oiseaux (LPO)	France	RAC-France
Objectif Climat	France	RAC-France
Oxfam France	France	RAC-France
Polenergie	France	RAC-France
Solar Generation	France	RAC-France
Virage Energie	France	RAC-France
WWF France	France	RAC-France
ARCE	Algeria	RAC-Maghreb
Association des Amis de la Saoura	Algeria	RAC-Maghreb
ONG Tenmiya	Mauritania	RAC-Maghreb
Groupe d'Etudes et de Recherche sur les Energies Renouvelables et l'Environnement (GERERE)	Morocco	RAC-Maghreb
Association Tunisienne pour la Protection de la Nature et de l'Environnement (ATPNE)	Tunisia	RAC-Maghreb
Climate Action Partnership	South Africa	SACAN
Ecocity (CURES)	South Africa	SACAN
Environmental Monitoring Group (EMG)	South Africa	SACAN
Greater Edendal Environmental Network (GREEN)	South Africa	SACAN
GreenHouse Peoples' Environmental Centre	South Africa	SACAN
Minerals and Energy Education and Training Institute	South Africa	SACAN
Project 90x2030	South Africa	SACAN
Southern African Faith Communities' Environment Institute	South Africa	SACAN
SouthSouthNorth	South Africa	SACAN
Sustainable Energy Society Southern Africa (SESS)	South Africa	SACAN
Timberwatch	South Africa	SACAN
WWF South Africa	South Africa	SACAN
ZERO Regional Environment Organization	South Africa	SACAN
Botswana Technology Centre (BOTEC)	Botswana	SARCAN
Lesotho Council of NGOs (LCN)	Lesotho	SARCAN
PELUM	Lesotho	SARCAN
Council for Development and Environmental Studies & Conservation (Maudesco)	Mauritius	SARCAN

Organization	Country	Regional Node
Action Group for Renewable Energies and Sustainable Development (GED)	Mozambique	SARCAN
Justiça Ambiental (JA)	Mozambique	SARCAN
Livaningo	Mozambique	SARCAN
CRIAA SA-DC	Namibia	SARCAN
Desert Research Foundation of Namibia	Namibia	SARCAN
ELA Namibia	Namibia	SARCAN
Renewable Energy and Energy Efficiency Bureau of Namibia (R3E)	Namibia	SARCAN
ELA Namibia	Namibia	SARCAN
Yonge Nawe Environmental Action Group	Swaziland	SARCAN
Centre for Energy, Environment and Engineering (CEEEZ)	Zambia	SARCAN
Energy and Environmental Concerns for Zambia	Zambia	SARCAN
ZERO Regional Environment Organization	Zimbabwe	SARCAN
ISky	USA	USCAN
350.org	USA	USCAN
ACEEE (American Council for an Energy Efficient Economy)	USA	USCAN
ActionAid USA	USA	USCAN
AED	USA	USCAN
Alliance for Affordable Energy	USA	USCAN
Alliance for Climate Protection	USA	USCAN
Alliance to Save Energy (ASE)	USA	USCAN
Avaaz	USA	USCAN
Center for Biological Diversity	USA	USCAN
Center for Clean Air Policy	USA	USCAN
CERES	USA	USCAN
Chesapeake Climate Action Network (CCAN)	USA	USCAN
CIEL	USA	USCAN
Clean Air-Cool Planet	USA	USCAN
Clean Water Action	USA	USCAN
Climate Law and Policy Project	USA	USCAN
Climate Protection Campaign	USA	USCAN
Climate Solutions	USA	USCAN
Coalition on the Environment and Jewish Life (COEJL)	USA	USCAN
Conservation International	USA	USCAN
Conservation Law Foundation	USA	USCAN
Defenders of Wildlife	USA	USCAN
EarthDay Network	USA	USCAN
Earthjustice	USA	USCAN
Ecoequity	USA	USCAN
Energy Action	USA	USCAN
Environment America	USA	USCAN
Environment Northeast	USA	USCAN
Environmental & Energy Study Institute (EESI)	USA	USCAN
Environmental Advocates of New York	USA	USCAN
Environmental Defense	USA	USCAN
Environmental Investigation Agency	USA	USCAN
Environmental Law & Policy Center (ELPC)	USA	USCAN
Fresh Energy	USA	USCAN
Friends Committee on National Legislation	USA	USCAN
Friends of the Earth (FoE) - US	USA	USCAN
Georgetown Climate Center	USA	USCAN

Organization	Country	Regional Node
Green For All	USA	USCAN
Greenpeace	USA	USCAN
ICLEI-Local Governments for Sustainability	USA	USCAN
International Forum on Globalization	USA	USCAN
International Rivers	USA	USCAN
IPS/Sustainable Energy & Economy Network (SEEN)	USA	USCAN
Kyoto USA	USA	USCAN
League of Conservation Voters	USA	USCAN
Massachusetts Climate Action Network	USA	USCAN
National Audubon Society	USA	USCAN
National Teach-in on Global Warming Solutions	USA	USCAN
National Wildlife Federation (NWF)	USA	USCAN
Natural Resources Defense Council	USA	USCAN
North Carolina Conservation Network	USA	USCAN
Oceana	USA	USCAN
Oil Change International	USA	USCAN
Oregon Environmental Council	USA	USCAN
Oxfam America	USA	USCAN
Penn Future	USA	USCAN
Pew Environment Group	USA	USCAN
Physicians for Social Responsibility	USA	USCAN
Presbyterian Church USA	USA	USCAN
Rainforest Action Network	USA	USCAN
Redefining Progress	USA	USCAN
Regeneration Project	USA	USCAN
Religious Witness for the Earth	USA	USCAN
Rocky Mountain Institute	USA	USCAN
SEED Coalition	USA	USCAN
Sierra Club	USA	USCAN
Southern Alliance for Clean Energy	USA	USCAN
Southwest Energy Efficiency Project (SWEET)	USA	USCAN
SustainUS	USA	USCAN
Tellus Institute	USA	USCAN
Texas Public Citizen	USA	USCAN
The Emmett Center on Climate Change and the Environment	USA	USCAN
The Joint Center for Political and Economic Studies	USA	USCAN
The Nature Conservancy (TNC)	USA	USCAN
The Wilderness Society	USA	USCAN
U.S. Green Building Council (USGBC)	USA	USCAN
Union of Concerned Scientists	USA	USCAN
WEDO	USA	USCAN
Will Steger Foundation	USA	USCAN
Woods Hole Research Center	USA	USCAN
World Resources Institute (WRI)	USA	USCAN
World Wildlife Fund	USA	USCAN
Worldwatch Institute	USA	USCAN
Global Village of Beijing	China	CCAN
Institute for Environment & Development	China	CCAN
Environment Friendly Charity Association	China	CCAN
Friends of Nature	China	CCAN
Shan Shui Conservation Centre	China	CCAN
CANGO	China	CCAN