Canadian International Development Agency

THE CDM IN LATIN AMERICA AND THE CARIBBEAN

COUNTRY STUDY: JAMAICA

PROJECT: CLIMATE CHANGE

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The author of the present document is Oscar Coto, PhD and Liana Morera, MSc.

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Acronyms

CAF	Corporación Andina de Fomento
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CFL	Compact Fluorescent Lamp
CIDA	Canadian International Development Agency
COP	Conference of Parties
DNA	Designated National Authority
DOE	Designated Operational Entity
DSM	Demand-side Management
EB	Executive Board of the CDM
ECLAC	Economic Commission for Latin America and the Caribbean
EIA	Environmental Impact Assessment
GHG	Greenhouse Gas
OLADE	Organizacion Latinoamericana de Energia
IRR	Internal Rate of Return
LAC	Latin American and Caribbean Region
MLE	Ministry of Land and Environment
MOP	Meeting of Parties to the Kyoto Protocol
MSW	Municipal Solid Waste
PCJ	Petroleum Corporation of Jamaica
PDD	Project Design Document
RFP	Request for Proposal
SD	Sustainable Development
SEER	Seasonal Energy Efficiency Ratio
SSN	SouthSouthNorth
SWAC	Sea Water Air Conditioning
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified Emission Reductions

Executive Summary

This document has been developed as part of the implementation of the Climate Change Initiative - Phase II, developed by the Sustainable Energy Program currently carried out by the Latin American Energy Organization and the University of Calgary, with financial support from the Canadian International Development Agency (CIDA).

The objective of this Initiative is to strengthen OLADE member countries technical and institutional capacity to participate in the Clean Development Mechanism (CDM), through the provision of up-to-date information regarding CDM procedures and activities, critical analysis of regional and national CDM activities, and provision of targeted training and technical assistance.

The current document presented here corresponds to the Jamaica National Case Study. Its major purpose is to provide Jamaica's CDM National Authority, the Ministry of Land and Environment (MLE), as well as other in-country national stakeholders, with a study on the national status of the participation on the mechanism, aiming at increasing in-country capacity for participation in the CDM.

The first chapter describes the CDM institutional framework in Jamaica. It includes a description of the current development situation of the CDM National Designated Authority, its mandate and activities as well as a description of the National CDM Project Approval Process together with the evaluation criteria currently used for the assessment of sustainable development contribution to national objectives of Jamaica. The Designated National Authority (DNA) to the CDM in Jamaica is currently the Ministry of Land and Environment (MLE). A Cabinet Decree from the Government of Jamaica dating from 2002 assigned responsibilities to MLE as the DNA, although such designation was given an interim status. Information is presented on aspects related to current mandate and functions of the DNA, an overview of the project approval process and description of the evaluation criteria in use in Jamaica. As it was found out during the in-country visits to Jamaica, by the implementing consulting team, Jamaica has retained trough the CDM project evaluation process considerations on the additionality aspects of a project, as well as aspects related to technology appropriateness, and sustainable development considerations (for which specific criteria are under development).

The second chapter presents recommendations for improvement of the national procedures for CDM in the country, discussing the spaces available to streamline institutional developments in the context of regulatory and promotional aspects of the CDM, followed by a short presentations of the menu of options available to Jamaica for the consideration of sustainable development criteria as part of the national CDM project approval process. Presentation is given to some suggestions on guidelines for establishing the national approval process by defining scope, efficiency, transparency and sustainable development objectives of the approval process. The document continues with a description of suggested requisites of the approval process as well the discussion of the relevant criteria to be used through

the evaluation process for CDM projects in Jamaica. Following the work developed in other countries, in which the OLADE/University of Calgary team have been working, presentation is given of the dimensions of sustainable development in the CDM, presenting to MLE experiences gained in other countries on the issue of assessing sustainable development contributions of CDM projects, with the aim of sharing valuable lessons learned on this key issue.

Chapter 3 presents the overview of the identified projects in the CDM portfolio of Jamaica as well as some case studies on the status of development of some projects in the country, followed by a presentation on the current status of identification of promising project ideas for the CDM. As part of this chapter, some comments are included on the development of local capacity for the undertaking of formulation of CDM projects, suggesting potential actions to be developed in the country in order to increase local capacity to participate and manage different aspects of the CDM project cycle.

Starting on an assessment of the current policy objectives of the Government of Jamaica in renewable energy and energy efficiency, estimations are conducted on the potential expected CERs that could be generated from wind, hydro, cogeneration and wood to energy and solar projects in the country. A total of up to 303,000 ton CO2/year (lower range) and near to 600,000 ton CO2/year could be expected depending on how the mobilization of investment in renewable energies shapes in the near term, in response to enacted policy objectives of the country. In the case of energy efficiency the total potential ranges up to 800,000 ton CO2/year, and a more concrete identification based on demand side management programs indicate a potential of getting up to 160,000 ton CO2/year in the near future.

The document presents and evaluation of the current portfolio of CDM projects in the country, detailing that there are currently 3 projects advancing on the CDM project cycle. These are the Wigton Wind Farm project (56,200 ton CO2/year), EcoTec CFL replacement project (23,000 ton CO2/year) and a rum distillery project for biogas production (116,000 ton CO2/year). It is clear that realizing the potential of identified emissions reductions would require major efforts in promoting the necessary investment in the country as well as leveraging interest and capacity development in the CDM as a complementary mechanism for supporting both renewable energy and energy efficiency projects in the country.

The document continues by providing MLE with an assessment of the results of the request for proposals conducted by the MLE in 2004-2005, that has identified up to 20 prospective projects for the CDM in the country, and suggesting concrete actions in order to move some of these projects from the status of identification into a project idea note useful for accessing windows of opportunity in the carbon market.

Presentation is given to a couple of case studies from the current portfolio in Jamaica, detailing aspects and lessons learned on the development of grid

emission factors as well as the additionality arguments that have been successfully developed by local project developers.

The document concludes with a summary presentation of key points and possible actions that may assist the development of the CDM in Jamaica.

First of all, the project portfolio needs to be assessed from the perspective of completing estimations required for determining emissions reductions, degree of risk associated to the proposed ideas, solving of legal rights and entitlement to emissions reductions to be generated, and other standard commercial activities of the market.

Secondly, efforts for CDM promotion and capacity building in Jamaica need to be systematised through a national strategy, aimed at increasing the links with productive sectors and development of national capacities for PDD formulation. This linkage becomes very important since a fair percentage of the projects may be of a small scale nature.

