REPORT OF THE FIRST NATIONAL WORKSHOP AND THE FIRST SECTORAL WORKSHOP FOR THE CAPACITY BUILDING FOR THE CLEAN DEVELOPMENT MECHANISM (CDM) SUB-COMPONENT OF THE CAPACITY BUILDING RELATED TO MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAs) IN AFRICAN, CARIBBEAN AND PACIFIC COUNTRIES PROJECT

TRINIDAD AND TOBAGO

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Executive Summary

The United Nations Environment Programme (UNEP), the European Commission (EC) and seven other institutions have launched a Programme to enhance capacities for Multilateral Environmental Agreements (MEAs) implementation in Africa, Caribbean and Pacific (ACP) countries in 2009.

The implementation strategy for the Clean Development Mechanism (CDM) Capacity Building Sub-component of the Programme will focus on the transfer of CDM knowledge and experience from UNEP Risoe Centre and its implementation partners to national CDM stakeholders through provision of institutional and technical backstopping to relevant national and regional public and private institutions.

In Trinidad and Tobago, in order to secure the effectiveness of the capacity building workshops and the implementation of the project, the UNEP Risoe Centre will partner with the Multilateral Environmental Agreements Unit (MEAU) of the Ministry of Housing and the Environment (MHE) to follow a detailed, structured approach which is defined in an approved work plan.

As prescribed by the work plan of the project, the first National Workshop took place on April 12-13, 2011 at the Normandie Hotel, Trinidad and Tobago. The first Sectoral Workshop took place on April 14, 2011 at The University of Trinidad and Tobago. The overall objective of both workshops was aimed at improving local capacity in identifying potential projects for CDM implementation.

Various presentations were made by a scientist from the UNEP Risoe Centre, Dr. Joergen Fenhann and a CDM consultant from Costa Rica, Dr. Oscar Coto. Their presentations included elaborations of the CDM Project Cycle, CDM review and status of the carbon market, CDM project types, CDM methodologies and methodology selection, the Project Idea Note (PIN) and other relevant CDM issues for Small Island Developing States (SIDS). Other presentations were given by the Solid Waste Management Company Limited, the Environmental Management Authority, Trinidad Cement Limited, the Ministry of Energy and Energy Affairs, The Energy Chamber, The University of Trinidad and Tobago and the Point Lisas Industrial Port Development Corporation Limited on various potential CDM opportunities for Trinidad and Tobago as well as potential difficulties which may arise.

It was concluded that the sector with the most potential locally for CDM (at present) is energy efficiency especially the power generation sector and it is anticipated that the conversion of a single cycle power plant to combined cycle will constitute one of the first CDM projects locally. Other viable sectors for CDM locally include renewable energy, carbon capture and sequestration and waste management.

Introduction

The United Nations Environment Programme (UNEP), the European Commission (EC) and seven other institutions have launched a Programme to enhance capacities for Multilateral Environmental Agreements (MEAs) implementation in Africa, Caribbean and Pacific (ACP) countries in 2009. The EC ACP MEAs Programme will enhance MEAs implementation through two components: Regional Hubs and Support to Specific MEAs. Capacity development for CDM is one of the sub-components of the Specific MEAs component. The CDM sub-component of the Programme will be implemented by the UNEP Risoe Centre in 7 African countries (Angola, Botswana, Ivory Coast, Malawi, Nigeria, Rwanda and Sao Tome and Principe), three Caribbean states (Belize, Cuba, Trinidad and Tobago) and Fiji and Papua New Guinea in the Pacific.

The implementation strategy for the CDM Capacity Building Sub-component of the Programme will focus on the transfer of CDM knowledge and experience from UNEP Risoe Centre and its implementation partners to national CDM stakeholders through provision of institutional and technical backstopping to relevant national and regional public and private institutions.

UNEP Risoe will put special emphasis on practical, hands-on and participatory training approaches. It will aid in the development of a national portfolio of [potential] CDM projects wherein all the Project Idea Notes (PINs) and Project Design Documents (PDDs) of the projects are developed by national experts as well as by participants in workshops as part of the problem-solving sessions during the workshops.

On November 24, 2010, the UNEP Risoe Centre and Trinidad and Tobago signed a Collaborative Agreement to facilitate the implementation of CDM capacity building activities in Trinidad and Tobago. It is intended that four National Workshops will be held in Trinidad and Tobago and three Sectoral Workshops. The Energy Sector will be the sector in focus locally.

In Trinidad and Tobago, in order to secure the effectiveness of the capacity building workshops and the implementation of the project, the UNEP Risoe Centre will partner with the Multilateral Environmental Agreements Unit (MEAU) of the Ministry of Housing and the Environment (MHE) to follow a detailed, structured approach which is defined in an approved work plan. The MEAU will be the primary executing entity of the project on behalf of the Ministry of Housing and the Environment and by extension the Government of Trinidad and Tobago.

There are four types of target groups for the CDM capacity building activities in Trinidad and Tobago which are listed below:

- Policy makers in CDM-related line-ministries, energy companies, investment promotion agencies and local municipalities
- Designated National Authority (DNA) staff members and members of the national CDM project approval committee functioning under the DNA

- National experts such as local consultants, academics and engineers from the line-ministries as well as national consultancy firms and technical divisions in public and private agencies of relevance to CDM in the country
- Members of local financial and banking sector who could be interested in providing underlying financing for CDM projects in the country

The stakeholders/ target groups are expected to play a role in the national portion of the CDM project cycle including CDM project identification, design, approval, implementation and financing.

It is aimed that the host country becomes able to identify, design, approve, finance, implement and monitor CDM projects that both address their sustainable development priorities and offer a cost effective option for carbon credit buyers to comply with their obligations under the Kyoto Protocol and the United Nations Framework Convention on Climate Change. (Trinidad and Tobago ratified the UNFCCC in May 1994 and its Kyoto Protocol in January 1999.)

As prescribed by the work plan of the project, the first National Workshop took place on April 12-13, 2011 at the Normandie Hotel, Trinidad and Tobago. The first Sectoral Workshop took place on April 14, 2011 at The University of Trinidad and Tobago. The overall objective of both workshops was aimed at improving local capacity in identifying potential projects for CDM implementation.

Objectives

The first National Workshop took place on April 12-14, 2011 at the Normandie Hotel in Trinidad and Tobago. This workshop was aimed at improving the local consultants and experts' capacity in identifying potential projects for CDM implementation. Specifically, this workshop focused on the preparation of PINs as the first step in project development for the CDM cycle. The Workshop also aimed to improve local understanding of CDM modalities and procedures, the CDM Executive Board (EB), the CDM project cycle, project design, methodologies, additionality, relevance of the CDM to national circumstances and priority sectors of the CDM. The overall objective is to allow Trinidad and Tobago to fully participate in the global carbon market.

