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Energy Efficiency and Renewable Energy Project: Capacity Building and Training Programme

Carbon Markets

Workshop Materials

21st & 22nd March 2012

ITP/ 11052

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ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECT: CAPACITY BUILDING AND TRAINING PROGRAMME

Funded by the Caribbean Electric Utility Service Corporation (CARILEC)

Date: 21 & 22 of March 2012

Place of the Workshop: University of the West Indies

DAY 1

TEACHING SEGMENT 1:CDM AND ITS APPLICABILITY FOR THE CARIBBEAN REGION

8:30	Registration
9:00	Welcome & Agenda
9:15	Objectives of the Workshop
9:30	Climate Change Negotiations
10:00	Kyoto Protocol and the Flexible mechanisms
10:30	*Coffee Break*
10:45	Clean Development Mechanism
12:00	*Lunch Break*
13:00	Programmatic CDM (pCDM) or Programme of Activities (PoA)
14:30	Applicability of CDM and pCDM for the Caribbean Region
14:45	*Coffee Break*
15:00	Case studies of CDM projects in the Caribbean Region
16:00	Lessons learn from developing CDM project
16:30	List of do and Don't when developing CDM project
17:00	*Close of Teaching Segment 1*

DAY 2

Teaching Segment 2: Other Carbon Market Schemes; and
Teaching Segment 3: Carbon Market theory

Teaching Segment 2: Other Carbon Market Schemes	
9:00	Overview of other (current/planned) carbon market schemes/mechanisms – namely under the voluntary carbon market
10:30	Facts and figures of voluntary carbon market schemes
10:45	Coffee-Break
11:00	How can developing countries and specially projects in the Caribbean region benefit from these schemes/mechanisms
11:45	Future of the carbon market and expected impacts for the region
12:00	Lunch Break
13:00	Possibilities for RE projects developed in the region to qualify and earn revenue from the sale of carbon credits
Teaching Segment 3: Carbon Market Theory	
14:00	Brief overview of the carbon market theory;
14:25	Potential advantages and disadvantages of carbon markets
14:45	Environmental externalities
15:00	*Coffee-break*
15:15	Theory of externalities of climate change and market failure
15:30	Policy option for dealing with environmental externalities
16:00	Establishments of the carbon prices from its supply and demand curves
16:30	Issues affecting the supply and demand of carbon
17:00	*Close of Workshop Day 2*

Teaching Segment 1: CDM and its applicability for the Caribbean Region

ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECT:
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OBJECTIVES OF THE WORKSHOP

Objectives of the Workshop

- This Project builds on the first tranche of the training programme carried out in the region: CARILEC Energy Efficiency and Renewable Energy Project carried out in September 2011
- Raise awareness of participants on the relevance of carbon market finance for the small island electric utilities within the Caribbean: namelly CDM, pCDM and voluntary mechanisms.
- The presentations will focus specifically on the benefits of carbon finance to the development of renewable energy and energy efficiency projects.
- The workshop will address the key steps required for renewable energy and energy efficiency projects developed in the region to take advantage of carbon market opportunities.

Structure

- Module 1: Clean Development Mechanism and its applicability for the Caribbean Region
- Module 2: Other Carbon Market Schemes for developing countries and its applicability within the region
- Module 3: Carbon Market theory

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Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

CLIMATE CHANGE NEGOTIATIONS

Scope

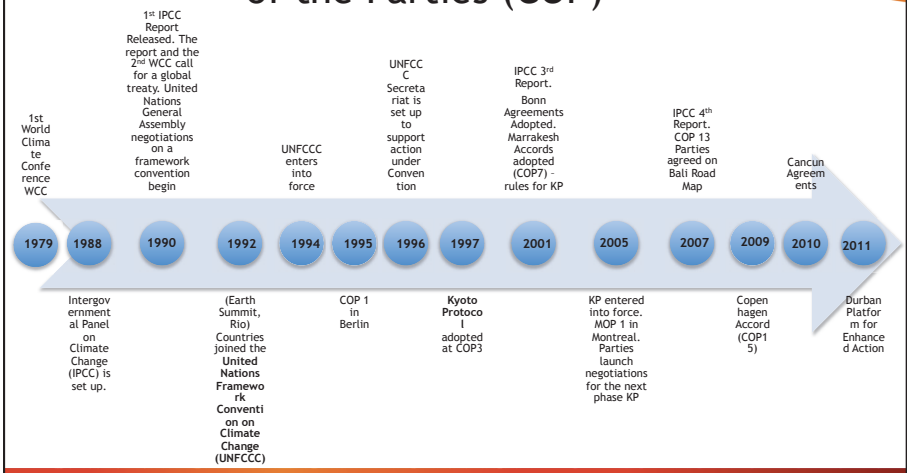
- UNFCCC and the Conference of the Parties (COP)
- UNFCCC Bodies
  - The Secretariat and Subsidiary Bodies
  - Expert Groups and other Constituted Bodies
  - Other Bodies
- Key objectives and characteristics of the Climate Change Negotiations
- Post 2012 and its implications for the Caribbean region

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

CLIMATE CHANGE NEGOTIATIONS

UNFCCC and the Conference of the Parties

UNFCCC and the Conference of the Parties (COP)



UNFCCC and the Conference of the Parties (COP)

- June 1992 Countries joined an international treaty, UNFCCC, to cooperatively consider what they could do to limit average global temperature rise and the resulting climate change and to cope with its impacts
- March 1994 UNFCCC entered into force following ratification by 50 countries. The main objective of the treaty:

achieve ... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner.

- 1995 the UNFCCC was adopted and negotiations to strengthen the global response to climate change were launched
- 1997 the Kyoto Protocol was adopted
- Kyoto Protocol - legally binds developed countries to emission reduction targets and the first commitment period started in 2008 and ends in 2012

UNFCCC: The Secretariat and Subsidiary bodies

COP - Supreme decision making body of the Convention. *Review and promote implementation of the Convention and any other legal instruments that COP adopts*

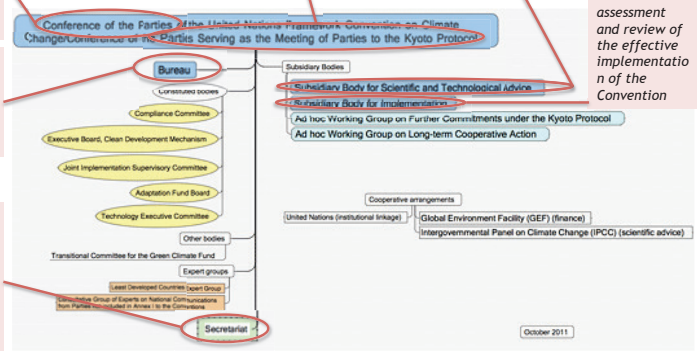
provision of advice and decisions related to the ongoing work under the Convention, its conferences and secretariat

organizational support and technical expertise to the UNFCCC negotiations and institutions and facilitates the flow of authoritative information on the implementation of the Convention and the Kyoto Protocol

CMP reviews the implementation of the Kyoto Protocol and takes decision to promote its effective implementation.

provision of timely information and advice on scientific and technological matters as they relate to the Convention or the Kyoto Protocol.

assessment and review of the effective implementation of the Convention



UNFCCC: Constituted Bodies and Expert Groups

Compliance Committee *aims to provide advice and assistance to Parties in order to promote compliance and determine consequences for Parties not meeting their commitments*

CDM-EB -*supervises the KP CDM under the authority and guidance of the CMP. IT is the ultimate point of contact for CDM Project Participants for the registration of projects and the issuance of Certified Emissions Reductions (CER)*

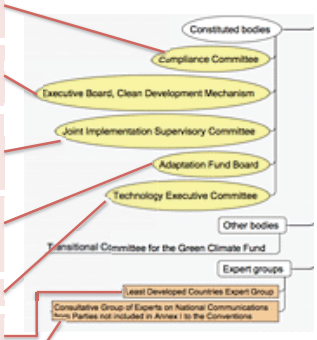
JISC -*under the authority and guidance of the CMP, supervises the verification procedure for submitted projects to confirm that the ensuing reductions of emissions by sources or enhancements of anthropogenic removals by sinks meet the relevant requirements of Article 6 and the JI these guidelines*

AFB - *manages the Adaptation Fund.* was established to finance concrete adaptation projects and programmes in developing country parties that are particularly vulnerable to the adverse effects of climate change. The Fund is filled by a 2% levy on CDM transactions.

TEC - *is the policy arm of the Technology Mechanism*

LEG - *to be nominated by Parties, with the objective of supporting the preparation and implementation strategy of national adaptation programmes of action (NAPAs)*

Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) was established *with the objective of improving the process of preparation of national communications from non-Annex I Parties*



UNFCCC: Other Bodies

Transitional Committee for the Green Climate Fund (TC-GCF) - charged by the COP to design the Green Climate Fund. The Green Climate Fund will support projects, programmes, policies and other activities in developing country Parties using thematic funding windows.

United Nations Institutional Linkage - The United Nations serves as depository for the Convention and the Kyoto Protocol. The secretariat is institutionally linked to the United Nations without being integrated in any programme, and is administered under United Nations Rules and Regulations.

GEF is an operational entity of the financial mechanism of the Convention that provides financial support to the activities and projects of Non-Annex I Parties. The COP regularly provides guidance to the GEF

The IPCC is a scientific body. It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. It does not conduct any research nor does it monitor climate related data or parameters. The COP receives the outputs of the IPCC and uses IPCC data and information as a baseline in.

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

CLIMATE CHANGE NEGOTIATIONS

Key Objectives & Characteristics of Climate Change Negotiations

Key Objectives & Characteristics of the Climate Change Negotiations

- 1st Stage of Negotiations:
  - Set up the framework of Governance: UNFCCC which was adopted in 1992 and entered into force in 1994
- 2nd Stage of Negotiations: Kyoto Protocol
  - Negotiation begin in 1995 and KP was adopted in 1997 (at COP3)
  - 2001: Bonn Agreement outlined the rules for the KP
  - 2001: Marrakech Accords (COP 7) – set up the operational rules for the KP
  - KP It set up:
    - emissions reduction targets for 37 developed countries and the European community (Annex I under the UNFCCC).
    - Individual targets were intended to reduce emissions by develop countries by 5% against 1990 levels over 5 year period (2008-2012)
    - mechanisms to help countries reach their targets in a cost-effective way: Emissions Trading Schemes (ETS), the Clean Development Mechanism (CDM); and Joint Implementation (JI)
  - 2005: KP entered into force

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations

2 Tracks

1) Ad hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP)
intended to negotiate improvements in the KP and a second set of emissions targets. This track covers only the developed countries signed up to the first commitment period of the Kyoto Protocol (not the US).