The report concludes that in the interest of developing the CDM potential in Jamaica, an effort should be placed in the development of programmatic type activities as well as on “bundling” of smaller scale projects. As such, different government institutions as well as universities can play an active role in developing the necessary tools used for their formulation according to the modalities and procedures of the CDM, assisting in reducing transaction costs, and reducing validation risks to projects in the portfolio.

Introduction

This project was developed as part of the implementation of the Climate Change Initiative - Phase II, developed by the Sustainable Energy Program currently carried out by the Latin American Energy Organization and the University of Calgary, with financial support from the Canadian International Development Agency (CIDA).

The objective of this Initiative is to strengthen OLADE member countries technical and institutional capacity to participate in the Clean Development Mechanism (CDM), through the provision of up-to-date information regarding CDM procedures and activities, critical analysis of regional and national CDM activities, and provision of targeted training and technical assistance.

The Phase II of the project builds on the earlier phase of information gathering (Phase I), which included LAC and International CDM Assessments. The products of Phase II Project are:

- National Case Studies: to be carried out in four OLADE member countries to extend the analysis of the current CDM institutional and project development situation in each country, identify the capacity building needs and to make suggestions of possible best practices and actions that can be put in place in order to strengthen the capacity to participate in the CDM. The four countries chosen for the case studies are Cuba, Jamaica, Nicaragua and El Salvador
- Development of National Training and Capacity Building Workshops based on identified technical and institutional issues.
- Development of a Lessons Learned Document: summarizing identified lessons learned through the process of implementing actions in the CDM field and outlining possible considerations for strategic actions to enhance in-country participation in the CDM.

The current document presented here corresponds to the Jamaica National Case Study. Its major purpose is to provide Jamaica's CDM National Authority, the Ministry of Land and Environment (MLE), as well as other in-country national stakeholders, with a study on the national status of the participation on the mechanism, with the aim of contributing to the in-country process for implementing the CDM.

The first chapter describes the CDM institutional framework in Jamaica. It includes a description of the current development situation of the CDM National Designated Authority, its mandate and activities as well as a description of the National CDM Project Approval Process together with the evaluation criteria currently used for the assessment of sustainable development contribution to national objectives of Jamaica.

The second chapter presents recommendations for improvement of the national procedures for CDM in the country, discussing the spaces available to streamline institutional developments in the context of regulatory and promotional aspects of the CDM, followed by a short presentations of the menu of options available to Jamaica for the consideration of sustainable development criteria as part of the national CDM project approval process.

Chapter 3 presents the overview of the identified projects in the CDM portfolio of Jamaica as well as some case studies on the status of development of some projects in the country, followed by a presentation on the current status of identification of promising project ideas for the CDM. As part of this chapter, some comments are included on the development of local capacity for the undertaking of formulation of CDM projects, suggesting potential actions to be developed in the country in order to increase local capacity to participate and manage different aspects of the CDM project cycle.

The document concludes with a summary presentation of key points and possible actions that may assist the development of the CDM in Jamaica.

1. Institutional Framework for the CDM in Jamaica

1.1. The CDM Designated National Authority (DNA)

The Ministry of Land and Environment (MLE) is reported to the UNFCCC Secretariat as the Interim Designated National Authority to the Clean Development Mechanism. The designation of MLE was made by the Cabinet of the Government of Jamaica in September 2002[1].

The Cabinet Decision 32/02 came in response to a submission #379 from MLE, giving approval for the MLE to be designated as the Interim Designated National Authority for the CDM of the Kyoto Protocol. At the same time, the Cabinet decision requested the Ministry of Foreign Affairs and Foreign Trade to issue a letter of authorization of full power to the MLE to sign a letter of approval for the Wigton Wind Farm Project, and defined the terms for the writing of such letter of approval.

In the meantime, to advance the implementation of the CDM and complete all institutional matters a tripartite arrangement was made among three principal national stakeholders with different expertise

- The Ministry of Land and Environment
- The National Meteorological Services Division
- The Scientific Research Council

This arrangement had as its objective to determine a plan of action, roles of the respective interest groups, time frames, modus operandi, etc.

Currently these institutions plus the Ministry of Commerce, Science and Technology and the Petroleum Corporation of Jamaica constitute the Technical Committee responsible for the approval decision of CDM projects. As required and based on the nature of a project, other assistance may be sought from other experts as the Forestry Department, the National Solid Waste Management Authority and the National Environment and Planning Agency. The Attorney Generals Chambers offers legal advice and undertakes legal reviews of agreements etc.

1.2. Mandate and Functions

As the institutional framework for CDM in Jamaica is still being determined all functions and responsibilities of the DNA have not been yet defined[2]. Currently,

[1] Cabinet's decisions from September 24th and 26th
[2] MLE is currently working on a Cabinet Submission for the establishment of the permanent DNA.

the Ministry of Land and Environment[3] as the interim DNA accomplishes both regulatory (project approval process) and promotional activities related to the CDM and its Environmental Management Division is in charge of all operative functions under the CDM, although there seem to be no specific internal ministerial decrees that pertain to the organizational matters of the CDM within MLE.

The Environmental Management Division is responsible for the development of policies and the framework to govern national environmental management issues. This includes the development of:

- adequate and appropriate policy instruments, supported by well developed research and database systems in the area of environmental protection and conservation, and
- effective legislation, standards and guidelines to promote sustainable development of the built and natural environment

Its major working areas are:

- Biodiversity (including national parks and protected areas, wildlife protection, endangered species, bio safety)
- Climate Change
- Environmental Stewardship
- Integrated Coastal Zone Management
- Pollution control (including air and water quality, the ozone layer, waste management particularly hazardous waste, persistent organic pollutants)
- Renewable Energy (including energy conservation issues)
- Sustainable Development (including Small Island Developing States issues)
- Trade and Environment
- Watersheds Management

1.2. The CDM Project Approval Process in Jamaica

Jamaica has developed a draft project approval process composed of a preliminary optional procedure, whose objective is to issue a letter of "no objection" or letter of support to the project and a final procedure that finishes with the delivery of the letter of approval in accordance with the CDM international regulations. The entire process is:

[3] www.mle.gov.jm

1.2.1. Process Related to the Issuance of Letters of No-Objection:

1. The Project Idea is submitted to DNA by project proponent asking for a letter of “no objection” or letter of support.

2. The Project Idea is reviewed by DNA.

3. A Letter of response is issued by DNA.

The objective of this preliminary process is to offer the project proponents with the opportunity of receiving documentation stating that the Government of Jamaica does not object to the continuation of process to develop the project as a CDM project activity, although retaining the right to further assess the project with the established criteria for such evaluations in Jamaica, among other issues.