The First Sectoral (Energy) Workshop took place on April 13, 2011 at The University of Trinidad and Tobago, Point Lisas Campus. The overall aim was similar to the National Workshop but additionally the objective was to explore opportunities for CDM in the energy sector in the Trinidad and Tobago. One critical objective of the project is to develop a portfolio of possible CDM projects for Trinidad and Tobago. The energy sector is expected to feature significantly in this portfolio and therefore, the Sectoral Workshop explored potential

opportunities for CDM with a range of energy stakeholders (mostly energy services companies) locally.

Participants

The workshops were facilitated by Dr. Joergen Fenhann of the UNEP Risoe Centre and Dr. Oscar Coto, a specialist CDM consultant of Costa Rica.

The Designated National Authority (DNA) of Trinidad and Tobago, which is the Multilateral Environmental Agreements Unit (MEAU) of the Ministry of Housing and the Environment, hosted the National Workshop and partnered with The University of Trinidad and Tobago to host the Sectoral Workshop. The Energy Chamber of Trinidad and Tobago played a significant role in the identification and invitation of participants for the energy sector.

The participants of the National Workshop included representatives from the following organizations:

- Ministry of Housing and the Environment
- Ministry of Energy and Energy Affairs
- Ministry of Public Utilities
- Ministry of Tourism
- Ministry of Works and Transport
- Caribbean Natural Resource Institute (CANARI)
- Caribbean Network for Integrated Rural Development (CNIRD)
- Nu Iron Limited
- National Reforestation and Watershed Rehabilitation Programme (NRWRP)
- Trinidad Cement Limited (TCL)
- The Environmental Management Authority (EMA)
- The Community-Based Environmental Protection and Enhancement Programme Company Limited (CEPEP)
- Indosaf Equipment and Supplies
- The Trust for Sustainable Livelihoods (SUSTRUST)
- Petroleum Company of Trinidad and Tobago Limited (Petrotrin)
- The Green Fund Executing Unit
- The Solid Waste Management Company Limited (SWMCOL)
- The Water and Sewerage Authority (WASA)
- The Delegation of the European Union (EU)
- The University of Trinidad and Tobago
- The Trinidad and Tobago Chamber of Industry and Commerce
- The United Nations Development Programme (UNDP)

The list of participants at the National Workshop is attached as Appendix III.

The Sectoral (Energy) Workshop was attended by the following companies:

- Ministry of Housing and the Environment
- The University of Trinidad and Tobago
- Nu Iron Limited
- Point Lisas Industrial Port Development Corporation Limited (PLIPDECO)
- TOSL Engineering Limited
- Alutrint Limited
- ABT Engineers and Constructors Limited
- Christa Beard
- D2F Technical Limited
- GGI Limited
- Omega Telecom Limited
- Risk Management Services Limited
- Territorial Services Limited
- Tricontinental Trinidad Limited
- The Energy Chamber of Trinidad and Tobago

The list of participants at the Sectoral Workshop is attached as Appendix IV.

Structure

The National Workshop lasted two days. On Day 1, there were welcome remarks from the Ministry of Housing and the Environment, the local office of the Delegation of the European Union, and the UNEP Risoe Centre. Following this, presentations were made by Dr. Fenhann and Dr. Coto. Day 2 also comprised presentations from Dr. Fenhann and Dr. Coto. Presentations about potential CDM projects were made by the EMA, SWMCOL, the Ministry of Energy and Energy Affairs and Trinidad Cement Limited (TCL). Day 2 also comprised group work. The participants were divided into small groups and worked to develop sample Project Idea Notes (PINs) for potential local CDM Projects.

The Sectoral Workshop included presentations by Dr. Fenhann and Dr. Coto as well as presentations by Mr. Donnie Boodlal, Researcher, Natural Gas Institute of Americas, The University of Trinidad and Tobago, Mr. Sherwin Long of the Energy Chamber and Mr. Gerrel Traboulay, Health, Safety and Environment Manager of the Point Lisas Industrial Port Development Corporation Limited (PLIPDECO).

Review of Presentations:

Welcome and Opening Speeches

Opening remarks for the National Workshop were brought by Mrs. Veronica Belgrave, Permanent Secretary of the Ministry of Housing and the Environment. Mrs. Belgave duly noted that climate change poses significant developmental challenges for countries of the region and in particular Small Island Developing States (SIDS) with the adverse impacts of climate change already being experienced in many parts of the Caribbean. Therefore, the potential of climate change was noted to possibly threaten to severely undermine efforts towards economic and sustainable development. The United Nations Framework Convention on Climate Change (UNFCCC) has identified in its ultimate objective the need to achieve a stabilization of greenhouse gas concentrations in the atmosphere and the importance of this mandate was reiterated.

Mr. Kishan Kumarsingh, who opened the First Sectoral (Energy) Workshop, further noted that climate change impacts are already a reality for Trinidad and Tobago. The country having realized an increase in mean surface temperature by about 1.7 °C based on an analysis of meteorological data for the years between 1961- 2008. Mr. Kumarsingh stated that Trinidad and Tobago, in keeping with our commitment to climate change mitigation, is a ratified signatory to United Nations Framework Convention on Climate Change and its Kyoto Protocol, which are international treaties which outlines the international response to the global issue of climate change. It was further stated that the Protocol have included three market-based mechanisms; namely –

1. Emissions Trading,
2. The Clean Development Mechanism and
3. Joint Implementation.

It is also noted that Trinidad and Tobago has no binding emission reduction targets under the Kyoto Protocol. It was highlighted that although, this country accounts for less than one percent of absolute global greenhouse gas emissions however its emissions portfolio is expected to increase as identified by the UNFCCC, the Government recognizes the need to address the challenge of climate change and remains committed to contribute to the global mitigation effort since climate change is a worldwide phenomenon.

Recent initiatives by the Ministry of Housing and the Environment including the development of a Draft Climate Change Policy for the nation that speaks to the mitigation of greenhouse gases through the development of a low carbon economy were also outlined.

Review of the CDM and Status of Carbon Markets (Oscar Coto)

The long and complex international negotiations which gave birth to the United Nations Framework Convention on Climate Change and the Kyoto Protocol were described in brevity. The Kyoto Protocol has several initiatives to mitigate greenhouse gases (GHG) and these include:

- Joint Implementation
- Clean Development Mechanism (CDM)
- International Emissions Trading

Under the CDM, Annex 1 Parties which have ceilings for GHG emissions (emission caps) assist non-Annex 1 Parties which do not have emission caps to implement project activities to reduce GHG emissions (or remove by sinks) and credits (Certified Emission Reductions) are issued based on emission reductions (or removal by sinks) achieved by project activities.

As of April 6th, 2011, there were two thousand nine hundred and fifty three (2953) registered CDM project activities. The CDM is part of a global effort to resolve an issue of public interest through application of a market based mechanism however markets are still fragmented with the European Union being the current largest buyers and China being that largest seller of CERs.