2) Ad hoc Working Group on Long-Term Cooperative Action (AWG-LCA) launched by the Bali Action Plan to work on an 'agreed outcome' under the UNFCCC
this includes mitigation actions for developed countries, nationally appropriate mitigation actions (NAMAs) by developing countries, financial arrangements, adaptation, technology transfer and a system for monitoring, reporting and verification.

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations (cont.)
  - Bali Action Plan & Bali Road Map
    - 2007 Bali Climate Change Conference culminated in the adoption of the Bali Road Map, which consists of a number of forward-looking decisions that represent the various tracks that are essential to reaching a secure climate future.
    - Bali Road Map includes the Bali Action Plan:
      - charted the course for a new negotiating process designed to tackle climate change, with the aim of being completed by 2009, along with a number of other decisions and resolutions.
      - Governments divided the plan into five main categories: shared vision, mitigation, adaptation, technology and financing
      - Other decisions:
        - » A decision on deforestation and forest management;
        - » A decision on technology for developing countries;
        - » The establishment of the Adaptation Fund Board
        - » The review of the financial mechanism, going beyond the existing Global Environmental Facility.
    - Bali Road Map was designed so that an agreement would be reach at COP 15 in Copenhagen

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations

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Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations

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Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations (cont.)
  - COP 15 – Copenhagen 2009
    - It was a crucial event in the negotiating process has:
      - It significantly advanced the negotiations on the infrastructure needed for effective global climate change cooperation, including improvements to the CDM of the KP.
      - Significant progress was made in narrowing down options and clarifying choices needed to be made on key issues later on in the negotiations.
      - It produced the Copenhagen Accord, which expressed clear a political intent to constrain carbon and respond to climate change, in both the short and long term.

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations (cont.)
  - COP 15 – Copenhagen 2009
    - Key elements of the Copenhagen Accord:
      - Long-term goal of limiting the maximum global average temperature increase to no more than 2 degrees Celsius about pre-industrial levels, subject to a review in 2015 – however no agreement on how this would be practically achieved;
      - Developed countries' promised to fund actions to GHG emissions and to adapt to the inevitable effects of climate change in developing countries. Developed countries promised to provide US$30 billion for the period 2010-2012, and to mobilize long-term finance of a further US$100 billion a year by 2020 from a variety of sources.
      - Agreement on the measurement, reporting and verification of developing country actions, including a reference to "*international consultation and analysis*", which had yet to be defined.
      - The establishment of four new bodies: a mechanism on REDD-plus, a High-Level Panel under the COP to study implementation of financial provisions, the Copenhagen Green Climate Fund, and a Technology Mechanism.
    - Failed in terms of producing a legally-binding Agreement

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations (cont.)
  - Cancun, Mexico 2010
    - The Cancun Agreements represent the key steps forward in capturing plans to reduce GHG emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures.
    - Does more than incorporating the key points of the Copenhagen Accord, it elaborates them and makes them operational
    - The Cancun Agreement agrees that deep cuts in emissions are necessary to achieve the 2°C limit. Room was left for a change in this limit of 2 °C to a lower limit of 1.5 °C as part of a review of the Agreement's implementation to be completed by 2015
    - Major emitting nations have begun to seriously engage in the climate challenge.

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations (cont.)
  - Cancun, Mexico 2010
    - Main objectives :
      - establish clear objectives for reducing human-generated GHG emissions over time to keep the global average temperature rise below 2ºC
      - encourage the participation of all countries in reducing these emissions, in accordance with each country's different responsibilities and capabilities to do so
      - ensure the international transparency of the actions which are taken by countries and ensure that global progress towards the long-term goal is reviewed in a timely way
      - mobilize the development and transfer of clean technology to boost efforts to address climate change, getting it to the right place at the right time and for the best effect
      - mobilize and provide scaled-up funds in the short and long term to enable developing countries to take greater and effective action
      - assist the particularly vulnerable people in the world to adapt to the inevitable impacts of climate change
      - protect the world's forests, which are a major repository of carbon
      - build up global capacity, especially in developing countries, to meet the overall challenge
      - establish effective institutions and systems which will ensure these objectives are implemented successfully

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations (cont.)
  - Cancun, Mexico 2010
    - Importance:
      - they form the basis for the largest collective effort the world has ever seen to reduce emissions, in a mutually accountable way, with national plans captured formally at international level under the banner of the United Nations Framework Convention on Climate Change.
      - they include the most comprehensive package ever agreed by Governments to help developing nations deal with climate change. This encompasses finance, technology and capacity-building support to help them meet urgent needs to adapt to climate change and to speed up their plans to adopt sustainable paths to low emission economies which can also resist the negative impacts of climate change.
      - they include a timely schedule for nations under the Climate Change Convention to review the progress they make towards their expressed objective of keeping the average global temperature rise below 2ºC. This includes an agreement to review whether the objective needs to be strengthened in future, on the basis of the best scientific knowledge available.

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations (cont.)
  - Cancun, Mexico 2010
    - New institutions that will be developed:
      - A Green Climate Fund: To house the international management, deployment and accountability of long-term funds for developing country support
      - A Technology Mechanism: to get clean technologies to the right place, at the right time and to best effect
      - An Adaptation Framework: to boost international cooperation to help developing countries protect themselves from the impacts of climate change;
      - A Registry: where developing countries will detail their voluntary plans (NAPAs) to limit GHG emissions and the support they need to achieve them

Key Objectives & Characteristics of the Climate Change Negotiations

- 3rd Stage of Negotiations: Post- 2012 Negotiations (cont.)
  - Durban Climate Change Conference, Nov/Dec 2011
    - Negotiations for the implementation of the Convention, the KP, the Bali Roadmap and the Cancun Agreements
    - included a decision by Parties to adopt a universal legal agreement on climate change as soon as possible, and no later than 2015
    - Main outcomes:
      - It wrapped up much of the remaining work to elaborate the Copenhagen/ Cancun process, by adopting the governing instrument of the new Green Climate Fund and a transparency rules for both developed and developing countries pledges.
      - It agreed to extend the Kyoto Protocol by another 5-8 years (2013-2020). Although the emissions targets for Kyoto's second commitment period still need to be worked out, and the formal amendment won't be adopted until next year, the basic political decision to extend the Protocol was made in Durban.
      - It agreed to launch a new negotiating process to develop a "protocol, another legal instrument, or agreed outcome with legal force," addressing the post-2020 period and "applicable to all Parties."

COP17/CMP7
UNITED NATIONS
CLIMATE CHANGE CONFERENCE 2011
DURBAN, SOUTH AFRICA

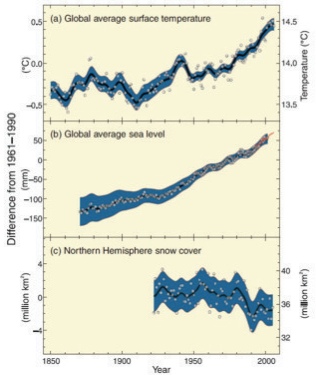
Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

CLIMATE CHANGE NEGOTIATIONS

The Caribbean Region and the implications of the Post 2012 Negotiations

The Caribbean Region and the Implications of the Post-2012 Negotiations

- Although small Island States emit <1% of global GHG emissions, they are the ones they are amongst the *mos vulnerable* groups to GCC, and have *low adaptive capa*
- Facts:
  - Annual average losses from wind, storm surge, and inland flooding are estimated to be as high as 6% of GDP in some countries, and climate change has the potential to increase these risks 33-50% by 2030
  - if no action is taken, increased hurricane damages, loss of tourism revenue, and infrastructure damages could total US$22 billion a year by 2050 and US$46 billion by 2100
  - Sea level rise (SLR) of 1 meter is projected to put 266 out of 906 tourism resorts and 26 out of 73 airports in the Caribbean at risk of inundation
  - An estimated 49% of major tourism resorts in CARICOM would be damaged or destroyed by combined SLR and storm surge and SLR-enhanced erosion
  - Climate change impacts in the Caribbean region are already being felt: tourism sector, the economies and livelihoods are already being affected by SLR and erosion and also by extreme impacts such as coral bleaching, flooding, and drought.



Source: IPCC, http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf.

The Caribbean Region and the Implications of the Post-2012 Negotiations

- Implications of the Post 2012 Negotiations for the Caribbean Region:
  - The agreement on a KP2 for the 2013-20 period is a good sign for the Caribbean region;
  - Durban made progress on requirements for Measurement, Reporting and Verification (MRVs) of emissions, such as agreed guidelines on the International Consultation and Analysis (ICA) of developing country mitigation actions and of International Assessment and Review (IAR) for such efforts by developed countries. SIDS are exempt to conduct NAMAs
  - The inclusion of at lest one SIDS party in the Adaptation Committee was a step forward;
  - Inclusion of the issue of loss and damage in the Cancun text for COP consideration (IISDa, 2011) was as well a step forward

The Caribbean Region and the Implications of the Post-2012 Negotiations

- Implications of the Post 2012 Negotiations for the Caribbean Region:
  - Durban made some progress with the technical details of the Green Climate Fund: the goal is to raise US$100 billion for this fund by 2020 - Caribbean countries could use this fund to help adapt to climate change impacts and reduce their emissions.
  - Limit the temperature increase by 2°C above industrial levels continues to be the target despite all efforts of SIDS to limiting it to 1.5°C - however this will be reassessed in 2014 with the completion of 5th Assessment Report by the IPCC
  - At the Durban, the SIDS-DOCK initiative also launched in Cancun in 2010 and which supports clean energy efforts of the world's small island developing states, received US$15 million from Japan to add to the initial US$14.5 million pledged by Denmark – this money can be used by the Caribbean region for funding alternative energy feasibility studies in Caribbean nations and the interconnection of the region's electricity markets

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Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE KYOTO PROTOCOL & FLEXIBLE MECHANISMS