Inbox 1

Sample Draft Letter of Endorsement

Construction of an Up flow Anaerobic Sludge Blanket (UASB) Reactor and Utilization of the Methane Produced at the New Yarmouth, Clarendon and Appleton Distilleries

The undersigned, as a legal and authorized representative of the Government of Jamaica, considering the proposal by *Forrest and Associates* (the "Applicant"), to implement C*onstruction of a UASB Anaerobic Reactor and Utilization of the Methane Produced at the New Yarmouth, Clarendon and Appleton Distilleries* (the "Project"):

1. Refers to the request by the Applicant that Emission Reductions generated by the Project be considered for purchase by KfW, Germany under the Clean Development Mechanism of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

2. Declares that

a. the Government of Jamaica has ratified the Kyoto Protocol
b. the Government of Jamaica has established an Interim Designated National Authority
c. the Government of Jamaica has taken notice of the Project, and is aware that the Applicant intends to sell ensuing Certified Emission Reductions the Project will generate to KfW, Germany
d. The Government of Jamaica will assess the Project in accordance with Jamaica's criteria for accepting such projects
e. The Government of Jamaica will start discussions with the Applicant within a reasonable time period, on the distribution of ensuing Certified Emission Reductions to be generated
f. The Government of Jamaica endorses development of the Project in accordance with Article 12 of the Kyoto Protocol and will facilitate, as may be necessary, the future validation, verification, issuance and transfer of the Certified Emission Reductions.

In the event that the results from the assessment of the Project and discussions between the Government of Jamaica and the Applicant are acceptable to both parties, the Government of Jamaica will consider granting formal approval of the Project, with the intention of enabling the transfer of Certified Emission Reductions to the account of KfW, Germany.

Full Name of Country:	Jamaica
Name:	Mrs. Anastasia Calnick
Position:	Director, Pollution Control Environmental Management Division Ministry of Land and Environment Interim Designated National Authority
Date:	12 April 2005
Signature	

Inbox 1 presents a representative indicative letter of no objection issued to a Jamaican project proponent for a rum distillery project interested in CDM emissions reductions.

The documentation available[4] on this procedure is not explicit as to the criteria used in order to conduct step 2 related to the review process of the DNA for the project idea submitted, or the scope of contents of a project idea document that needs to be submitted to the DNA.

1.2.2. Process for National Approval of CDM Projects (to obtain the letter of approval required for registration of CDM project activity)

The objective of this procedure is to define the approval of the Government of Jamaica to be expressed in the Letter of Approval to be submitted together with other relevant project cycle documentation to the EB of the CDM for the request and further registration of the proposed CDM project activity to take place in Jamaica. This procedure includes the following steps:

1. Formal Submission of Project Proposal to DNA by project proponent.

2. A Letter of Acknowledgement of Project Proposal is sent by the DNA to the project proponent.

3. The Project Proposal is sent to the members of the Technical Committee.

4. A Meeting of the Technical Committee is convened in order to review the Project Proposal and take a decision.

5. Depending on the decision of the Technical Committee, a Letter of Approval or Disapproval is prepared for legal review by DNA.

6. The Letter is sent to project proponent.

In respect to the procedure for granting of letter of approval, it is not clear at least:

1. What constitutes the formal submission of a project proposal to the DNA? In the procedure for granting of letters of no objection, it was clear that the proponent must submit a project idea; but in the format approval process is not clear whether or not the PDD is the binding document required for the review procedure or if there is a different format for a ***project proposal*** to be submitted at the time of requesting a letter of approval.

[4] Anastasia Calnick. The CDM Project Approval Process in Jamaica. Presentation at the Regional Workshop on Recent Developments in the CDM. Mona Visitors Lodge, 10-11 November 2005.

2. What is the expected timeline required for the review and approval of the project proposal as well as the time required for the issuance of the final letter of approval?

It is important to note that Cabinet Decision 32/02 approves the designation of MLE as interim DNA. The Cabinet Decision 32/02 gives MLE the right to issue a letter of approval to a particular project (that is the Wigton Wind Farm), but it is not clear if this power authorizes MLE to give letters of approval to other projects.

The following page presents the formal letter of approval issued by the MLE as acting DNA, used for the current request for registration of the Wigton Wind Farm Project in Jamaica, expected to be registered by March/April 2006.

Although the Government of Jamaica issued the approval letter to the Wigton Project in 2002, and such version has been used for registration to the CDM, another letter signed on 14/2/05, expands on some reasoning for approval of the project and confirming that the project is to be brought under the CAF-Netherlands CDM Facility.

Taking into account that at the time of issuance of the letter of approval to the Wigton Project, there was no guidance given by the CDM EB, this letter contains more that the necessary considerations required currently by the EB, although it does not mention the voluntary participation of the parties, that is required formally by the CDM.

It is expected that since such guidance is now in place, the Government of Jamaica will conform to such guidance when issuing letters of approval for new CDM projects in the country.

The letter of approval for the Wigton Wind Farm Project follows:

MINISTRY OF LAND AND ENVIRONMENT

1 DEVON ROAD, P.O. BOX 272, KINGSTON 6, JAMAICA

Telephone 927-9941-3; Fax 929-7349

Letter of Approval

The Undersigned, as a legal and authorized representative of Jamaica,

Recalling that Jamaica is a party to the United Nations Framework Convention on Climat Change and the Kyoto Protocol,

Bearing in mind that Article 12 of the Kyoto Protocol provides that the purpose of the Clea Development Mechanism shall be to assist Parties not included in Annex 1 to the Convention in achieving sustainable development and in contributing to the ultimate objective of th Convention, and to assist Parties included in Annex 1 in achieving compliance with thei quantified emission limitation and reduction commitments under Article 3 of the Kyot Protocol,

Recalling that The Netherlands is a party to the United Nations Framework Convention on Climate Change and the Kyoto Protocol, and is included in Annex 1 to the Convention,

Referring to:

Project No. CER 01/11, named the Wigton Wind Farm Project, hereinafter referred to as "the CDM project", located at Wigton in the Parish of Manchester, Jamaica, a 20 MW generation project developed by Renewable Energy Systems Ltd. (RES), hereinafter referred to as "the Contractor",

declares that:

1. Jamaica acceded to the Kyoto Protocol on June 28, 1999.

2. Jamaica recognizes the CDM project to be a Clean Development Mechanism project in accordance with Article 12 of the Kyoto Protocol and its underlying decisions.

3. Jamaica confirms that the CDM project contributes towards the realization of the country's sustainable development goals.

4. Jamaica authorizes the Contractor and any future owner of the CDM project to generate certified emission reduction units (CERs), by the realization and operation of the CDM project, in accordance with Article 12 of the Kyoto Protocol.