The CDM Project Cycle and Associated Concepts (Oscar Coto)

The CDM project cycle includes the main steps as described diagrammatically below in Figure 1. The important concepts which must be considered along the project cycle are additionality (proving additionality), baseline scenario, baseline methodology and the crediting period.

The project cycle can be lengthy as there are significant delays and is risky in that the necessary approvals and validations required at various stages may mean that a project is not able to qualify for the CDM at the end.

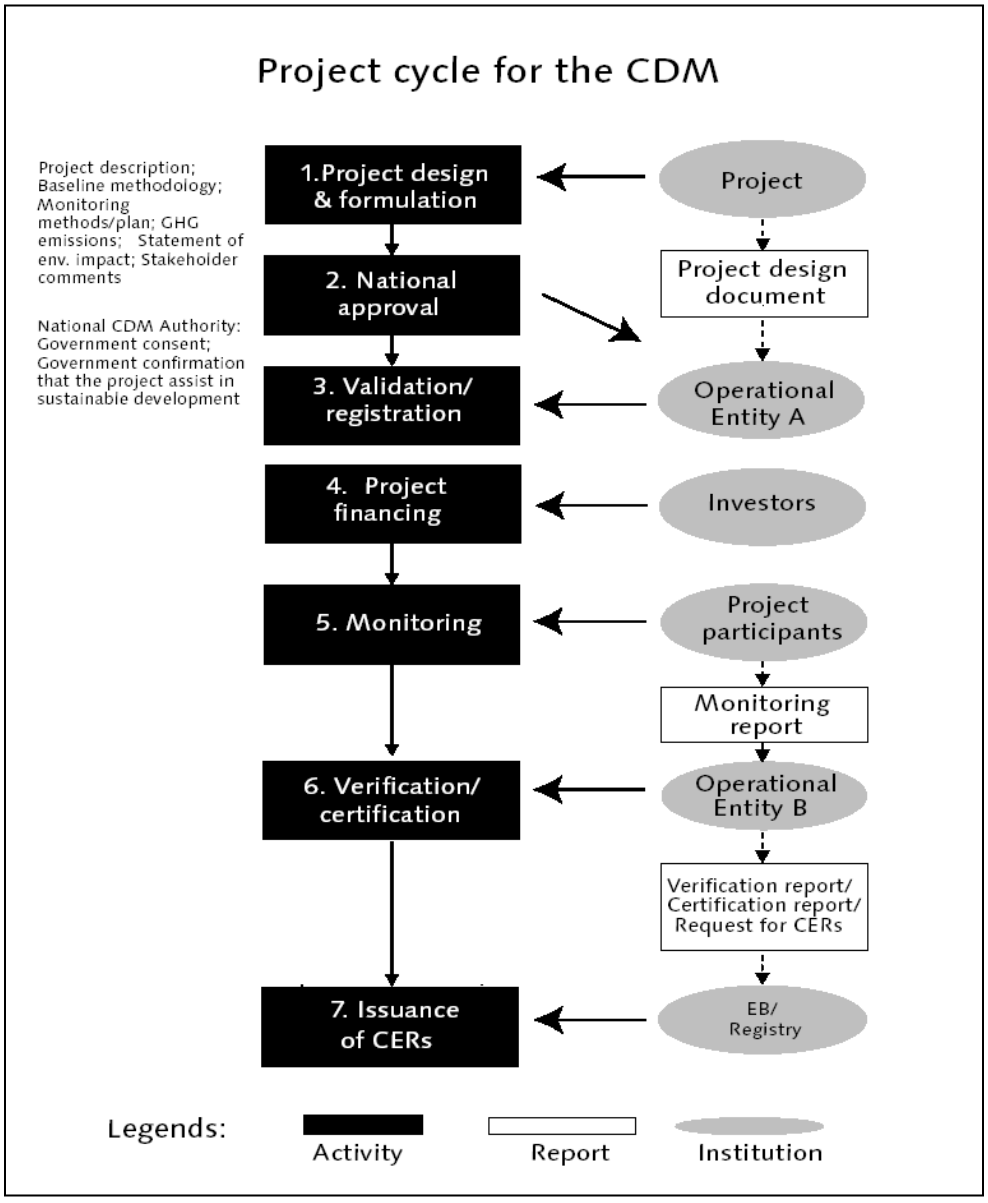

Figure 1: Project cycle for the CDM

CDM Project Types and Scales (Oscar Coto)

The largest sector within the CDM is the energy industry (Renewable and Non-Renewable) which accounts for 65.53% of registered project activities. Other sectors which have numerous projects include energy distribution, energy demand, waste handling and disposal and fugitive emissions from fuels. Some examples of projects include:

- Power generation from waste energy recovery and supply to a recipient who was receiving a more GHG intensive power

- Power generation using renewable or low carbon energy sources and export power to a grid with emission factor of more than zero and / or to recipient using fossil fuel based power in the absence of the project activity

Project scopes are tied to approved methodologies for project development.

Small scale projects may be bundled together to form one project but all sub-projects must be of the same type.

The Project Idea Note (PIN) (Oscar Coto)

The PIN is not part of the official CDM project cycle but it presents early information on a potential CDM project. The concept of the PIN was originally at the start of the carbon market. It retains its relevance in the carbon market and helps to acquire letters of non-objection from Designated National Authorities.

A PIN contains basic indicative information about a potential project such as type and size, location, baseline information, crediting period information, financial structure and timeline and other relevant socio-economic information. There is required template which must be adhered to for CDM projects.

Energy Sector Projects in the Region (Oscar Coto)

Latin America accounts for 15.2% of all CDM projects whilst the Caribbean region is trailing behind with only 1.8% of total registered CDM project activities. Trinidad and Tobago has not yet registered any CDM projects. The largest sector is energy efficiency and fuel switching. Renewable energy accounts for the second largest sector of CDM projects.

CDM Methodologies and the Methodology Selection Tool (Joergen Fenhann)

An approved methodology comprises of the following:

- Source, approach
- Applicability
- Summary
- Identification of baseline scenario
- Additionality
- Project boundary
- Emission reduction formulas
- Leakage
- Monitoring methodology

The Methodology Panel and the Small Scale Working Group evaluates proposals for methodologies and grants the necessary approvals.

There are four types of small scale CDM projects and super small scale projects are always additional in Least Developed Countries (LDCs) and SIDS.

At present there are 167 approved methodologies and there are tools (web-based) for the selection of the appropriate methodologies and technologies for CDM projects.