Scope

- The Kyoto Protocol
- Flexible Mechanisms Contemplated in the Kyoto Protocol
  - CDM, JI and IET
  - Emissions Trading
  - EU ETS
- The Carbon Market
  - Why a carbon market
  - How carbon markets support GHG mitigation
  - Development of the Carbon Market to date
  - Overview of the carbon market demand
  - Key factors affecting supply and demand of carbon credits
  - Possible developments for the carbon market in the future

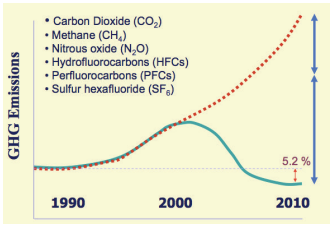
Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE KYOTO PROTOCOL & THE FLEXIBLE MECHANISMS

The Kyoto Protocol

The Kyoto Protocol

- it is an international agreement, which builds on the *United Nations Framework Convention on Climate Change (UNFCCC)*, that sets legally binding targets and timetables for cutting the GHG emissions of industrialized countries



- The most important decision of UNFCCC
- Developed countries agreed to reduce emissions to ***5.2 percent below 1990 levels***, within commitment period **2008 to 2012**

The Kyoto Protocol

Division of Parties by Annex

ANNEX I

ANNEX II

Australia / Austria / Belgium / Canada / Denmark / EC / Finland / France / Germany / Greece / Iceland / Ireland / Italy / Japan / Luxembourg / Netherlands / New Zealand / Norway / Portugal / Spain / Sweden / Switzerland / Turkey / United Kingdom / USA

Belarus / Bulgaria / Croatia / Czech Republic / Estonia / Hungary / Latvia / Liechtenstein / Lithuania / Monaco / Poland / Romania / Russian Federation / Slovakia / Slovenia / Ukraine

(EIT Countries)

NON-ANNEX I COUNTRIES = All the Rest of Ratifying Countries

The Kyoto Protocol

Emission Reduction Targets under the KP (% of 1990 base year)

Industrialized Countries		Economies in Transition (EIT)	
• Australia	+8%	• Bulgaria	-8%
• Canada	-6%	• Croatia	-5%
• EC bubble	-8%	• Czech Republic	8%
• *(Germany -21%)*		• Estonia	-8%
• *(Portugal +27%)*		• Poland	-8%
• *(Netherlands -12.5%)*		• Romania	-8%
• Japan	-6%	• Russia	0%
• USA	-7%	• Ukraine	0%

Examples of the pledges made for the KP2

Industrialized Countries	Economies in Transition (EIT)	Other Parties
• Canada : -17% by 2020 relative to 2005 levels • EC bubble: -20% by 2020 and -30% by 2030 (if major economies agree to it) • USA : -17% by 2020 relative to 2005 levels		• China: reduce its CO2 emissions per unit of GDP by 40-45% by 2020 compared to 2005 • India: reduce 20-25% relative to 2005 levels

Flexible Mechanisms

- The Flexible Mechanisms :
  - Stimulate sustainable development through technology transfer and investment
  - Help countries with Kyoto commitments to meet their targets by reducing emissions or removing carbon from the atmosphere in other countries in a cost-effective way
  - Encourage the private sector and developing countries to contribute to emission reduction efforts

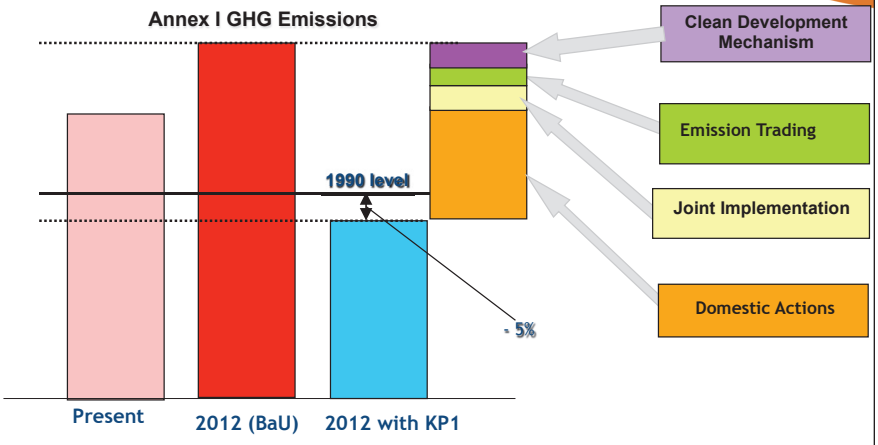
Flexible Mechanisms

KP FLEXIBLE MECHANISMS

Project Based

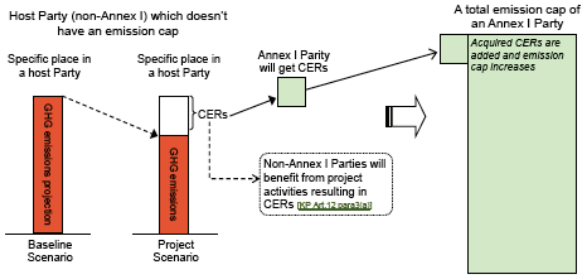
Clean Development Mechanism (CDM)	Joint Implementation (JI)	International Emissions Trading (IET)
• Aims to assist non-Annex I countries achieve sustainable development • Annex I countries with emission caps pay to implement projects to achieve emission reductions in developing countries. Credits issues based on emission reductions of project.	• Annex I country assists another Annex I country to implement project to reduce emissions.	• Trade of emissions allowances or reduction credits. Aim is to reduce total costs of achieving collective emissions reductions. Total amount of emissions reductions of Annex I countries does not change
Between developed and developing countries	Between developed countries	Between developed countries

Flexible Mechanisms



Flexible Mechanisms: Clean Development Mechanism

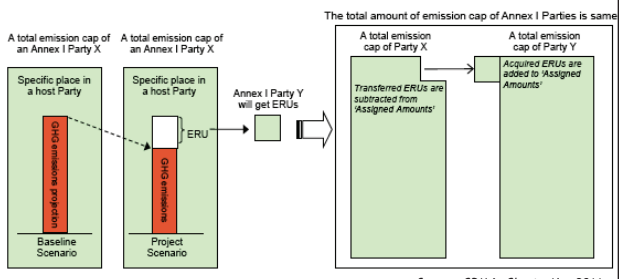
- The Clean Development Mechanism (CDM):
  - Annex I parties have ceilings for GHG emissions
  - They assist non-Annex I countries which don't have caps to implement projects to reduce GHG emissions (or remove by sinks) and the CERs are issued based on emissions reductions
  - Annex I countries can use CERs to contribute to compliance of their quantified GHG emission reduction targets under KP – result: the emission cap of these countries will increase



Source: CDM in Charts, Nov 2011

Flexible Mechanisms: Joint Implementation

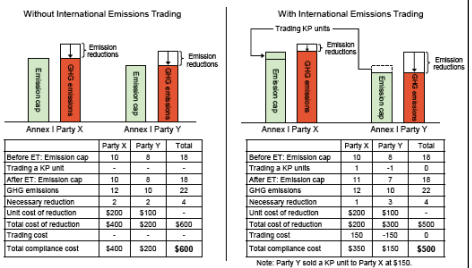
- Joint Implementation (JI):
  - Annex I parties which have ceilings for GHG emissions assist other Annex I to implement projects to reduce GHG emissions (remove by sinks), and credits are issued (ERU, Emission Reduction Unit)
  - Annex I countries can use ERU to contribute to compliance of their quantified GHG emission reduction targets under KP
  - the total amount of Annex I emissions cap wil not change, because JI is credit transfer btw Parties both of which have emission caps



Source: CDM in Charts, Nov 2011

Flexible Mechanisms: International Emission Trading

- Emissions trading (art. 17 of the KP) allows countries that have emission units to spare (emissions permitted but not "used") - to sell this excess capacity to countries that are over their targets.
- IET is to trade KP units (CERs, ERUs, etc) between Annex I Parties:
  - The total amount of emission cap of Annex I Parties will not change;
  - Only Annex B Parties of the KP can participate in IET;
  - Minimum trading unit if 1tCO2e
- Through market mechanism, International Emissions Trading can decrease total cost of Annex I Parties to achieve their collective emission reduction targets.



	Party X	Party Y	Total
Before ET: Emission cap	10	8	18
Trading a KP unit	-	-	-
After ET: Emission cap	10	8	18
GHG emissions	12	10	22
Necessary reduction	2	2	4
Unit cost of reduction	$200	$100	-
Total cost of reduction	$400	$200	$600
Trading cost	-	-	-
Total compliance cost	$400	$200	**$600**

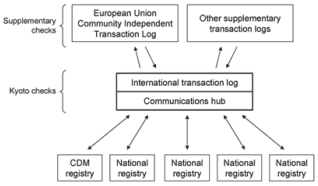
	Party X	Party Y	Total
Before ET: Emission cap	10	8	18
Trading a KP units	1	-1	0
After ET: Emission cap	11	7	18
GHG emissions	12	10	22
Necessary reduction	1	3	4
Unit cost of reduction	$200	$100	-
Total cost of reduction	$200	$300	$500
Trading cost	150	-150	0
Total compliance cost	$350	$150	**$500**

Note: Party Y sold a KP unit to Party X at $150.

Source: CDM in Charts, Nov 2011

Flexible Mechanisms: International Emission Trading

- Other units in the Carbon Market (each equal to 1tonne CO2):
  - Assigned amount unit (**AAU**) - calculated from its base year emissions and emission target
  - A removal unit **(RMU)** on the basis of A/R activities and additional GHG removal by sinks
  - An emission reduction unit **(ERU)** generated by a JI project
  - A certified emission reduction **(CER)** generated from a CDM project activity
- Transfers and acquisitions of these units are tracked and recorded through the registry systems under the KP (National Registries and the International Transaction Log)



Source: UNFCCC website

GHG emission cap of Annex I Party at the end of the 1st Commitment period is:

Emission cap of Annex I Party = AAUs + RMUs + Acquired credits from JI and CDM (CERs+ERU) ± Acquired and transferred KP units by International Emissions Trading

Flexible Mechanisms: EU ETS

- European Union Emission Trading Scheme (EU ETS)
  - An entity-based domestic "cap and trade" emissions allowance programme
  - Governed by Community Law using a special unit of trade - "allowances"
  - Compatible with international emissions trading under Kyoto, contributing towards Kyoto targets
  - The cap determines the maximum amount of emission allowances - and for 2003 is determined to be just under 2.04 billion allowances

Summary:

- Phase 1: 2005-07

  Phase 2: 2008 -12
- 50% of CO2 emissions that occur within a region in the world that is responsible for 17% of the global energy-related GHG emissions
- Covers 12,000 plants within the industrial and electricity generation sector in the EU 27

Flexible Mechanisms: EU-ETS

- EU ETS - who is affected?
  - 1st and 2nd Commitment Period:
    - covered power stations and other combustion plants, oil refineries, coke ovens, iron and steel plants and installations producing cement, glass, lime, bricks, ceramics, pulp, paper and board
    - Only carbon dioxide emissions
  - 3rd Commitment Period:
    - will be extended to include other sectors and greenhouse gases.
    - CO_2 emissions from installations producing bulk organic chemicals, hydrogen, ammonia and aluminium will be included, as will nitrous oxide (N2O) emissions from the production of nitric, adipic and glyocalic acid production and perfluorocarbons from the aluminium sector.