5. Jamaica accepts the transfer of 100% of verified CERs, generated through the CDM project, to the Government of The Netherlands during the crediting period of the CDM project 2003 - 2013, through issue of CERs by the CDM Registry under the CDM Executive Board, cf. FCCC/CP//CRP.11, Annex to Decision -/CMP.1 (Article 12) Part J or through any other mechanism accepted by the Conference of the Parties/Meeting of the Parties.

6. The transfer of CERs is irrespective of any legal or other transfer of the CDM project to third parties.

7. In case the Kyoto Protocol will not enter into force, Jamaica and the Netherlands consider the transfer to The Netherlands as a transfer of greenhouse gas emission reduction on a bilateral basis.

Done the 26th day of September 2002, at Kingston, Jamaica

For Jamaica .....

Horace W. Dalley, M.P.
Minister of Land and Environment

1.3. Evaluation Criteria for CDM Projects

The evaluation and approval process in Jamaica comprises more than evaluation of the contribution to sustainable development by the project. The entire process includes assessments of additionality and nature of the technology used by the project.

Until now, Jamaica has reviewed and approved one project, the Wigton Wind Farm, developed by the Petroleum Corporation of Jamaica. When this project was submitted for evaluation, criteria had not been yet developed so in order to facilitate the evaluation of this project, the following criteria were temporarily established:

- Sustainable development.
- Stakeholder's participation.
- Additionality.
- Net reduction of greenhouse gas emissions.

As per a recent presentation done by the Jamaican DNA,[5] evaluation of CDM project activities currently comprises the following aspects:

1. The feasibility and appropriateness of technology.
2. The contribution to Sustainable Development (currently the national sustainability criteria are being developed).
3. The additionality of the project (benefits should be additional to what otherwise would have occurred in the absence of the certified project activity).

The DNA has not yet established the set of criteria, indicators and general procedure used for the evaluation of the different aspects to be considered in the evaluation of proposed CDM project activities. It seems that items 1 and 2 of the preceding list are well within issues normally considered by DNAs elsewhere, based on current policies and regulations in the area of compliance with national objectives, as well as with national sustainable development criteria. It is worth suggesting that the DNA in Jamaica makes the procedure more transparent to project proponents by disclosing a set of criteria and indicators to be used, as well as definition of the timeline for approval processes in the CDM locally.

[5] OLADE/UNEP Riso Regional Workshop on Recent Developments in the CDM – 10-11 November 2005

By way of example, the Wigton Wind Farm Project in its PDD documentation makes use of the following arguments to support why the project is contributing to the sustainable development in Jamaica:

- Compliance with government energy policy and generation of renewable energy based electricity and diversification of generation sources.

- Increased creation of employment, both during construction and during operation of the facility.

- Increased local investment, especially since about a quarter of the total investment will be in local civil contractors working for the project.

- Increased benefits from the dissemination of renewable energy at the local educational level.

1.4. Capacity Building and Promotional Activities in the CDM

The MLE in Jamaica also develops capacity building and promotional activities related to the CDM. However, the DNA doesn't have any formally established strategy and plan for promotional activities in the CDM.

The CDM training activities carried out in the last few years in Jamaica have been mostly, independent initiatives organized with the support from different institutions like UNDP, the Canadian International Development Agency (CIDA), and more recently OLADE/UNEP Riso.

In 2005, MLE issued a Request for proposal for project ideas suitable to be developed as CDM projects. MLE received a portfolio of 13 different project summaries for consideration. Those will be discussed in chapter 3 of this report.

The call for proposals included the request for the following information:

a) Project location.
b) Background information and justification: included a description of technology and justification.
c) Need or problem to be addressed.
d) Overall goal and purpose of the project.
e) Definition of boundaries of the project.
f) Description of proposed strategies to accomplish the project work.
g) Schedule of activities and estimated budget.
h) Partners and responsibilities.

A review of the proposals received indicates that:

1. Most of the proposals concentrated on project development issues related to the justification of technology and other project issues, consistent with the approach of the DNA to assess viability of project activities, not necessarily CDM aspects.

2. A fair number of proposals seem to have presented information related to their financing needs especially for developing pre investment studies required for further advancing the development of business plans for the project ideas.

3. In the area of municipal services, there are a few proposals that seem to be competing for the use of common resources, such as MSW and waste water from treatment plants, but without creating certainty as their right to claim the CERs from potential CDM projects at those sites.

4. Few projects seem to have grasped the need to provide estimates ex ante on potential emissions reductions from the proposed activities.

5. Few projects seem to manage well the language of the CDM with respect to eligibility requirements and project definitions like boundaries, baseline, etc.

The issues aforementioned described indicate some of the major needs in which to focus promotional aspects of the CDM in the country, which will be dealt with in a further section of this report.

2. Strengthening the CDM Project Approval Process in Jamaica

The Ministry of Land and Environment in Jamaica, acting as the Interim National Designated Authority to the CDM, is currently preparing a formal submission to the Cabinet, in order to move forward the process to establish the firm grounds for the full establishment of the DNA in the country. This process includes the definition of the organizational chart of the internal ministerial office to be charged with the day to day operations of the CDM in country, define the scope and responsibilities of the office that are relevant to the CDM in Jamaica, and define the administrative actions that will allocate the required technical, human resource and budgetary requirements. At the international level, it is to be recalled that Jamaica has already reported to the UNFCCC Secretariat that the MLE is the acting DNA. It is expected that on going process in Jamaica is of an internal in-country development of the ministerial level and not an external change at the level of the UNFCCC Secretariat.

The present work is not intended to provide input to the current institutional developments in Jamaica, due to the internal ministerial and cabinet decisions involved in such a process.

The purpose of this chapter is to provide assistance to MLE in assessing and providing some recommendations on the nature of the national approval process that they may implement in response to the required international charter of the CDM.

2.1. Process Related to the Issuance of Letters of No-Objection:

As it was presented in Chapter 1, the approval process in Jamaica comprises two separate procedures defined on the basis of draft publications available, that were previously presented. The first procedure, which is in fact optional, is conducive to the issuance of a letter of no-objection to a project proponent. This letter is sometimes requested by carbon buyers as a way to manage risks in early project identification and development. As such, this type of letter of no-objection is not binding the host government to approve CDM projects and for that matter the legal language included allows the government or the DNA to express its right to fully assess the project during a formal national approval process.