CDM Project Cycle (Joergen Fenhann)

Oscar Coto's earlier presentation delved into the CDM's project cycle diagrammatically. This presentation was similar but went further to elaborate on the project eligibility criteria and the assessment of the baseline or the business as usual (BAU) scenario which is the situation prior to the CDM project being implemented. It was also noted that the crediting period can either be renewable or fixed. The transaction costs associated with a CDM project's size, scale and location were also itemized. Of critical importance for the national approval of a CDM project is the sustainable development criteria which is determined nationally. Each Designated National Authority approves a CDM project if it [among other criteria] complies with what the country considers to be sustainable development. Monitoring and Verification reports are also very important to produce for CERs (Certified Emission Reduction credits) to be issued. Thus documentation throughout the implementation of a project is very important.

Important web sources of information on the CDM (Joergen Fenhann)

UNFCCC CDM web-site: CDM.UNFCCC.INT
CDM Rulebook: CDM.RULEBOOK.ORG
UNEP Risoe's CDM Pipeline: WWW.CDMPIPELINE
UNEP Risoe's Capacity Building for CDM: WWW.CD4CDM.ORG
UNEP Risoe's Methodology Selection Tool: CDM-METH.ORG
UNEP Risoe's CDM Bazaar: CDMBAZAAR.NET
Trinidad and Tobago CDM site: trinidadandtobago.acp-cd4cdm.org

CDM Pipeline (Joergen Fenhann)

There are an approximate 2942 projects in the CDM Pipeline. Monthly, the number of newly registered CDM Projects is around 100. Thus far, 550 million CERs have been issued which is the equivalent of 5.5 € at 10 €/ton CO_2. Renewable energy is the prevailing sector for new projects.

Most of the projects are concentrated in certain regions, most notably China. Other regions are trailing such as the Caribbean. There are only few projects in this region in the countries of Dominican Republic, Cuba; and Jamaica, Bahamas and Guyana in the English Speaking Caribbean.

It is to be noted that there are delays throughout the cycle of the CDM Projects. It takes approximately one year for the project to be registered and about 2.8 years before the first issuance of the CER.

Capacity Development for the CDM in ACP (ACP CD4CDM) (Joergen Fenhann)

The project aims to:

- enable targeted ACP countries to participate in the global carbon market
- provide skills to identify, design, approve, finance, implement and monitor CDM projects,
- emphasise the development of a regional CDM projects portfolio that could be marketed in international carbon events
- support the provision for Designated National Authority (DNA) website.

The project participating countries have been selected and include:

- **Africa**: Angola, Botswana, Côte d'Ivoire, Malawi, Nigeria, Rwanda and São Tomé and Principe
- **Caribbean**: Belize, Cuba and Trinidad and Tobago. Regional activities will also be conducted.
- **Pacific**: Fiji and Solomon Islands. Regional activities will also be conducted

CDM Methodologies for the different project types

Approved methodologies for CDM projects are categorized broadly. There is an online selection tool for the selection of methodologies on the UNEP website http://cdm-meth.org/ . The categories are as follows:

- Agriculture and Forests
- Waste
- Conventional Power Production
- Heating Systems
- Power Consumption
- Industrial Production Processes
- Transportation

Simpler rules for CDM projects from Least Developing Countries (LDCs), and Small Island States (SIDS) (Joergen Fenhann)

Normally a share of the proceeds from the issuance of CERS is retained by the CDM Executive Board (EB) as payment for the Registration Fee and for the Adaptation Fund (2%). In 2003, LDCs were exempted from the Registration Fees and contributions to the Adaptation Fund.

Normally all CDM projects have to show that they are additional i.e. that they would not exist without CDM. However, At COP 15 it was decided to establish simplified modalities for the demonstration of additionality for all SIDS/LDC countries. At the 54th meeting of the EB it was decided that projects are always are additional in these countries.

Normally it is hard for CDM project developers to find money for preparing the PDD and for validation and first issuance. COP15 requested the EB to use the interest accrued from the Share of Proceeds to give loan to these activities in LDCs and SIDs.

Programmatic CDM (Joergen Fenhann)

A programme of activities (POA) is a voluntary coordinated action by a private or public entity which coordinates and implements any policy/measure or stated goal (i.e. incentive schemes and voluntary programmes), which leads to anthropogenic GHG emission reductions or removals by sinks that are additional to any that would occur in the absence of the (Programme of Activities) POA, via an unlimited number of CDM programme activities. It is different from regular CDM activities because a programme of activities rather than a single project activity is registered. The activities are mostly similar and are coordinated by a public or private entity. The activities can take place in many different locations (including multi-country) over a period of up to 28 years.

The programmatic CDM offers LDCs and SIDs the opportunity to bundle small projects which would not qualify under the CDM as individual project activities. It also reduces transaction costs as the registration fee is for the overall POA and not individual projects. POAs are particularly important for end use energy efficiency or renewable energy generation by end users. It is important for LDCs and small island countries which are most vulnerable to climate change but lack potential for large GHG mitigation projects. POAs can help roll out of mitigation reduction activities and lead to region or sector wide change

Energy Sector CDM Projects (Oscar Coto)

The Latin American and Caribbean region accounts for 15.2% of CDM Projects globally. However, the Caribbean only accounts for 1.8% of projects globally. Energy efficiency is the leading sector of CDM projects whilst renewable energy is the second largest with wind energy being the leader in renewable energy. In the region, the leading energy projects are in the following sectors: electricity generation, electricity for industries, energy for transport and energy for households and building. The types of mitigation activities occurring in the region include: renewable energy, energy efficiency and fuel and feed stock switch. The manufacturing and chemical industries are also participating in the CDM in the Latin American region.

CDM Project Opportunities in Trinidad and Tobago

Landfill CDM Projects (Uche Osuji, Trinidad and Tobago Solid Waste Management Company Limited (SWMCOL))

Mr. Osuji presented on the current mandate and opportunities for Waste Management in Trinidad and Tobago. Mr. Osuji presented a comprehensive overview on solid waste management in Trinidad and Tobago that included an introduction to SWMCOL, the current solid waste (SW)

situation and the status of landfills in Trinidad and Tobago. Mr. Osuji also examined the CDM rationale and potential CDM projects in the SW sector. The preparations of CDM project documents and barriers that may exist in this area were also examined.

The Trinidad and Tobago Solid Waste Management Company Ltd. (SWMCOL) was identified as a multidisciplinary organisation with expertise in environmental consultancy services and waste management. Some of its specific responsibilities include:

- Manage, control, collect, treat and dispose of all solid wastes;
- Establish and operate disposal sites in accordance with proper sanitary landfill procedures; a central hazardous waste disposal facility, transfer stations, where appropriate, based on sound economic considerations.
- Promote, establish and operate resource recovery systems for retrieval of valuable secondary material wherever technically and economically feasible and in accordance with good public health and sanitation practices.

It was noted that solid waste management has become an important aspect of the sustainable development agenda for Caribbean SIDS although it was recognized that there are constraints which limit the range of possible options for the sound management of SW.