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE KYOTO PROTOCOL & THE FLEXIBLE MECHANISMS

Carbon Market

Carbon Market

- Why a carbon market?
  - Regulatory pressure on firms, governments, and even individuals to constrain their greenhouse gases (GHGs) emissions
  - Voluntary reasons firms, governments, individuals and other organisations constrain emissions – carbon neutral
  - Both domestic reductions and purchase of outside "GHG emission reductions"
  - As GHGs settle in the atmosphere, it does not matter where emissions are reduced
  - Opportunity for countries such as the Caribbean ones to benefit from investment in activities to reduce

The Carbon Market is the key tool for reducing emissions worldwide.

Carbon Market

- How carbon markets support GHG mitigation

Pricing carbon emissions

- Cap and Trade
  - EU ETS
  - New Zealand ETS

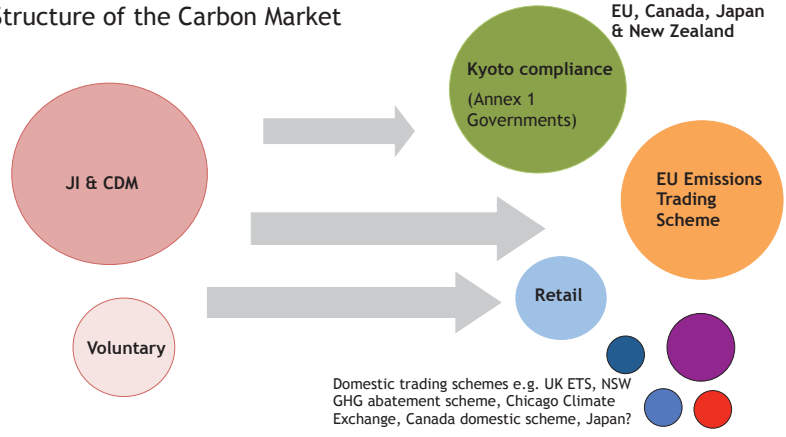
Promoting Non-Fossil Energy

- Renewable Energy
  - Feed in Tariffs
  - Quota Systems
  - Public Tendering
  - Bonus System

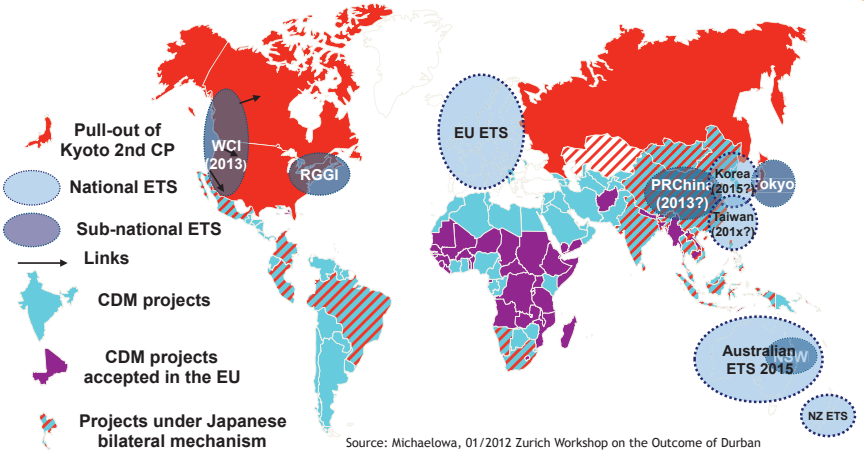
Mitigation of GHGs

Carbon Market

Structure of the Carbon Market



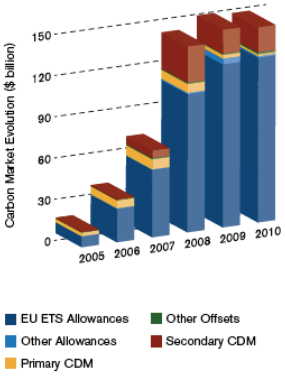
Carbon Market



Source: Michaelowa, 01/2012 Zurich Workshop on the Outcome of Durban

Carbon Market

- Development of the Carbon Market
  - Global Carbon Market total value: $142billion
  - Suffering from the lack of post-2012 regulatory clarity, the value of the primary CDM from $2.7billion to $1.4billion (lower than 2005);
  - The Assigned Amount Unit (AAU) market, which grew in 2009 shrank as well in 2010.
  - the market that had grown most in 2009 — allowances under the U.S. Regional Greenhouse Gas Initiative (RGGI)—saw that year's gains erased in 2010.
  - European Union Allowances (EUAs) market: was responsible for 84% of the global carbon market value in 2010
  - EU ETS (EUAs+ 2nd CDM): responsible for 97% of the global carbon market



Source: WB, State and Trends of the Carbon Market, June 2011

Carbon Market

- Supply and Demand (2008-2012)

	Potential demand	Contracted CERs and ERUs		AAUs	Residual demand
	($MtCO_2e$)	nominal ($MtCO_2e$)	adjusted for performance ($MtCO_2e$)	($MtCO_2e$)	($MtCO_2e$)
EU	**1,065**	**1,868**	**883**	**54**	**129**
Government (EU-15)	315	270	132	54	129
Private sector (EU ETS)	750	1,598	751	0	0 (-1)
Japan	**300**	**372**	**180**	**191**	**3**
Government of Japan	100	34	21	76	3
Japanese private sector	200	338	159	115	0 (-74)
Rest of Annex B	**27**	**40**	**22**	**1**	**5**
Government	22	37	21	1	1
Private sector	5	3	1	0	4
Total	**1,392**	**2,280**	**1,085**	**245**	**136**
Government	437	341	174	130	133
Private sector	955	1,939	911	115	4

Note: Numbers may not add up due to rounding. A portion of the purchases attributed to the European private sector relates to portfolios of intermediaries that are available for secondary transactions. In addition to the volumes reported above, about 173 million tons (nominal) are contracted but not attributed, and are very likely in the hands of intermediaries. They could represent about 83 million tons also available for secondary transactions, with public or private entities.

Source: WB, State and Trends of the Carbon Market, June 2011

Expected **gross use** of Kyoto assets now stands at 1.39 billion tCO2e over 2008-12 - 70% of demand coming from the private sector.

Adjusting the approximate 2.4 billion CERs and ERUs contracted (nominal) for risk of underdelivery and accounting for AAU transactions as well as some secondary transactions by governments - estimated residual demand of 136 MtCO2e of Kyoto assets over the next two years, comes all from European governments

Carbon Market

- Demand post-2012:
  - future demand for emission reductions generated in developing countries remains a delicate and heroic exercise as many initiatives looking beyond 2012 are still at the proposal stage and will likely be influenced by the outcome of the ongoing negotiations.
  - Key features of many of these proposals are not yet fully specified, with uncertainties as to the amount of credits that could be used to meet compliance obligations, eligible mechanisms or standards, and further qualitative restrictions (for example, on country of origin or technology)
  - Thus the WB analysed 3 scenarios of demand:
    - (1) enacted and proposed initiatives aligned with unconditional pledges under the Copenhagen Accord,
    - (2) the full implementation of enacted and proposed initiatives aligned with higher pledges under the Copenhagen Accord; and
    - (3) the introduction of domestic cap-and-trade schemes in most of Annex I countries to deliver on pledges at the higher end of commitments under the Copenhagen Accord

Carbon Market

Scenarios of potential demand for Offsets generated in mom-Annex I countries (2013-2020) – (MtCO2e)

This includes: CDM and JI, as well as political support and other bilateral offsetting mechanisms (e.g. Japan is preparing a bilateral offsetting mechanism with 15 pilot projects in nine countries that could co-exist along current Kyoto Mechanisms)

Country (group of)	Scenario 1: Enacted and proposed initiatives, unconditional pledges		Scenario 2: Enacted and proposed initiatives, higher pledges		Scenario 3: ETS in major Annex I countries, higher end of Copenhagen Accord pledges*
	Description	Potential demand ($MtCO_2e$)	Description	Potential demand ($MtCO_2e$)	Potential demand in 2020 ($MtCO_2e$)
EU, as well as Iceland, Liechtenstein and Norway	20 percent below 1990, with differentiation EU ETS and effort sharing	1,750†	30 percent below 1990, with differentiation EU ETS and effort sharing	2,550†	
New Zealand	NZ ETS: 10 percent below 1990	77	NZ ETS: 20 percent below 1990	106	
Australia	CPRS (2015): 5 percent below 2000	516	CPRS (2015): 15 percent below 2000	637	All countries deliver on Copenhagen Pledges resulting in aggregate reductions in Annex I GHG emissions of 17 percent below 1990 levels)
Japan	Between 25 and zero percent below 1990	≤539	25 percent below 1990	539	
Switzerland	20 percent below 1990, with ETS and other measures	28	30 percent below 1990, with ETS and other measures	55	
United States & Canada	No U.S. federal ETS, California and limited WCI, RGGI‡	12	No U.S. federal ETS, with full WCI (incl. California), RGGI‡	24	
TOTAL		2,922		3,911	1,500–2,000

*: Demand under Scenario 3 is only for year 2020, thus not comparable with the first two scenarios.
†: Already accounts for an inflow in the EU ETS of 750 million CERs and ERUs during Phase II.
‡: No significant demand is expected to come from RGGI.