The only issue worth mentioning here with respect to this procedure at the early stage of a project relates to the relative lack of clarity with respect to the type of information required for the process. The information required is basically the submission of project idea, although the process presented by MLE does not include a definition of what makes a project idea document. It will be important for any project developer to have a clearer idea of the intent and contents of a Project Idea to be submitted to the DNA. For that matter, the DNA can certainly discuss and propose a format for the Project Idea document required, and for that it may select/adapt from several types of well established protocols for the contents of project idea notes that are used in current carbon markets. The process involved

in the issuance of letters of no-objection can perfectly retain a certain degree of flexibility due to the nature of those letters not required directly by the formal registration process of the CDM, and the government can exercise its discretional judgment as to the criteria, level of information required and feedback loops required as to reach a decision on their issuance. It seems important in some types of projects that the DNA should exercise careful control on issues related to "rights to resource access". This may arise, for example, in the case of MSW processing for methane emission reduction projects.

A hypothetical case may arise for example if consideration is given to the fact that in the RFP process implemented in Jamaica, several project proponents came forward with project ideas for solving MSW treatment in the country. Some of those proposals aimed at processing the same MSW and therefore unless the DNA exercises the right legal assessment in granting letters of no objection, it may eventually grant such letters without clarifying such important issues, allowing for the potential misuse of such type of documents internally and externally.

2.2. Process for National Approval of CDM Projects

The second procedure is the formal approval of a CDM project so that it can move forward for registration. The current process is established as follows:

1. Formal Submission of Project Proposal to DNA by project proponent.

2. A Letter of Acknowledgement of Project Proposal is sent by the DNA to the project proponent.

3. The Project Proposal is sent to the members of the Technical Committee.

4. A Meeting of the Technical Committee is convened in order to review the Project Proposal and take a decision.

5. Depending on the decision of the Technical Committee, a Letter of Approval or Disapproval is prepared for legal review by DNA.

6. The Letter is sent to the project proponent.

The current information available on the approval process in Jamaica also mentions that the following aspects should be considered when assessing project proposals:

1. The feasibility and appropriateness of technology.

2. The contribution to Sustainable Development (currently the national sustainability criteria are being developed).

3. The additionality of the project (benefits should be additional to what otherwise would have occurred in the absence of the certified project activity).

In order to make suggestions for strengthening the current approval process for CDM projects in Jamaica, the DNA should consider enacting a set of transparent guidelines that drive the overall national approval process of CDM projects. Such guidance normally takes the form of a document posted in the web site of the relevant DNA/Ministry.

2.2.1. Key Elements for a National Approval Process for the CDM

Some of the most important points to be included in the definition of the national approval process are:

Guidelines for the establishment of the approval procedure: normally these are related to scope, efficiency, transparency and consideration given to sustainable development.

Scope is defined in terms of the compliance to the relevant decisions and modalities and procedures of the CDM requesting a host country to express the voluntary participation in the CDM as well as the confirmation of the contribution to sustainable development by the proposed project activity to be registered in the CDM.

Efficiency is related to the criteria and procedures to be used as well as the definition of maximum allowed times allocated for the response to a project proponent.

Transparency related to the support for the decision making process involved based on sound technical criteria and feedback loops used by the DNA that are to be availably published in the web site of the DNA.

Sustainable development reflects on the overarching normative, ministerial decisions and balance when considering environmental, and socio economic aspects of sustainable development.

In the current Jamaican approval process, consideration is given to the issue of assessing the additionality of the project. Although the Jamaican DNA is free to assess whatever aspects it considers relevant in its approval process, it is not the common practice for DNAs to include their own assessment of additionality in their letters of approval to project proponents. The CDM modalities and procedures assign a clear responsibility for assessing the additionality of proposed CDM project activities to the Designated Operational Entities (DOEs) as part of the validation process for the purpose of the CDM registration,

Assessing additionality requires the development of a certain level of technical expertise that is seldom found across so many types of sectors and types of project activities, creating a serious problem in the institutional development of a DNA.

It is suggested that the DNA in Jamaica should evaluate whether or not is appropriate to enter into an in depth analysis of additionality as defined in the scope of the national approval process. If the DNA does need to carry out an assessment of additionality, it is recommended that the special tool developed by the Executive Board be used for this purpose as it will likely match the approach taken by the project proponent

Definition of requisites for the national approval process:

A basic ingredient in any approval process concerns to the types and characteristics of the documents that are to be integral part of the process. The current draft approval process in Jamaica mentions that step 1 of the process is the formal submission of the project proposal by the project proponent to the DNA.

In the current draft approval process there is no definition in the procedure as to what constitutes a project proposal, therefore this is one of the first issues to be addressed by the DNA.

It is becoming more common for host country's DNAs to require the submission of the project´s Project Design Document (PDD) in order to start the national approval processes of proposed CDM project activities.

Therefore it is suggested that the Jamaican DNA should consider establishing the ***requisite of submission of a PDD*** according to the modalities and procedures of the CDM, either in the small scale format if the project complies with such categorization; or the normal standard structured PDD for other types of projects.

It is worth mentioning that the DNA may consider requesting the following two additional documents as part of the submission process:

1. If environmental impacts appear to be significant and an Environmental Impact Assessment (EIA) of the project is required, a copy should be provided, A host country is responsible for determining whether environmental impacts of a CDM project are acceptable, and clarity in this respect normally provides the DNA with assurance that there has been compliance with national legislation, at least on the environmental aspects of the project, reducing uncertainties and time lags required for internal consultation within ministerial offices.

2. Statement declaration by the project proponent including a summary of the project and a declaration of the proponent's views with respect to why the

proposed project activity for the CDM is to be considered as contributing to the sustainable development of Jamaica. For that matter the project proponent may use guidance provided by the DNA with respect to aspects that can be considered when justifying sustainable development contributions of CDM projects in Jamaica (see section 2.3 below). This can certainly create an "environment for common language" development with respect to sustainable development contribution at the local level.

3. Verification by local stakeholders that they have in fact been consulted on the project and have no substantial objection to the project. Anecdotal evidence indicates that in some CDM project validation processes, not enough attention was given to this required and important step.

An important aspect to be considered in the documents requested, relates to the means of verification to be used by the DNA, related to legal representation rights to a project, validity of signatures, type of legal support for example given to the use of certified copies of EIAs, etc.