The core of the CDM rationale is to assist in achieving sustainable development while contributing to GHG stabilization and possibly defraying of municipal solid waste management costs. Some possible SW projects under the SW category were broadly identified as:

- Existing landfill: gas capture and flaring
- Existing landfill: gas capture and electricity generation
- New landfill: gas capture and flaring
- New landfill: gas capture and electricity generation
- Alternative technologies to landfill such as composting, biogas and incineration
- Energy generation through biogas and incineration

Specifically, certain potential landfill projects were identified as:

1. Capture of methane from all landfills and flaring/production of electricity
2. Sewage sludge digestion with methane recovery for flaring/electricity production
3. Waste Incinerators
4. Composting of organic waste

5. Material recovery (paper, plastics, etc.)

Mr. Osuji also highlighted existing CDM Methodologies. Also presented were some potential barriers to the CDM approach which included investment barriers, technology barriers and institutional & regulatory barriers. Another key barrier was identified as a lack of data-led Sustainable Waste Management Planning allowing cradle-to-grave consideration. It was also noted that the industry is at a critical juncture of change and uncertainty and ultimately evolution will determine final modality of CDM approach.

Renewable Energy and Energy Efficiency Policy Framework and its Potential for CDM Projects (Mr. Vernon De Silva, Ministry of Energy and Energy Affairs)

Mr. De Silva noted that 56% of carbon dioxide emissions in Trinidad and Tobago are from heavy petrochemical and heavy industries. Liquefied natural gas production accounts for the largest part of that 56% (36%) of the emissions from petrochemical and heavy industries. Power generation accounts for 28% of CO_2 emissions and transport accounts for 11% of emissions.

The Ministry of Energy and Energy Affairs (MEEA)'s climate change agenda includes renewable energy, energy efficiency, Compressed Natural Gas (CNG) for the transport sector, carbon capture and storage (CCS), energy audits, energy efficiency technologies for the industrial sector, combined cycle technology for the electricity generation sector,

Mr. De Silva noted that the primary objective of the Renewable Energy (RE) Policy is to identify and examine strategies and make recommendations for introducing RE into the local energy mix. The RE policy promotes energy efficiency and conservation as very important complementary elements of RE implementation to ensure its effectiveness. The secondary objective of the RE Policy is to identify, examine and make recommendations on measures to reduce GHG emissions.

Mr. De Silva further reiterated that the key factors for potential projects include:

- Early Project Identification
- Determining Baseline
- Proving Additionality – economic, financial, or institutional demonstration
- Source and paying for a Designated Operating Entity (DOE)
- Market Demand

It can be a difficult process as proof of additionality can be an issue and the process will be longer for projects with new methodologies.

The MEEA is considering a preliminary target to produce 5% of current peak power demand from RE sources by 2020 → 60 MW as part of the RE Policy. Wind has been identified as the

preferred technology at this time. Consideration is being given to the development of a 20 MW pilot wind farm project.

Mr. De Silva noted that potential CDM Projects included power generation (energy efficiency), i.e. conversion of single cycle power plants to combined cycle. For example, the 760 MW Trinidad Generation Unlimited (TGU) Power Plant, by utilizing combined cycle technology instead of single cycle can avoid carbon emissions is approximately 1.5 metric tonnes. Sectoral Scope Projects may include the manufacturing industries such the introduction of new reformer technology in ammonia and methanol plants, the installation of high efficiency motors at industrial plants. Other potential projects may include mass transportation and the use of a fleet of buses which utilize alternative energy.

A Programme of Activities (POA) may include for example:

- Retrofitting of Government buildings with RE and energy efficiency (EE) technologies (which includes solar water heating, photovoltaic systems, EE lighting, etc.)
- Construction of new government buildings with green design
- Use of biofuels for transportation

Trinidad and Tobago: Nariva Restoration, Carbon Sequestration, and Livelihoods Project (Majid Mohammed, Environmental Management Authority)

The Nariva Restoration, Carbon Sequestration and Livelihoods Project lies within the Nariva Environmentally Sensitive Area. Over the period 2005-2009, the World Bank administered grant funding from the Japanese Government, totaling US$470,000 (TT$2,961,000), to the Government of the Republic of Trinidad and Tobago, to assess the potential for carbon sequestration and mitigation of greenhouse gases through the restoration of the Nariva Swamp. Studies included:

- ✓ Development of a Reforestation Scheme and Assessment of its Social Impact on Communities of the Nariva Swamp (Tropical Re-Leaf Foundation, 2008):
- ✓ Development of a Water Resources Management Plan for the Restoration of the Nariva Swamp: Water Distribution within the Nariva Swamp (2009);
- ✓ Monitoring and remote sensing of Greenhouse Gas (GHG) Emissions, primarily Methane (CH_4) and Nitrous Oxide (N_2O), to establish a baseline for emissions over the Nariva Swamp.

Nariva was severely impacted by human induced alterations, primarily illegal agricultural activities, through mid 1980's into the early 1990's. These activities resulted in the removal of large areas of forest and alterations to the hydrology of the system. Additionally, deliberate burning of the swamp to flush out wildlife for hunting and to access interior fish stocks, causes alteration to the area's vegetation occurred and there are no signs of natural recovery in the areas concerned therefore reforestation is necessary to restore habitats.

The deforested area covers approximately 1131 hectares with no signs of natural recovery. During the pilot phase of the project EMA provided funding over the fiscal year 2007-2008 in the amount of TT$ 205,235 (approx. US$ 33,000). The Forestry Division supervised the reforestation of approximately 6 hectares. Three Community Based Organizations (CBOs) from the area were invited to replant fifteen (15) acres of land, in three parcels of five acres each.

This is the only project being considered under the CDM using this particular methodology: AR-AMS0003 "Simplified baseline and monitoring methodology for small scale CDM afforestation and reforestation project activities implemented on wetlands". The pilot phase of the project has been completed however, funding has been sourced from the Green Fund to continue the project and 10 CBOs have been contracted to replant trees in 2011.

The objectives of the project are to:

- To restore and conserve the Nariva Wetlands;
- To develop sustainable livelihood opportunities for surrounding communities;
- To develop a management regime for the Nariva Swamp;
- To develop and implement a Communications, Educations and Public Awareness Plan for the Nariva Swamp;
- To develop models for determination and verification of levels of carbon sequestered.

Planting will take place over a 5 year period at a rate of 268 hectares per year with 120 labourers from the communities and supervision by Forestry officers. This project has the potential to be registered under the CDM as about 194,000 tons Carbon Dioxide equivalents (CO_2e) in carbon sinks are expected up to 2017 and about 80,000 tons CO_2e, up to 2013, in emission reductions from CH_4 avoidance.