Carbon Market

- Estimated of potential supply under CDM and JI up to 2020 (MtCO2e)

This does not assume continuation of JI beyond CP1 and do not include new approaches or mechanisms

2012-2020: 2.5 billion offsets could be generated

50-70% of this supply is expected from projects registered before 2013

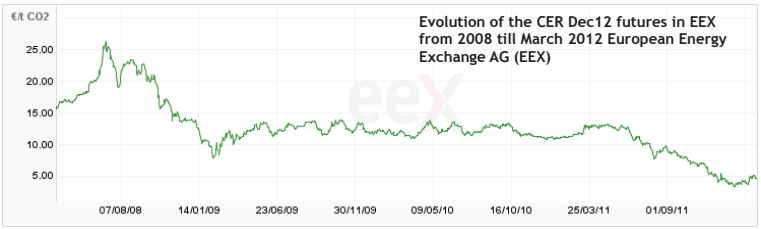
	pre-2013	post-2012	Cumulative (up to 2020)
Point Carbon			
CDM-EU ETS eligible	1,186	1,875	3,061
CDM-other	6	409	415
ERU	202		202
TOTAL	**1,394**	**2,285**	**3,679**
Barclays			
CDM-EU ETS eligible	1,140	1,741	2,881
CDM-other		1,043	1,043
ERU	250		250
TOTAL	**1,390**	**2,784**	**4,174**
CDC Climat Research †			
CDM-EU ETS eligible	1,115	2,534	3,649
CDM-other		373	373
ERU	205		205
TOTAL	**1,320**	**2,907**	**4,227**
*Deutsche Bank**			
CDM-EU ETS eligible	1,287	939	2,226
CDM-other	2	437	439
ERU	200		200
TOTAL	**1,489**	**1,376**	**2,865**

† Conservative estimate that does not account for new projects possibly entering the CDM pipeline after March 2011, nor for possible renewal of crediting period for already registered projects.
*Secured supply from the first crediting period of projects registered as of January 2011.

Carbon Market

Historical profile and trends of carbon prices – JOSE para fazer

- CERs (WB)
  - Fixed prices for pre-2013 CERs: €8-10
  - Post-2012 CERs: €6-8
- Early June 2011, the price of the CER future for delivery in 2012 (Dec12) was close to €13; however, since then its value has been decreasing and is now €4.52 (ICE, 1st March 2012).



Evolution of the CER Dec12 futures in EEX from 2008 till March 2012 European Energy Exchange AG (EEX)

Carbon Market

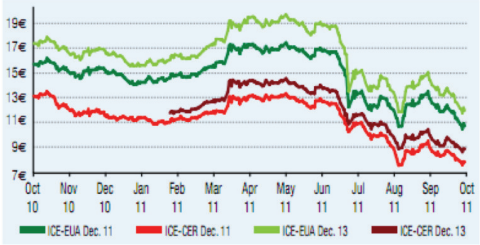
Historical profile and trends of carbon prices

- The CER price is closely linked with the price of EUAs

The figure also shows the rapid fall (>40%) of both prices since June 2011. This is due to the combination of the following occurrences:

- The evolution of the economic crisis in Europe has lead to:
  - lower demand for carbon credits due to the reduction of production outputs which results in lower energy consumption and a corresponding need for carbon credits
  - more offer of carbon credits as companies with liquidity problems use them to obtain short-term revenue or finance

Historical prices of EUA and CER future contracts October 2010 - October 2011 (Source: Tendances Carbone, October 2011)



- The uncertainty regarding the EU ETS operation post-2012 and the agreement in an international treaty to succeed the Kyoto Protocol is leading to a loss of trust in the market by its players.

Carbon Market

- Possible development of the carbon market in the future:
  - Formal negotiations have been going on for a successor treaty but no success as yet. Under the current regulations imports of CERs for compliance in EU ETS III (2013- 2020) will be allowed from CDM projects registered during Kyoto Protocol from developing/LDC countries and project registered 2013 onwards ONLY from LDCs;
  - A number of market mechanisms are currently being discussed for the post 2012 treaty. Some of them are discussed below:
    - **Reformed CDM :** major area of improvement and reform of CDM is the introduction of standardized baselines and monitoring methodologies (aimed at maintaining environmental integrity, but reducing transaction costs, enhancing transparency and predictability, and facilitating access to new project types and regions). Reducing the complexity and thus increasing the coverage of Programme of Activities (PoA) is also an area needing significant reform. The CDM Executive Board has recently taken some steps in this direction.
    - **NAMAs:** concept created in the Bali Action Plan (2007) to denote [voluntary] mitigation actions by developing countries after 2012. The Cancun Conference formally recognized developing countries' Nationally Appropriate Mitigation Actions (NAMAs), which were pledged after the Copenhagen Conference.

Carbon Market

- Possible development of the carbon market in the future (cont):
  - **Sectoral Crediting Mechanism (SCM):** more ambitious sectoral mechanisms that make it possible to tap into far greater emissions-saving potentials and provide more revenue for financing reductions in developing countries. Because only actions that go beyond a previously defined threshold or target are credited, this would ensure net benefits to the atmosphere. The coverage of a SCM relates to the developing country that adopts the program as well as the sectors that are included. Coverage also involves determinations of the specific entities within the covered sectors and whether there is potential differentiation within sectors.
  - **Reducing emissions from deforestation and forest degradation (REDD+):**. REDD+ extends REDD by including sustainable forest management, conservation of forests, and enhancement of carbon sinks.

Carbon Market

- Possible development of the carbon market in the future (cont):
  - Post 2012 Funds: Multilaterals and Government agencies have introduced post 2012 funds for purchase and trade carbon credits generated in the post Kyoto period, potentially up to 2022 - gives a clear signal to the market and its partner's confidence in the development of a post Kyoto regime while directly supporting environmental projects.
  - Green Climate Fund: Cancun Agreements formalized the commitment made by developed countries in Copenhagen to mobilize $100 billion a year by 2020 to support concrete mitigation actions by developing countries that are implemented in a transparent way. Fund will be governed by the Green Climate Board.
  - Bilateral Mechanism: Japan government has been promoting the use of bilateral mechanism in which the developed country will provide technology and fund to the developing country in return for emission reductions credits generated from the project.

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Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE CLEAN DEVELOPMENT MECHANISM

Scope

- The CDM Project Cycle
- Who is Who in CDM?
- Approval Requirements for CDM projects
- CDM Costs
- CDM Project Pipeline
- Barriers to CDM implementation in the Caribbean region

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE CLEAN DEVELOPMENT MECHANISM

CDM Project Cycle

CDM Project Cycle

Large Scale

CDM Project Cycle

Exceptions for small-scale CDM projects:

- Simplified PDD
- Simplified baseline methodologies SSC- CDM
- Simplified monitoring plans
- The same DOE can validate, verify and certify
- Bundling possible (portfolio)

SSC Projects:

- Type I: Renewable energy project with max. 15MW output
- Type II: EE improvements (AS or AD) max. 60 GWh reduction per year
- Type III: emission reductions of max 60ktCO2/year

CDM Project Cycle

Simpler CDM rules for LDC and SIDS:

1) No additionally check for:
   - Projects up to 5MW renewable energy projects (Type I SSC CDM);
   - EE projects with scope of less than 20GWh (Type II SSC CDM)
   - Other projects (Type III SSC CDM) that aim to achieve ER no more than 20ktCO2e) will be included hereunder

CDM Project Cycle

(1) Planning a CDM Project Activity (CDM PA)

- PPs plan a CDM PA;
- Several conditions to take into account:
  - The CDM project should assist the non-Annex I party in achieving sustainable development
  - The CDM project is additional
  - The eligibility of land use; land-use change and forestry PA under CDM is limited to afforestation and reforestation (A/R)

The PP should make sure that the project is ELIGIBLE to become a CDM PA

CDM Project Cycle

(1) Planning a CDM PA – *Eligible?*

- Any project that reduces emissions from:
  - Carbon dioxide (CO2)
  - Methane (CH4)
  - Nitrous oxide (N2O
  - Hydroflorocarbons (HFCs)
  - Perfluorocarbons (PFCs)
  - Sulphur Hexafluoride (SF6)
- Plus afforestation and reforestation (A/R) projects

Eligible emission reductions

CDM Project Cycle

(1) Planning a CDM PA – *Eligible?*

- Renewable energy (e.g. hydro, wind, biomass)
- Energy efficiency (e.g. waste heat recovery)
- Coal Mine Methane (CMM)
- Fuel switching (Coal to Gas)
- Improvements at nitrous oxide plants or HFC-23 production facilities
- Afforestation and reforestation project

Eligible project types

CDM Project Cycle

(1) Planning a CDM PA – *Eligible?*

- The CDM PA needs to be **additional** - GHG are reduced below those that would have occurred in the absence of the registered CDM PA

The demonstration of additionality is one of the most important parts of the PDD and will be critically reviewed by a third party validator

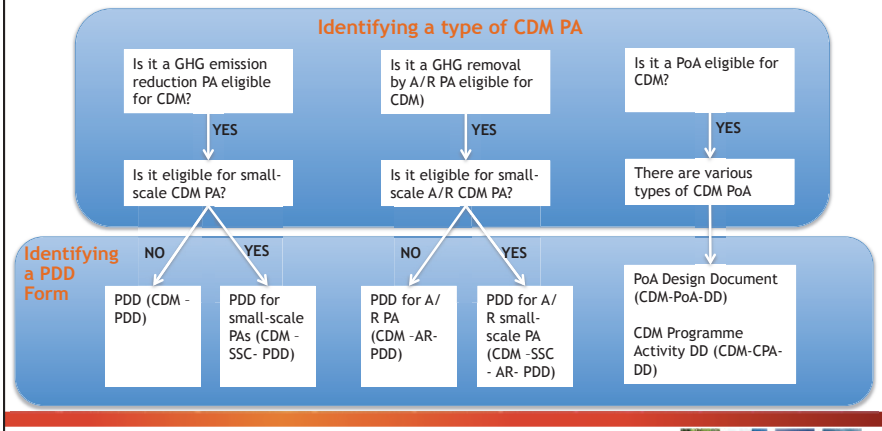
CDM Project Cycle

(2) CDM Project Design Document (CDM-PDD)

- A CDM-PDD needs to be produced for each CDM project;
- This is a 40+ page report outlining the details of the project and demonstrating that the project will reduce emissions and that the project is additional;
- Each project will use an existing methodology or else a new methodological approach will need to be developed
- PPs make the PDD
- The CDM-PDD presents information on the essential technical and organizational aspects of the project activity and is a key input into the validation, registration, and verification of the project.