Criteria used for the evaluation process:

It is suggested that the Jamaica DNA should drop from the evaluation process for granting of national approval letters for project activities under the CDM, the existing criteria related to assessing the additionality of the project, since in the CDM project cycle the DOEs are charged with validating this aspect before a project can be successfully registered. (see above)

Therefore, the other two aspects which may be retained within the draft national approval process in Jamaica are:

1. *Feasibility and appropriateness of the technology*: There are many different types of project activities that can be submitted for CDM registration. Assessing the feasibility of such a broad potential of sectors and projects may prove to be a very time consuming task for the DNA. It may well be the case that the DNA is inclined to assess the appropriateness of a technology with respect to compliance with general policy objectives and compliance with national laws and regulations. For example a valid criterion could be to assess if a given project and technology assists the Government of Jamaica with respect to certain general policy objectives (for example in the areas of renewable energy, clean production, sustainable infrastructure development and development of local forestry industries).

2. *Contribution to sustainable development*: the Ministry of Land and Environment, in conjunction with the Technical Committee for the CDM is currently discussing the sustainable development criteria that could be used for CDM proposed project activity assessment in Jamaica. International CDM modalities and procedures are very clear in stating that a host country is sovereign in its assessment of sustainable development contribution for

CDM projects, requiring only that the national letter of approval should assert that the proposed project activity contributes to the sustainable development of the country. Taking into account that the draft approval process includes the assessment of appropriateness of the technology as expressed before, it is suggested that the DNA may wish to consider the development of criteria/indicators/means of verification in the following two areas: contribution to protection/conservation at the local/global level; and contribution to socio-economic improvement at the local/general society level. In a further section of this chapter, MLE is presented with information on basics for sustainable development contribution as well as with shared experiences on how other projects in the LAC region have dealt with this issue taking into account the singularities that may be present in small island states.

Approval procedure:

The draft documentation on the current national procedure includes 6 steps that are part of the procedure. At this point, it is suggested that the MLE should consider the publication of a ministerial resolution that gives the contents and details to the 6 step procedure to be used. It is important to mention, that transparency is important to project developers, as well as a ex ante well defined timeline on the amount of weeks, or working days that are required by the DNA to assess, and implement the different steps in the national approval procedure, in order to obtain a response on the issuance of a letter of approval for a CDM project.

One issue that may be absent from the current draft procedure is related to conflict resolution issues that may arise when a project is not approved or when the technical recommendation is not favourable to the proposed project. It is therefore suggested that MLE should consider this issue, taking into account that in some countries, at least, the DNA as part of the approval process grants the project proponent the possibility to attend a meeting/hearing to talk on the perceived sustainable development contribution of a project before issuing a final judgment on it.

2.3. Sustainable Development Assessment[6]

CDM and Sustainable Development in the context of Non-Annex I Countries

CDM international regulations established that it is the host Party's prerogative to confirm whether a clean development mechanism project activity assists it in achieving sustainable development. In other words, the CDM operationalisation process has not imposed any kind of limitations to the benefits a project could

[6] The information of this section was mainly taken from **UNEP Risø, 2004**.

generate in terms of sustainable development, leaving developing countries free to identify and to develop their own evaluation criteria.

Although this freedom could be positive from the perspective of developing countries like Jamaica, the lack of well defined criteria can be inconvenient for project developers and investors, due to lack of transparency, and could promote impartial evaluations depending on the judgment of the evaluator.

Likewise, such a system could eventually have negative implications for the country as the lack of a "Minimal Standard" of sustainable development could promote projects whose contribution to national sustainable development goals are weak or non-existent but would be approved in a situation where host countries are competing to attract CDM investors.[7]

In a context where benefits generated by the sales of CERs are lower than those expected some years ago, the collateral benefits from CDM projects are a major issue for non Annex I parts looking to maximize benefits from their participation in the CDM. For that reason, the sustainable development assessment of a CDM Project should be considered an important tool identifying those projects with the major local positive impacts.

2.3.1. Selecting Criteria for the Sustainable Development (SD) Assessment

A CDM Project could provide multiple benefits to the host country including:

- Increased energy efficiency and conservation.
- Transfer of technologies and financial resources.
- Local environmental benefits, e.g. cleaner air and water.
- Local environmental side benefits, such as health benefits from reduced local air pollution.
- Poverty alleviation and equity considerations through income and employment generation.
- Sustainable energy production.
- Private and public sector capacity development.
- Other indirect benefits related to rural development, energy access, capacity building, education, and health.

National authorities can thus identify criteria reflecting the linkage between a CDM project activity and, for example the national development priorities (poverty alleviation, employment generation, economic growth, health, etc.). Consequently, a CDM project activity could have major effects on national development goals and priorities from national, local and/or sectoral development plans and social development strategies so the challenge is to identify a set of indicators reflecting those effects. Furthermore, the identification and selection of a set of relevant

[7] **Thorne and Raubenheimer (2001)** quoted by **UNEP Risø, 2004**.

criteria among these plans and strategies could minimize the effort related to the evaluation process.

In the selection process, three aspects have to be taken into account:

- The chosen national SD criteria should be meaningful from a project level perspective in order for them to be represented by appropriate project level indicators. Table 1 provides some examples of sustainable development criteria that are operational at the project level.

- The overall sustainable development impacts of the CDM project should be positive.

- Even if the aggregated SD impact of a CDM project is positive, there may be cases where trade-offs arise or where a project has adverse or irreversible effects on one or more of the indicators chosen to reflect the SD criteria so, rules or procedures should be established for taking such cases into account.

Table 1. Sustainable Development Criteria Operational in a Project Context

Dimension of Sustainable Development	Criteria
Economic	generate employment
	reduce economic burden of energy imports
	provide financial returns to local entities
	positive impact on BoP
	technological change
	cost-effectiveness
Social	increase equity
	increase energy access
	gender issues
	education and training
	Health
	alleviate poverty
	legal framework
	Governance
	information sharing
Environmental	GHG emission reductions
	local environmental benefits, e.g. related to: air pollution, water, soil, waste
	use of exhaustible resources
	use of renewable resources
	biodiversity

Source: UNEP Risø, 2004.

2.3.2. Selecting Indicators or Verifiers

The next step is the selection of adequate indicators to define the direction, positive or negative, in which a criterion is affected by the Project. Moreover, this

selection not only should reflect the positive or negative impact of a Project on the national sustainable development, but also verifiers selected should be easy to use and to interpret so the transparency and objectivity of the process could be assured.

Consequently, the selection of a set of indicators should be made so that it is:

- Complete: The set of indicators should be adequate to indicate the degree to which the overall objective of sustainability (social, economic and environmental dimensions comprised) has been met.

- Operational: The set of indicators should be used in a meaningful way in the analysis. This implies that the indicators should provide a balanced coverage of the area; that they are well defined and unambiguous; and that they should be policy-relevant

- Decomposable: It means that the decisions can be broken down into parts involving a smaller number of indicators[8].

- Non-redundant: To avoid double counting of consequences.