An Overview of the Point Lisas Industrial Estate (Gerrel Traboulay, Manager, Health, Safety and the Environment, Point Lisas Industrial Port Development Corporation (PLIPDECO))

PLIPDECO was founded in 1966 and was an initiative of the South Chamber (now the Energy Chamber). It is a quasi state/private company– 51% Government and 49% Private. It was established to allow energy based companies to take advantage of newly discovered natural gas reserves and at the same time to develop a port facility to serve the southern sector of the country. The two main areas of operation are port and estate management. The Point Lisas Industrial Estate is a world class petrochemical and industrial park. The estate's main functions are:

- Maintenance of infrastructure such as roadways, verges, drains and landscaping

- Maintenance of leases
- Monitoring and auditing on the estate to ensure that the plans do not impinge on the rights of others or poses a danger
- Monitor compliance

One hundred and three tenants have leases on the estate which hosts the downstream energy sector of Trinidad and Tobago. There are 3 methanol companies, 5 ammonia companies, 2 steel companies, 1 urea plant; and natural gas processing, chlorine, power generation and desalination of water also take place on site. Ten percent (10%) of the land on the estate is mangrove. The faunal diversity throughout the mangrove at Point Lisas is typical of mangrove systems throughout Trinidad.

PLIPDECO's role as landlord of the Point Lisas Industrial Estate is to monitor compliance. With each tenant on the industrial estate, a lease agreement is made outlining various terms and clauses by which the tenant must abide. These clauses include environmental covenants between landlord and tenant. The environmental covenant between landlord and tenant is dependent on the operations that take place at the tenanted facility. PLIPDECO monitors the effluent leaving the tenanted facilities on the estate through a reporting schedule and also through independent testing. For any variation to a lease agreement, the tenant must submit an environmental questionnaire to PLIPDECO and in turn receive an Environmental Clearance which would take into consideration the change of operation etc. Scheduled visits to major facilities are conducted to audit various activities that occur on site.

Overview of the Energy Sector (Sherwin Long, The Energy Chamber)

Mr. Long noted that there exists more than 100 years of oil production locally. Trinidad and Tobago has a 50 year track record of increases in output (600%) and 50 years of developing a world class gas based industry. Mr. Long also discussed the trends in oil and gas production in the Trinidad and Tobago as succinctly summarized by Figure 2 and 3 below.

Mr. Long described the reserves of oil and gas by showing the trends of decreasing reserves. It could be seen that gas reserves have fallen below oil reserves but generally the trend is the quick depletion of reserves of both and oil and gas.