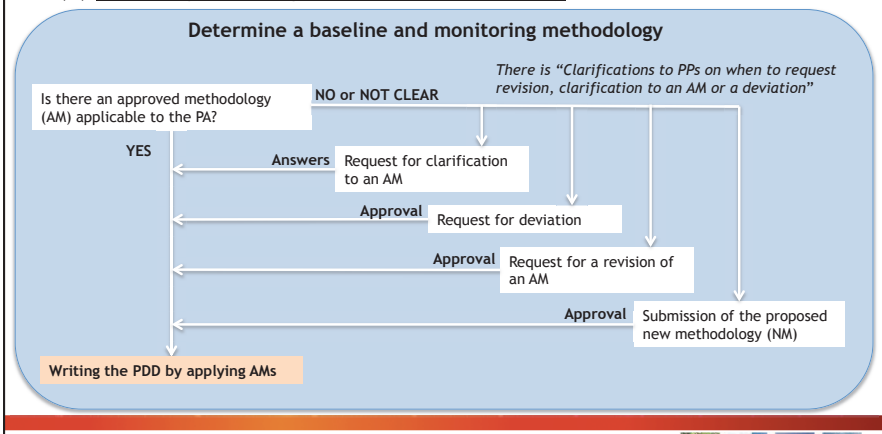
CDM Project Cycle

(2) CDM Project Design Document (CDM-PDD)



CDM Project Cycle

(2) CDM Project Design Document (CDM-PDD)



CDM Project Cycle

(2) CDM-PDD: PDD and Methodology related forms

		Normal-scale CDM project activity		Small-scale CDM project activity	
Emission Reduction	PDD	CDM-PDD ver.3 (Att.1)	CDM Project Design Document	CDM-SSC-PDD ver.3	CDM Project Design Document for Small-Scale project activities
				CDM-SSC-Bundle ver.2	Form for submission of bundled Small Scale project activities form
		CDM-PoA-DD ver.1	Programme of Activities Design Document	CDM-SSC-PoA-DD ver.1	Small-Scale CDM Programme of Activities Design Document
		CDM-CPA-DD ver.1	CDM Programme Activity Design Document	CDM-SSC-CPA-DD ver.1	Small-Scale CDM Programme Activity Design Document
	Methodology	F-CDM-AM-Subm ver.1	Form for submission of queries from DOEs to the MP regarding the application of approved methodologies	F-CDM-SSC-Subm ver.3	Form for Submissions on Small Scale Methodologies and Procedures
		F-CDM-AM-Rev ver.1	Form for submission of requests for revisions of approved methodologies to the MP		
		CDM-NM ver.3.1	CDM Proposed New Methodology: Baseline and Monitoring	F-CDM-SSC-NM ver.1	Form for proposed New Small-Scale Methodologies
A/R (chap.12)	PDD	CDM-AR-PDD ver.5	CDM Project Design Document for A/R project activities	CDM-SSC-AR-PDD ver.2	Project Design Document Form for Small-Scale A/R project activities
		CDM-PoA-DD-AR ver.1	Programme of Activities Design Document Form for A/R project activities	CDM-PoA-DD-SSC-AR ver.1	Programme of Activities Design Document Form for SSC-AR project activities
		CDM-CPA-DD-AR ver.1	CDM Programme Activity Design Document Form for A/R project activities	CDM-CPA-DD-SSC-AR ver.1	CDM Programme Activity Design Document form for SSC-AR project activities
	Methodology	F-CDM-AR-AM-Subm ver.1	Form for submission of queries from DOEs to the AR WG regarding the application of Approved A/R Methodologies	F-CDM-SSC-AR-Subm ver.2	Form for Submission on Small Scale A/R Methodologies and Procedures
		F-CDM-AR-AM-Rev ver.1	Form for submission of requests for revisions of Approved Methodologies to the AR WG		
		CDM-AR-NM ver.4	CDM Proposed New Methodology: Baseline and Monitoring for A/R		

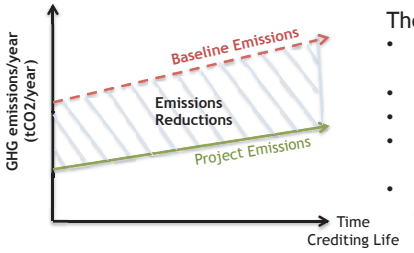
PDD: http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html
PoA-PDD: http://cdm.unfccc.int/Reference/PDDs_Forms/PoA/index.html
Methodology: http://cdm.unfccc.int/Reference/PDDs_Forms/Methodologies/index.html

Source: CDM in Charts, Nov 2011

CDM Project Cycle

(2) CDM-PDD: Concept of BASELINE and ADDITIONALITY

- The BASELINE (scenario and emissions) for a CDM PA is the scenario that reasonably represents GHG emissions that would occur in the absence of a PA



The BASELINE shall be determined by the PPs:

- In accordance with the approved or new methodology;
- In a transparent and conservative manner
- On a project-specific basis
- Taking into account the relevant national and sectorial policies and circumstances
- Shall cover all gases, sectors and source categories in the project boundary

- The difference between the baseline emissions and the GHG emissions after implementing the CDM PA is emission reductions

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY

- Not all projects that reduce GHG emissions are additional projects
- Essentially, you need to make a compelling case that goes BEYOND common practice in that area/sector and demonstrate ADDITIONALITY
- A CDM PA is ADDITIONAL if GHG emissions are reduced below those that would have occurred in the absence of the CDM PA
- This is one of the most important parts of the PDD needed and it will be critically reviewed by a third party validator and therefore must be supported by verifiable evidence

The PP have to write explanation of how and why the PA is additional. How should the PP do that?

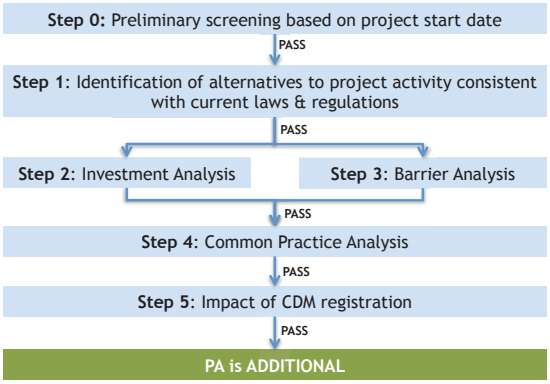
CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

- This can be done in a number of ways. For example:
  - The CDM helps remove barriers to implementation, including investment, technological, regulatory, competitive disadvantage and management barriers. For example, introduction of a new technology to a country could be considered particularly risky and the CDM could help mitigate that risk
  - The project is beyond regulatory & policy requirements

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?



CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 0: Preliminary screening based on **project start date**

- Start date of a CDM project is "*the earliest date at which either the implementation or construction or real action of a project activity begins*" (e.g. Contracts have been signed for equipment's)
- If a project has started prior to registration then need to:
  - Provide evidence that CDM was seriously considered in decision to proceed with PA (official, legal and/or other corporate documentation available to a third party)
- Prior consideration of CDM:
  - New PAs with starting date **on or after 2 Aug 2008** – the PPs need to inform the Host Party DNA and the EB in writing of the start of the PA and of their intention to seek CDM status (this must be done within **6 months** of the start of the PA)

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 0: Preliminary screening based on project start date

PASS

Step 1: Identification of alternatives to project activity consistent with current laws & regulations

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 1: Identification of alternatives to project activity consistent with current laws & regulations

- Identify realistic & credible alternatives to the project activity available to project participants/similar developers
  - provision of outputs or services with comparable quality, properties & application areas
  - continuation of current situation (if applicable)
  - compliance with applicable legal/regulatory requirements that are systematically enforced
- Not Additional if proposed project is **THE ONLY** alternative

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 0: Preliminary screening based on project start date

PASS

Step 1: Identification of alternatives to project activity consistent with current laws & regulations

PASS

Step 2: Investment Analysis

CDM Project Cycle

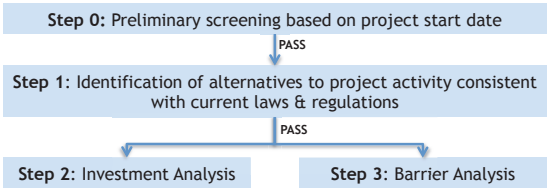
(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 2: Investment Analysis

- Is the project economically or financially less attractive than other alternatives without CERs ?
  - simple cost, investment comparison or benchmark analysis
  - document costs and show that project produces **no** economic benefits without sale of CERs
- Not Additional if proposed project is financially attractive

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?



CDM Project Cycle

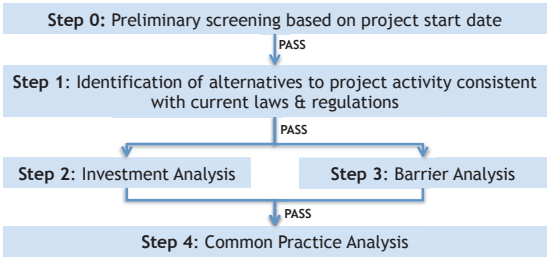
(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 3: Barrier Analysis

- Does the project face barriers that?
  a) Prevent implementation of the project or
  b) Do not prevent implementation of at least one of the alternatives:
     - Investment barriers (e.g. debt finance not available for innovative PA)
     - Technological barriers (e.g. lack of skills/infrastructure
     - Barriers due to prevailing practices (e.g. 1st of a king)
- Not Additional if cannot satisfy a) and b)

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?



CDM Project Cycle

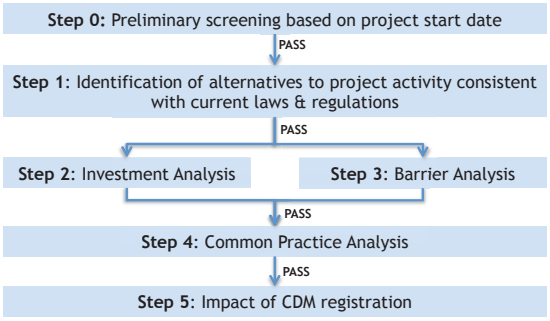
(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 4: Common Practice Analysis

- Determine whether project type is already well used in relevant sector and region ?
  - analyse activities similar to project activity
  - discuss similarities and distinctions (e.g. differences in required investment capital or type/size of firm undertaking project)
- Not Additional if no essential distinctions between project and similar activities

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?



CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 5: Impact of CDM Registrations

- Explain how CDM registration (+ project benefits & incentives) alleviate economic or financial hurdles (Step 2) or other identified barriers (Step 3) and thus enables the project to be undertaken
  - anthropogenic greenhouse gas emission reductions
  - financial benefit of revenue obtained by selling CERs
  - attracting new players who are not exposed to the same barriers
  - attracting new players who bring the capacity to implement a new technology
  - reducing exchange rate risk affecting expected revenues and attractiveness for investors
- Not Additional if cannot satisfy Step 5

CDM Project Cycle

(2) CDM-PDD: ADDITIONALITY – How to demonstrate?

Step 0: Preliminary screening based on project start date

PASS

Step 1: Identification of alternatives to project activity consistent with current laws & regulations

PASS

Step 2: Investment Analysis | **Step 3:** Barrier Analysis

PASS

Step 4: Common Practice Analysis

PASS

Step 5: Impact of CDM registration

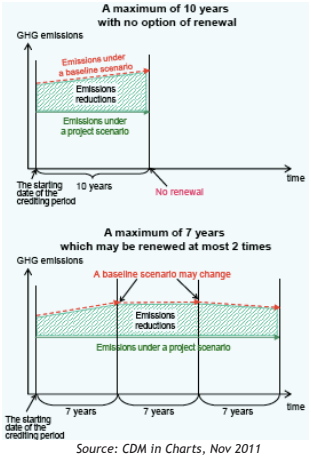
PASS

PA is ADDITIONAL

CDM Project Cycle

(2) CDM-PDD: Crediting period

- The crediting period starts at registration
- The PP select the crediting period for the PA from 2 options:
  - A maximum of 7 years which may be renewed twice;
  - A maximum of 10 year with no option of renewal
- The PP shall state in the PDD the starting date of the crediting period



Source: CDM in Charts, Nov 2011

The CDM Project Cycle

(2) CDM-PDD: Sustainable Development

- The project must contribute to the sustainable development of the country in which it will be implemented
- This to take in consideration:
  - Is the PA in line with the country's policy on RE and EE?
  - How does the project affect the environment and people surrounding it?

The CDM Project Cycle

(2) CDM-PDD: Monitoring Plan

- Monitoring refers to the collection and archiving of all relevant data necessary for determining the baseline, measuring GHG emissions within the project boundary of a CDM project activity and leakage, as applicable;
- The PDD need to state a monitoring methodology which refers to the method that will be used by PPs for the collection and archiving of all relevant data necessary for the implementation of the monitoring plan
- The monitoring plan should be based on a previously approved monitoring methodology of a new one
- Revisions, to the monitoring plan to improve its accuracy and/or completeness of information shall be justified by PPs and shall be submitted for validation to a DOE

CDM Project Cycle

(2) CDM-PDD: Project Example

- Landfill Gas project in the Dominican Republic- build, operate and maintain a landfill gas (LFG) collection and flaring system. LFG will be used for electricity generation for use at the landfill site and/or supply to the local grid.
- About 300 tonnes per day of MSW is proposed to be processed to generate 5.6 MW electricity and 75 tonnes per day of organic manure.

- The proposed PA has 3 components that result in emission reductions:
  1. Methane from municipal solid waste collection and treatment resulting in reduction of methane escaping into the atmosphere
  2. Using methane to produce electricity for own consumption
  3. Using methane to displace fossil fuel from power generation

CDM Project Cycle

(2) CDM-PDD: Project Example

- Present scenario:
  - Landfill gas is released to the atmosphere without any treatment or control.
- The baseline scenario, therefore, is the continuation of the current practice (release of landfill gas to the atmosphere)

- Contribution to sustainable development:
  - Climate change mitigation (through the avoidance of the release of methane into the atmosphere) – emission of about 2.5Million tCO2e will be avoided on a 7 years crediting period
  - Hiring and training of local employees
  - Transfers of know-how, directly by training, or indirectly through the visibility of the project and its interest as a successful local environmental initiative;
  - Increased awareness to environmental issues and to the benefits of proper waste management
  - Emergence of local suppliers of equipment and local competitors launching their own business, using the project as a benchmark.

CDM Project Cycle

(2) CDM-PDD: Project Example

- Methodology:
  - ACM0001 "*Consolidated baseline and monitoring methodology for landfill gas project activities*"; as well as
  - AMS I.D "*Grid connected renewable energy generation*" considering the possibility to use the captured gas for energy production in the future (estimated capacity less than 15MW)

CDM Project Cycle

(2) CDM-PDD: Project Example

- Alternatives to the present situation:
  - Capture of landfill gas and its flaring undertaken without being registered as a CDM PA
  - Atmospheric release of the landfill gas or partial capture of landfill gas and destruction to comply with regulations or contractual requirements, or to address safety and odor concerns (current situation).
- The first option involves significant investment and additional costs of landfill operations with no associated revenues, which is not financially attractive. The second alternative corresponds to the current situation, and is the only alternative to the PA - baseline scenario.

CDM Project Cycle

(2) CDM-PDD: Project Example

- Financial Analysis – benchmark analysis
  - Benchmark rate: 19.11% (average 2008 lending rate in the Dominican Republic)
  - IRR PA without CDM – 10.7% - not viable
- Barrier analysis:
  - Investment barriers: No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the Dominican Republic
  - Barriers due to prevailing practice: is one of the first projects in Dominican Republic. A total of 365 landfills have been identified, all of them being classified as open dumps. The landfill in question is the only solid waste disposal site that could be considered as a managed landfill (even though, it does not handle any kind of gas control, capture or burning).
  - Technological barriers: the PA is the first of its kind, neither the technology nor the skills required for the operation of the proposed project activity are available

CDM Project Cycle

(2) CDM-PDD: Project Example

- Common Practice Analysis
  - The PA is the first of its kind, in the Dominican Republic there are no other activities similar to the proposed PA operating or in development. Common practice in the Dominican Republic is neither collection nor destruction of landfill gas.

Having satisfied all the steps. The project is **additional**.

CDM Project Cycle

(3) Getting approvals

- The project needs to be approved:
  - By the countries Designated National Authority (DNA)
  - By the Government of the country that is buying the CERs (if at the time of registration an Annex I Party is involved)
- The statement issued by the DNA
  - The Party has ratified the Kyoto Protocol.
  - The approval of voluntary participation in the proposed CDM project activity
  - In the case of Host Party(ies): statement that the proposed CDM project activity contributes to sustainable development of the host Party(ies).

CDM Project Cycle

(4) Validation

- Is the process of independent evaluation of a PA against the requirements of the CDM on the basis of the PDD.
- Validation is carried out by a designated operational entity (DOE).

(5) Registration

- Is the formal acceptance of a validated project as a CDM PA:
  - It is done by the CDM Executive Board (EB)
  - PPs shall pay registration fee at registration stage
- If there are any changes from the PA as described in the registered PDD, PPs can notify and request approval of such changes

CDM Project Cycle

(6) Monitoring a CDM PA

- PPs must collect and archive data necessary for calculation of GHG emission reductions by the PA - according to the monitoring plan in the PDD

(7) Verification & Certification

- Verification is the periodic independent review and *ex post* determination of the monitored GHG emission reductions:
  - is carried out by a designated operational entity (DOE)
- Certification is the written assurance by a DOE that a project activity achieved the reductions in GHG emissions as verified

CDM Project Cycle

(8) Issuance of CERs

- EB will issue certified emission reductions (CERs) equal to the verified amount of GHG emission reductions
- Among issued CERs, 2% of those will be deducted for the share of proceeds to assist developing Parties to meet the costs of adaptation (SOP-Adaptation)

(9) Distribution of CERs

- CERs will be distributed among PPs
  - The decision on the distribution of CERs from a CDM project activity shall exclusively be taken by PPs.

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE CLEAN DEVELOPMENT MECHANISM

Who is who in CDM?

Who is who in CDM?

Several important entities within the CDM process:

- Project participants;
- CDM Executive Board (EB)
- Designated Operational Entities (DOEs)
- Designated National Authorities (DNAs)

Who is who in CDM?

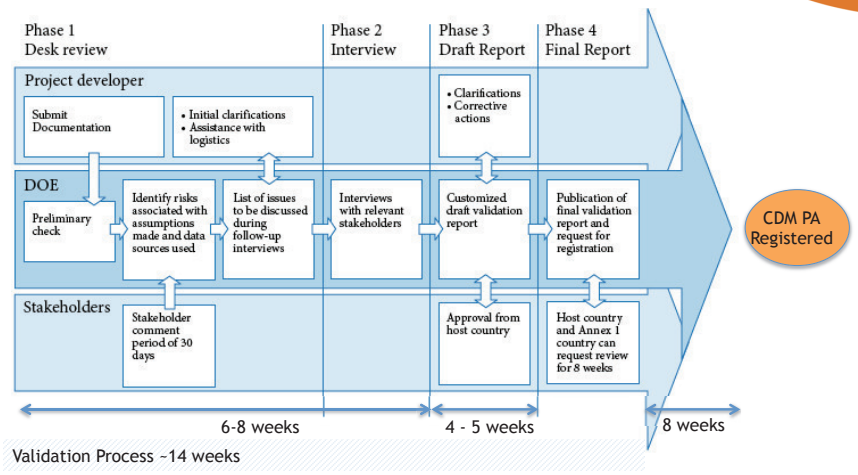
Entity	Role
Project Participants	Responsible for the identification, development of the PDD, implementation of the PA, monitoring of emission reductions
CDM EB	EB supervises the CDM, approves new methodology, maintains the CDM registry, responsible for the final registration of validated PA, instructs the issue of CERs for a CDM PA Activities of the EB, approved rules, procedures etc, available at: http://cdm.unfccc.int/
DOE	Independent third parties that are accredited by the EB to validate proposed CDM projects and to verify emissions reductions of registered projects. Also responsible for requesting the issuance of the CERs to the EB.
DNAs	National entities responsible for approving the project in the host-country – assurance that the PA contributes to the sustainable development of the region

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE CLEAN DEVELOPMENT MECHANISM