- Minimal: To minimize costs, time and efforts. The availability and quality of data should be relevant in the determination of evaluation requirements.

Table 2 shows some examples of indicators selected by non-Annex B countries for their sustainable development assessment of CDM Project activities.

Table 2. Criteria, Indicators and Measurement Standards that can be used in relation to CDM Projects

Dimension / Criteria[†]	Indicator	Measurement standard[††]	
		Quantitative	Qualitative
Economic		**Quantitative**	
Cost Effectiveness	Net costs Financial flows	Financial costs Social cost	
Growth	Income Generation	Net surplus	
Employment	Employment	No. of man-years created or lost	
Investments	Activity in energy sector, industry, agriculture etc.	Foreign exchange requirement ($ and share of investment)	
Sectoral	Technology	Physical measures like	

[8] To minimize the effect of decision maker's preferences and his/her value judgments.

Dimension / Criteria[†]	Indicator	Measurement standard[††]	
		Quantitative	Qualitative
development	access Market creation	energy demand and supply, economic measures, energy efficiency and affordability, energy security	
Technological change	Innovation Learning	No of technologies Price of technologies and maintenance Cost development over time	
Environmental		**Quantitative**	
Climate Change	GHG emissions	GHG emissions	
Air Pollution	Local air pollution, particulates Environmental health benefits	Emissions of SO2, NOx and particulates Monetary value of environmental health benefits	
Water	Rivers, lakes, irrigation, drinking water	Emissions in physical units Damages in physical and monetary units	
Soil	Exposure to pollutants	Emissions in physical units Damages in physical and monetary units	
Waste	Waste discharge and disposal	Emissions in physical units Damages in physical and monetary units	
Exhaustible resources	Fossil fuels	Physical units	
Biodiversity	Specific species	Number, monetary values	
Social		**Quantitative**	**Qualitative**
Legal Framework	Regulation, property rights	Physical regulation standards, tax value and revenue Land area distribution	Outline of major rules and property rights
Governance	Implementation of international agreements, enforcement	Cost of administrating and enforcing agreements and project management No. of infringements and sanctions	Characteristics of formal and informal authorities Quality of bureaucracy Contract enforceability
Information sharing	Institutions, markets, formal and informal networks	New institutions created No of institutional units participating in policy implementation (companies, households, public sector, NGOs, individuals)	Description of networks; members, roles, interests
Equity	Distribution of costs and benefits,	Cost and benefits in economic units related to stakeholders, income	Mapping local stakeholders and their participation Gender aspects

Dimension / Criteria[†]	Indicator	Measurement standard[††]	
		Quantitative	Qualitative
	income distribution, local participation	segments, gender, geographical area etc. Income generation adjusted with distributional weights Gini coefficient	
Poverty alleviation	Income or capabilities created for poor people	Change in the number of people below poverty limit, income created to poor people Energy services provided to poor people (energy units)	Characteristics of poverty in terms of limited capabilities: Food, education, health, and limited freedom of choice

[†] In the practice, the set of selected criteria has to be small and consistent with the Project so then the evaluation process could involve a previous selection from an extensive list of relevant criteria according to the nature of the Project. **N. from A.**

[† †] In many circumstances it will be necessary taking into account qualitative verifiers to capture impacts that could not be quantified as is the case of social criteria. Getting information is always difficult and in many cases impossible so then the selection should be realized taking into account the availability and accessibility of this information. **N. de A.** based on **UNEP Risø, 2004.**

Source: UNEP Risø, 2004.

2.3.3. Selecting the Evaluation Tool

The selection of the evaluation tool is another important element in the design of a Project evaluation system. Regarding the CDM Project activities, multiple tools have been used, the checklist criteria being the most common tool used by developing countries.

The criteria checklist is usually built on the indicators identified as the most relevant to guarantee the sustainable development contribution of the project activities.

There are many different versions of this kind of tool. A very well known is the SSN matrix developed by the international NGO SouthSouthNorth. It consists of eligibility criteria, additionality filters, sustainable development indicators, and feasibility indicators. The entire matrix could be found at http://www.southsouthnorth.org. Additional information regarding evaluation tools and examples could be found at **UNEP Risø, 2004.**

3. Project Development for the CDM in Jamaica

3.1 Environment and Potential for CDM Projects

3.1.1. Potential for Renewable Energy Projects for the CDM in Jamaica

The objective of this section is to assess the overall potential for the CDM in Jamaica, with the objective of providing the Jamaica DNA with an initial approach for determining potential targets to be identified from sectors with relevant short and medium term potential for project development for the CDM. The targeted sector considered in this work is: renewable energies, landfills and management of solid waste as well as sugar cane processing facilities and alcohol distilleries.

The analysis conducted here is based on the available sources of information obtained during the field trip to Jamaica undertaken in November 2005.

Information available on the Renewable Energies Potential in Jamaica[9] indicates that:

1. The least cost expansion plan of 2004 indicates a growth rate of 4.75% per year in electricity consumption in Jamaica.

2. Estimated electricity consumption in Jamaica in 2012 will be on the order of 5,480 GWh.

3. In 2005, 5% of the electricity generated in Jamaica comes from renewable energies.

4. Current drafts of the national electricity policy set a target for 15% contribution for renewable energies in 2012.

5. Targeted energy generation from renewable energy sources will be in the order of 820 GWh, coming from an estimated additional 130 MW of renewable energy capacity to be installed in country.

For the purpose of estimation of the carbon emission reductions in Jamaica over the next few years, especially with respect to projects that incorporate renewable electricity into the national grid, relevant information on carbon emission factors is as follows, based on the results from the validation of the Wigton Wind Farm Project[10]:

[9] Detlef, Loy and Coviello, Manlio. Renewable energies potential in Jamaica. Prepared for ECLAC, GTZ and Ministry of Commerce, Science and Technology of Jamaica.
[10] DNV. Validation Report Wigton Wind Farm Project in Jamaica. Report 2005-1016 Revision 01. Available at http://cdm.unfccc.int

1. A carbon emission factor for the Jamaica grid was determined based on the application of the ACM0002 methodology.

2. A value of 0.834 tones CO_2/ MWh has been validated by a DOE for this project and for recent information available in country.

The evaluation of emissions reductions for Jamaica is analyzed for different types of resources:

Wind: The identified potential for wind energy is in the order of 40-60 MW in the near to medium term, based on the wind resource evaluations conducted in the country. Supposing a plant and field factor similar to the one obtained at the existing Wigton Wind Farm, the expected electricity generation of such a development will be in the range from 105-175 GWh. Using the existing emissions factor of the grid, the potential emissions reductions of wind interconnection in the grid will be in the order of 87,570 to 145,950 tones CO_2/year.