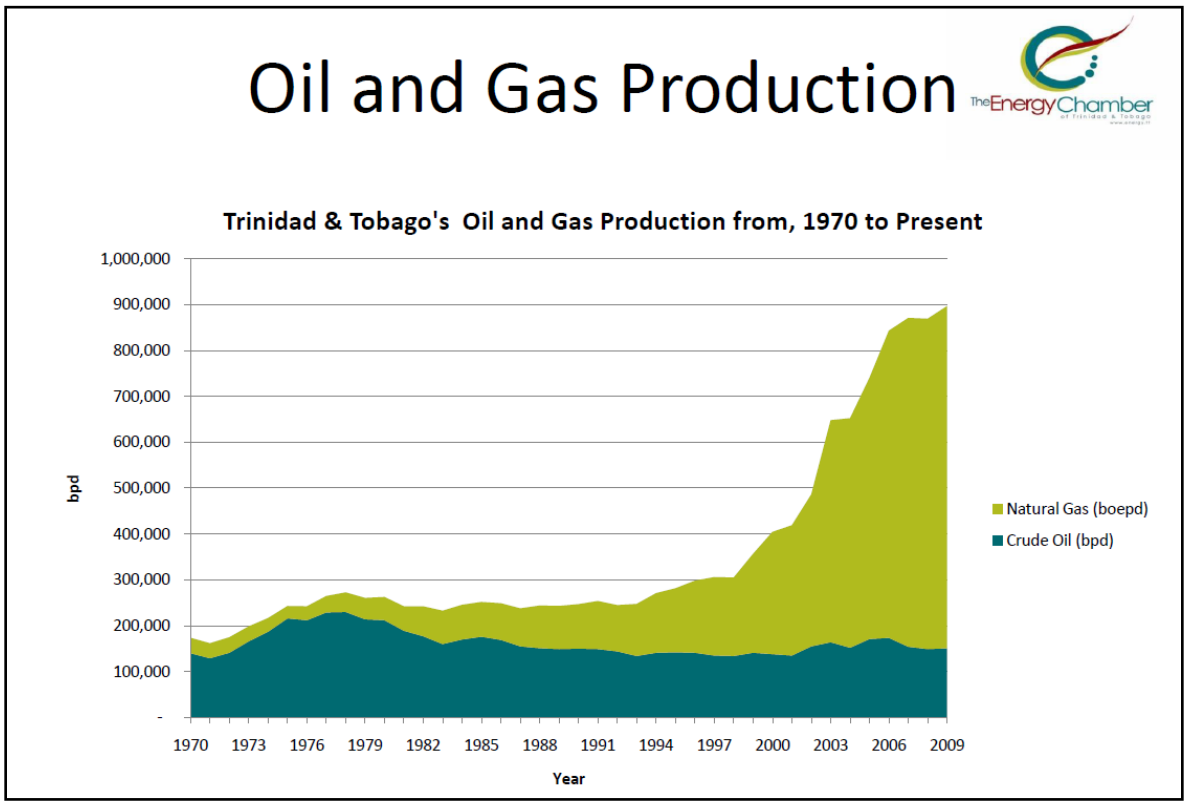

Figure 2: Oil and Gas Production

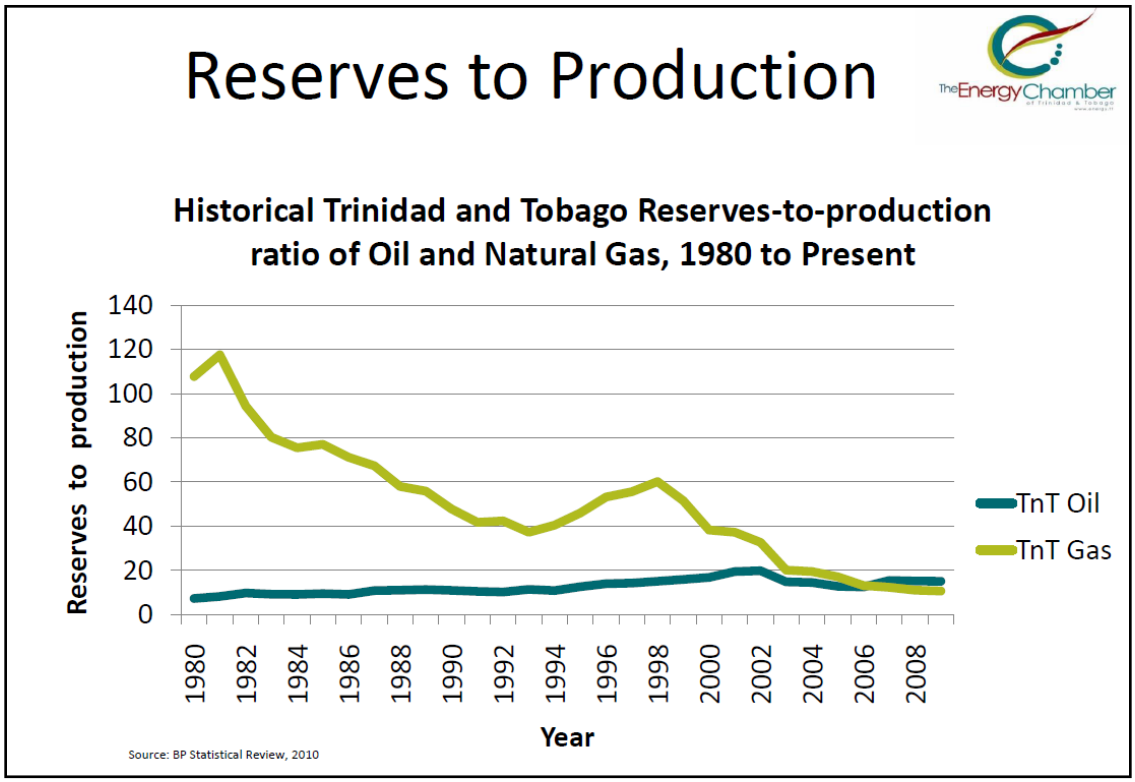

Figure 3: Reserves to Production

Potential CDM opportunities for the country include energy efficiency in the petrochemical and power generation sector, plastic (polyethylene) recycling and carbon capture and sequestration.

The promotion of the Green Economy locally is also a potential driver of the CDM. Measures which may promote a local Green Economy include:

- Policy targets for reduction of carbon emissions by milestone dates
- Review of tariff structure for electricity and transportation fuels and removal of subsidies
- Promotion of widespread use of cleaner transportation fuels like CNG in public transportation (PTSC, maxis, PH and private vehicles)
- Promotion of the measuring of carbon footprint and greening of businesses and increased energy efficiency and electricity conservation.

The aim of The Energy Chamber is to promote energy investment and export energy services.

An Overview of GHG Emissions in T&T and Identification of Opportunities (Mr. Donnie Boodlal, Researcher, Natural Gas Research Institute of the Americas, The University of Trinidad and Tobago)

Mr. Boodlal noted that the total GHG emission of Trinidad and Tobago is 52 million tonnes (2009) – 73rd in the world). Trinidad and Tobago contributes less than 0.1% of total global emissions but in terms of CO_2 emissions per capita, Trinidad and Tobago ranks 2nd in the world (40 tons/person). Trinidad and Tobago has the lowest carbon utilization efficiency in the world when expressed as CO_2/GDP.

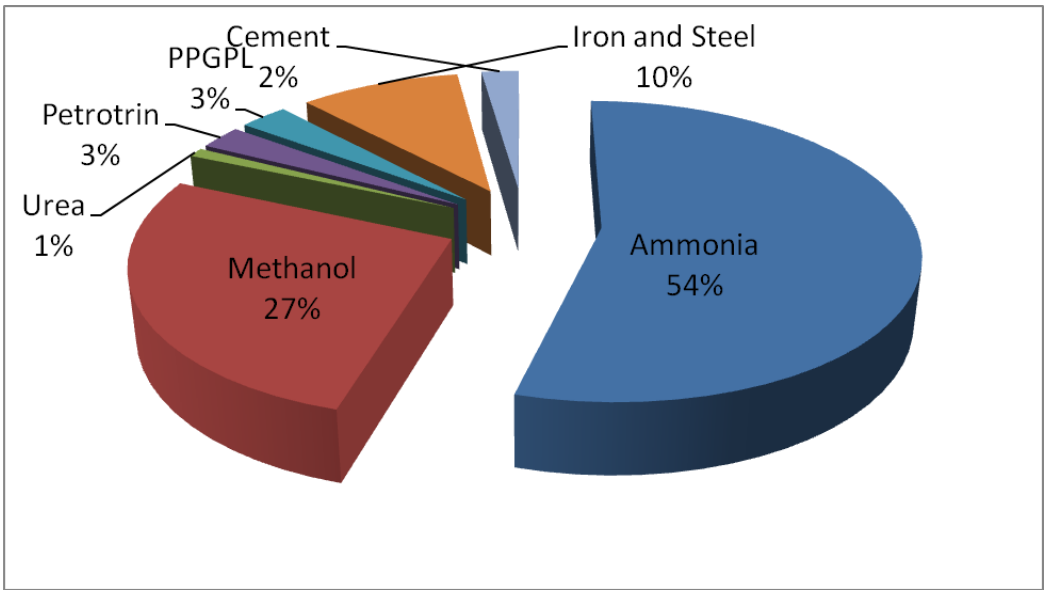

Figure 4: A closer look at the Petrochemical Sector (2009)

Mr. Boodlal took a closer look at carbon emissions by percentage from the petrochemical sector which is summarized in the chart above. Ammonia is clearly the largest contributor of CO_2 emissions within the petrochemical sector. The industrial sub-sector is the largest contributor of CO_2 emissions amongst the power generation sector accounting for more than 80% or related emissions. Management options for CO_2 emissions include energy efficiency, energy conservation, fuel switching (including renewable), CO_2 re-use and carbon capture and storage.

It was noted by Mr. Boodlal that the Powergen Port of Spain Plant operates at 28% efficiency, the Powergen Point Lisas Plant operates at 21.8% efficiency and the Trinity Power Plant in Point Lisas operates at 27.5% efficiency. Therefore, there is tremendous potential for the increase in energy efficiency through the conversion of these power plants to combined cycle power generation. It was further noted that in terms of opportunities for Trinidad and Tobago, the lowest hanging, greatest impact fruits included CNG, enhanced oil recovery, power generation efficiency, power consumption efficiency, and solar water heating.

He noted that government response should include the following:

- Setting an aggressive but realistic target for GHG reduction soon
- Rapidly pursuing “negative-cost” and “CDM-able “ opportunities
- Fast-tracking commercialization of promising technologies

The business response should include the following:

- Reduction of carbon footprint
- Contribution to policy debate
- Identification and capture of new business opportunities

The consumer response should include:

- Making more informed choices about their consumption
- Putting pressure to drive business and government actions

Ms. Hannah Wei-Muddeen of Trinidad Cement Limited (TCL) presented on the potential for a CDM project using waste tyres in cement kilns. However, due to copyright issues, TCL was not willing to provide their presentation to the Multilateral Environmental Agreements Unit (MEAU) or disseminate the contents of their presentation.