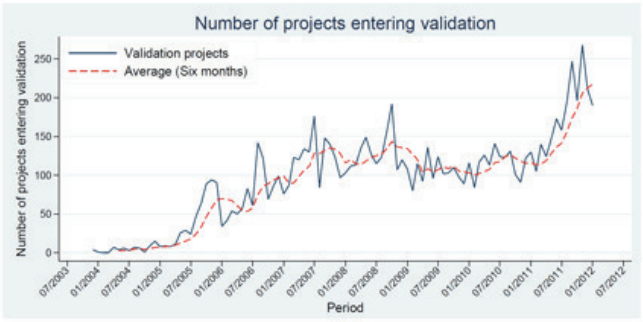
Approval Requirements for CDM Projects

Approval Requirements for CDM Projects



Approval Requirements for CDM Projects

Number of CDM projects entering validation



Source: UNFCCC, 29/02/2011

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE CLEAN DEVELOPMENT MECHANISM

CDM Costs

CDM Costs

- Project Design Cost:
  - For any CDM project the PP is obliged to prepare a PDD and submit for approval;
  - Cost incurred in the process:
    - Cost prior to the project preparation (e.g. communicating with government);
    - Costs of project preparation (either by the developed or contracted out)
- Other CDM costs:
  - Adaptation: 2% of CDM project proceeds are levied for use as an adaptation fund (except for LDC)
  - CER validation, verification and certification costs
  - EB administrative costs and registration fees (since 02/2010):
    - USD 0.10 / CER issued for the first 15,000 tonnes of CO2e for which issuance is requested in a given year
    - USD 0.20 /CER issued for any amount in excess of 15,000 tonnes of CO2e;
    - The maximum registration fee payable is capped at USD 350,000

CDM Costs

Specific cost associated with CDM stages

Activity	Cost (large-scale, US$)	Cost (small-scale, US$)	Type of cost
Planning Phase			
Initial feasibility study, i.e. Project Idea Note (PIN)	5,000–30,000	2,000–7,500	Consultancy fee or internal
Project Design Document (PDD)	15,000–100,000	10,000–25,000	Consultancy fee or internal
New methodology	8,000-30,000	6,500-10,000	DOE fee
Validation	8,000–30,000	6,500–10,000	DOE fee
Registration fee (advance on SOP-Admin – see below)	10,500–350,000[20]	0–24,500[21]	EB fee
Total CDM-specific costs – planning phase	38,500–610,000	18,500–117,000	
Construction Phase			
Construction, plant & equipment	Variable, depending on project type		Contractors fees
Installation of monitoring equipment	Usually minimal relative to total plant & equipment cost		Contractors fees
Total CDM-specific costs – construction phase	Usually minimal relative to total plant & equipment cost		

Source: UNEP Risoe Centre, CDM Information and Guidebook 2011

CDM Costs

Specific cost associated with CDM stages

Activity	Cost (large-scale, US$)	Cost (small-scale, US$)	Type of cost
Operation Phase			
UN Adaptation Fund Fee	2% of CERs	2% of CERs	EB fee
Initial verification (incl. system check)	5,000–30,000	5,000–15,000	DOE fee
Ongoing verification (periodically)	5,000–25,000	5,000–10,000	DOE fee
Share of Proceeds to cover administration expenses (SOP-Admin)	The fee paid at registration is effectively an advance that will be 'trued up' against actual CERs issued over the crediting period (if different to emission reductions projected at registration). SOP-Admin is not capped.		EB fee
Total CDM-specific costs – operation phase	Variable – minimum 2% of CERs plus 5,000/year (if verification undertaken annually)		

Note: Projects in least developed countries are exempted from the 2% adaptation levy

Source: UNEP Risoe Centre, CDM Information and Guidebook 2011

CDM Costs

- Costs for Least Developed Countries
  - LDC don't have to pay registration fee
  - LDC are exempt to pay fee to the Adaptation Fund

Samoa, Solomon Islands and Vanuatu are LDCs, thus don't have to pay these fees.

- Loan Scheme for Project Development (COP 16 – further guidance related to CDM) if:
  - Less than 10 registered projects in country
    - Loan can cover the cost of PDD
    - Loan can cover costs of validation and 1st verification
    - To be repaid from the 1st issuance
  - Not yet operational – the UNFCCC secretariat is selecting a public or private institutions to administer this loan scheme

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE CLEAN DEVELOPMENT MECHANISM

CDM Projects Pipeline

CDM Project Pipeline

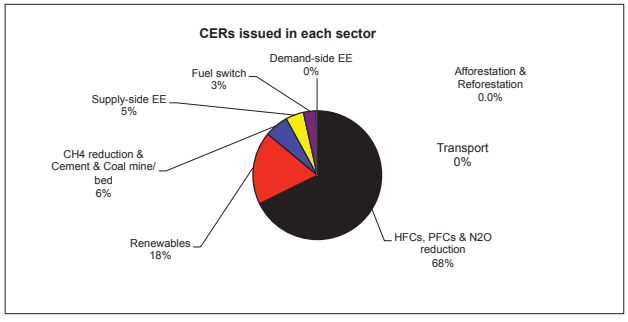
Current Status of CDM: (1st March 2012)

Status of CDM projects	Number
At validation	**3933**
Request for registration	70
Request for review	35
Correction requested	3
Under review	
Total in the process of registration	**108**
Withdrawn	54
Rejected by EB	216
Validation negative by DOE	205
Validation terminated by DOE	1099
Registered, no issuance of CERs	2432
Registered, CER issued	1439
Total registered	**3871**
Total number of projects (incl. rejected & withdrawn)	9486

Source: UNEP Risoe CDM, 01/03/2012

CDM Project Pipeline

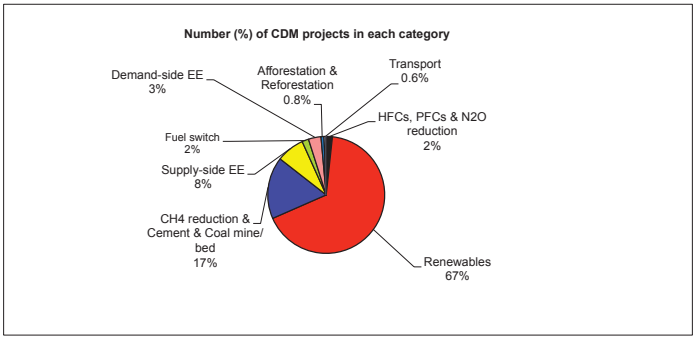
- CERs issued by sector



Source: UNEP Risoe CDM, 01/03/2012

CDM Project Pipeline

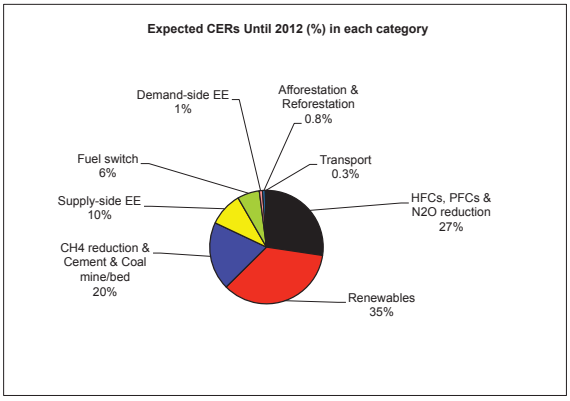
- % of CDM projects in each category



Source: UNEP Risoe CDM, 01/03/2012

CDM Project Pipeline

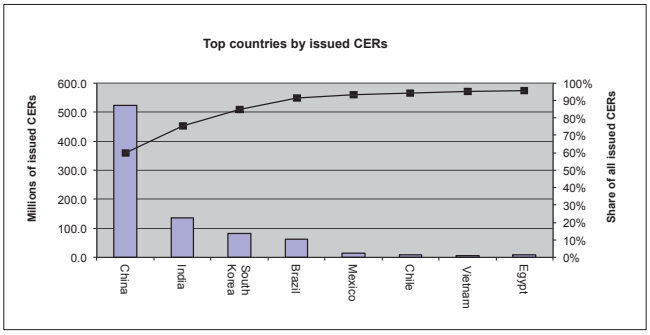
- CERs until 2012 (%) in each category



Source: UNEP Risoe CDM, 01/03/2012

CDM Project Pipeline

- Top Countries by issued CERs



Source: UNEP Risoe CDM, 01/03/2012

Teaching Segment 1: CDM and Its Applicability for the Caribbean Region

THE CLEAN DEVELOPMENT MECHANISM

Barriers to CDM Implementation in the Caribbean Region

Barriers to CDM Implementation in the Caribbean Region

- What has been done in the region?
  - There has been an important local effort to participate in CDM;
  - CDM has been contributing for the implementation of RE projects in the region, however has not transformed that sector
  - Most (more than 60%) of the CDM projects in the region are renewable energy projects connected to the grid (being 50% hydropower)
  - Sustainable development and climate change are issues taken in consideration in the Caribbean region
  - The Caribbean region has been proactively making visible contributions to sustainable development in the region

CDM has provided income for interested developers of RE projects
Scaling and energy transformation will require complementary actions
There is an opportunity to provide additional benefits to sustainable development
It is important to speed up reform of the CDM-pipeline in the region.

Barriers to CDM Implementation in the Caribbean Region

- Institutional & Regulatory Barriers
  - Lack of capacity for DNAs
  - Lack of transparent rules and procedures for domestic project approval
  - Complexity of procedures combined with lack of CDM expertise
  - Complex rules and arrangements for monitoring and compliance verification;
  - Lack of rules and arrangement to monitor co-benefits of sustainable development (transparency, verification & compliance)
  - Lack of approaches for international cooperation towards low carbon economies
- Technical Barriers
  - Lack of awareness and know-how of project developers
  - Lack of a diversified portfolio of projects (the major part of the CDM projects are renewable energy projects)
  - Lack of local CDM champions
  - Specific nature and scope of the projects in the region

Barriers to CDM Implementation in the Caribbean Region

- Financial Barriers
  - The CDM project face significant barriers to investment
  - Lack of finance to cover up-front costs
  - The existent carbon finance does not correspond to the need of capital investment projects
  - Financial institutions have made little effort to conduct "benchmarking" of carbon revenues flow and financing
  - Lack of project financing: investment banks unfamiliar with CDM
  - Too long times for project approvals which leads to increased transaction costs

CONCLUSIONS
CDM has provided income for interested developers of RE projects
Scaling and energy transformation will require complementary actions
There is an opportunity to provide additional benefits to sustainable development
It is important to speed up reform of the CDM-pipeline in the region.

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