Conclusions and Recommendations

- One of the most feasible projects for Trinidad and Tobago at the moment is the conversion of single cycle power generation to combined cycle power generation. It was suggested that the combined cycle power plant at the Union Estate in La Brea temporarily replace the Port of Spain power plant. In the interim, a new combined cycle power plant may be commissioned and be registered as a CDM project. This was suggested as the first CDM project for Trinidad and Tobago. A PIN would be written for this project by a hired consultant.

- It is recommended that the Trinity power plant be converted to combined cycle generation and that Trinity Power Limited be invited to the next round of CDM meetings to begin the consultations to further this recommendation.

- A portfolio of potential CDM projects for Trinidad and Tobago will be developed by the Ministry of Energy and Energy Affairs in conjunction with the Ministry of Housing and the Environment by September, 2011.

- The Designated National Authority (The MEAU) will develop a National Sustainable Development Criteria to be used in the approval of CDM projects at a national level.

- It is recommended that the DNA work with the Environmental Management Authority (EMA) to develop a screening process for CDM Project Design Documents (PDDs) to be incorporated in the Certificate of Environmental Clearance (CEC) Rules.

- It is recommended that the DNA concretize the process for approval of projects, i.e. a formal letter of approval or a letter of non-objection. Internally, the DNA needs to specify its roles and responsibilities (in terms of personnel; who signs letters etc). The DNA may require technical knowledge in this regard.

- The DNA should initiate consultations with the Bankers Association of Trinidad and Tobago to commence the development of the Investor's Guide for CDM as outlined in the work plan of the project.

- The Ministry of Housing and the Environment should begin scoping for a Programme of Activity (POA) for the country.

APPENDIX I

AGENDA

Capacity Building Workshop on CDM Project Identification, Design, and Implementation, Hotel Normandie, 12-13 April 2011

Schedule	Sessions	Speakers
DAY 1		
Session 1: Opening session; Chair		
9.00	Introduction	Kishan Kumarsingh, MEAU
9.05	Welcome and opening speech	Mrs. Veronica Belgrave, Permanent Secretary, Ministry of Housing and the Environment
9.20	Welcome from the European Commission	Solomon Ioannou, EC
9.30	About the EC ACP MEA projects, objectives of the workshop and work-plan	Joergen Fenhann, URC
Session 2: Status of the CDM and the carbon markets		
9:40 - 10.00	The CDM: A review of its development and status of the carbon markets	Oscar Coto, EMA
10.00 - 10.20	CDM project implementation progress so far – the URC CDM Pipeline	Joergen Fenhann, URC
10.20 - 10.40	Past experience and current CDM status in Trinidad and Tobago	Kishan Kumarsingh, MEAU
10.40-11.00	**Tea Break**	
Session 3: The CDM project cycle: process, actors and basic concepts behind project development		
11.00 - 11.45	CDM project cycle – process and actors, concepts and their application in project identification	Oscar Coto, EMA
11.45 - 12.30	CDM Methodologies and the Methodology Selection Tool	Jorgen Fenhann, URC
12.30-1.30	**Lunch break**	
Session 4: CDM examples – New rules - Programmatic CDM		
1.30 - 2.30	CDM project types and scales, showcase examples of CDM projects	Oscar Coto, EMA

2.30 -2.50	Recent developments and regulations for project activities in the CDM: rules for CDM project from Small Island States	Joergen Fenhann, URC
2.50 - 3.30	Programmatic CDM	Joergen Fenhann, URC
3.30 – 3.50	**Tea break**	
Session 5: Project identification & Sources of information		
3.50 - 4.20	Identifying and screening CDM opportunities in Trinidad and Tobago	Oscar Coto, EMA
4.20 - 4.50	Important web sources of information: CDM Rulebook, CDM Pipeline, Project web sites	Joergen Fenhann, URC
4.50 - 5.00	Group photo	
DAY 2		
Session 1: CDM Project opportunities in Trinidad and Tobago		
9.00 - 9.20	Wind CDM Projects	Indu Sharma, GDF Suez
9.20 - 9.40	Landfill CDM projects	Uche Osuji, SWMCOL
9.40 -10.00	Wind CDM projects	Najma Hosein, WindTNT
10.00 -10.20	Renewable Energy Policy and its potential for CDM Projects	Ministry of Energy and Energy Affairs
10.20 - 10.40	Cement CDM projects	Hannah Wei-Mudden, Trinidad Cement Limited
10:40 - 11.00	**Tea break**	
11:00 - 11.20	Experiences from the Nariva Wetland CDM project	Dr. Joth Singh, EMA
Session 2: PIN preparation		
11.20 -11.40	PIN – the uses of a PIN and its preparation	Oscar Coto, EMA
11.40 -12.30	Group exercise on PIN preparation	Group work
12.30 – 1.30	**Lunch**	
Session 3: Pin preparation and the PDD		
1.30 - 2.30	Group exercise on PIN preparation	Group work
2.30 - 3.30	PIN Presentation and discussion	Presentations from groups
3.30 – 3.50	**Tea break**	
3.50 – 5.00	Discussions and conclusion of the workshop	

APPENDIX II

AGENDA

CDM Workshop for the Energy Sector
The University of Trinidad and Tobago, 14 April 2011

Schedule	Sessions	Speakers
Session 1: Overview		
9.00 - 9.10	Welcome and opening speech	Kishan Kumarsingh, MEAU
9.10 - 9.20	About the EC ACP MEA projects, objectives of the workshop and work-plan	Joergen Fenhann, URC
9.20 - 9.40	Overview of the sector	Sherwin Long, Energy Chamber
9.40 - 10.10	CDM project implementation progress so far – the URC CDM Pipeline, Key web-sites	Joergen Fenhann, URC
10.10 – 10.40	Energy sector CDM projects in the region	Oscar Coto, EMA
11.00 – 11.00	The CDM project cycle	Joergen Fenhann, URC
11.00 - 11.20	**Tea break**	
Session 2: Key sectors		
11.20 -11.45	An Overview of the Point Lisas Industrial Estate	Gerrel Traboulay, Plipdeco
11:45 – 12:05	Power plant CDM projects	Donnie Boodlal, UTT
12:05 - 12.30	Reduction of N2O from nitric acid production	Adel Al Taweel, UTT
12.30 - 1.30	**Lunch**	
Session 3: Group work on CDM ideas		
1.30 – 3.00	Group work on CDM project in the Energy Sector	Group work
3.00 – 3.20	**Tea break**	
3.20 – 4.00	Presentation from the groups	Groups
4.00 – 4.50	Discussion on possible CDM projects	Oscar Coto, EMA
4.50 – 5.00	Conclusion of workshop	

APPENDIX III

Attendance Register for April 12-13, 2011, Normandie Hotel, Port of Spain

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APPENDIX IV

Attendance Register for April 14, 2011,
The University of Trinidad and Tobago, Point Lisas Campus

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