Hydro: The identified potential for hydroelectric development in Jamaica is in the range from 40-80 MW, most likely coming from 2-3 identified projects. There are 23.8 MW of hydro electric capacity in the country. At present only the Laughlands Great River project is under development for a capacity of 1.5 MW and an expected yearly generation of 8.44 GWh. Information gathered during the in-country visit indicated that hydro development is not to be expected to be highly pursued in the near term, therefore potential emissions reductions from hydro project development will be in the order of 7,039 tones CO_2/year.

Sugar Cane Cogeneration: it is well known that electricity generation from cogeneration facilities depends very much on the choices of process and technology characteristics. The initial assessment indicates that total bagasse output is at the order of 600,000 tones per year (2003) equivalent to an energy equivalent of about 940,000 barrels of oil. Studies developed in Jamaica indicate that for different scenarios, the potential interconnection of sugar cane cogeneration to the grid could be in the range from 220-300 GWh per year including projects to be developed in all 7 factories in the country. A study developed by Gibson Energy indicates that Sugar Company of Jamaica mills could produce up to 94 MW and 266 GWh of electricity to the grid during the harvest season. This in turn could mitigate up to 221,844 Tones CO_2/year. Estimates have been conducted on potential use of wood plantations to supplement generation during the off season for up to 280 GWh additional renewable biomass generation. During the off season, the potential emissions reductions could be of an additional 233,520 tones CO_2/year. It is clear that key developments and decisions will need to be implemented in Jamaica with respect to the enactment of the Jamaica Sugar Industry White Paper under discussion by the Cabinet and also important strategic decisions since it has been discussed in the country that off season generation at sugar factories could be developed by using coal as a fuel. The potential, nevertheless is important on the side of emissions reductions if a biomass energy path is adopted in the country, contributing to a potential in the

range from 185,000 to 455,364 tones CO_2/year, and coming from up to 6-7 facilities.

Wood to energy: Jamaica has started consideration of potential development of wood to energy plantations in the country. An initial calculation is done based on the development of a forestry project involving up to 10,000 hectares of rapid growth plantations with average yields of 12 tones of dry matter per year for rotation periods of 3-5 years. The available biomass could produce up to 80 GWh per year for a total estimated level of 66,720 tones CO2/year. Wood to energy development is highly dependent on policies and project development conditions as well as market values for forestry projects that will need to be carefully analyzed in the country.

The estimated potential emissions reductions from the renewable energy source considered in this study is:

1. At the lower range: 383,173 tones CO_2/year.

2. At the upper range: 616,693 tones CO_2/year.

It is worth mentioning that in the next section there is consideration given to the possibility of developing CDM projects in the area of solar energy.

Realizing the potential for CDM in renewable energies in Jamaica would obviously require the careful identification and targeting of promising ventures with potential as well as articulated investment projects in the context of adequate complementary actions that need to be supported by the government.

3.1.2. Potential for CDM in Energy Efficiency in Jamaica

Energy efficiency has been identified in current Jamaica's Energy Policy as having the greatest scope for reducing emissions and dependence on imported energy. The Energy Policy includes the following support measures to support energy efficiency and conservation:[11]

- Dissemination of information
- Electricity loss reduction programs
- Demand Side Management programs for the power sector
- Reduction of duties on energy efficiency equipment
- Coordination of transportation and energy planning
- Appliance testing and labelling
- Energy efficient building code
- Annual inspection of industrial boilers

[11] Project Possibilities under the CDM – Project Portfolio, Ministry of Land and Environment, July 2005.

Almost all of Jamaica's electricity is generated from imported fossil fuels. Transportation and industry also rely heavily on imported fuels. Examination of the GHG emissions (CO_2) resulting from Jamaica's energy use across all sectors, including power generation and industrial production, as reported in the country's national communication under the Kyoto Protocol[12], provides an indication of where the highest reductions in emissions might be obtained through efficiency improvements. A summary of emissions in each sector follows in Table 3.

Table 3. Greenhouse Gas Emissions for different sectors in Jamaica

Sector	1994 Emissions of CO_2 (1000 tones)
Bauxite manufacturing	3,749
Production of electricity and heat (for all sectors)	2,414
Transport fuel use	1,257
Residential fuel use	316
Cement manufacturing	235
Agriculture	151
Other manufacturing	127
Commercial / Institutional fuel use	119
Petroleum refining	105

Other significant non-energy related emissions include an additional 403 kt CO_2 produced during the manufacture of mineral products and 343 kt N_2O released from agricultural soils.

The largest individual emitter is the bauxite production industry, but this is closely followed by power production. Transportation fuels also account for a large proportion of emissions, while fuel use (excluding electricity) by residences, commercial and institutional buildings and manufacturing accounts for smaller proportions.

On this basis, the largest opportunities to reduce Jamaica's GHG emissions, as well as reduce the country's dependence on imported energy, appear therefore be through the use of energy efficiency measures in bauxite manufacture and transportation, and improved end-use electricity efficiency in all sectors. Lesser opportunities exist in fuel efficiency measures in the residential, commercial, cement, and agricultural sectors.

Assuming a modest 10% improvement in end-use energy efficiency in all sectors of the economy, the emissions reductions from energy efficiency in Jamaica would be in the order of 818,000 tones per year CO_2.

An estimate of the potential emissions reductions that might be achieved from electricity Demand Side Management (DSM) programs in Jamaica can be made

[12] Jamaica Initial National Communication to UNFCCC 1994

from a 1992 report from the Global Environmental Facility.[13] The proposed DSM programs were estimated to save 191,000 MWh per year by 2008. Using a grid emissions factor of 0.834 tones/MWh (see below), this would result in emissions reductions of 160,000 tones/yr.

To realize the identified potential in the energy efficiency sector, Jamaica will have to implement a coherent and comprehensive efficiency and DSM strategy involving both public and private sector partners. Jamaica could also take a leadership role at the international level by submitting energy efficiency and DSM programs for CDM registration now that the COP/MOP has agreed to allow programs to be included as CDM activities (see section 3.6 below).

In addition to end-use energy efficiency, solar water heating presents an additional opportunity to reduce fossil fuel demand in the residential and commercial/institutional sectors. Based on experience in Barbados, where over 30,000 units are in place[14], an initial market in Jamaica of 4,500 units would be conservative. Installation of 4,500 solar water heaters would provide an additional reduction 6,000 tones/yr of CO_2.

3.2. Existing CDM Project Portfolio in Jamaica

Jamaica's current CDM Project Portfolio currently consists of three projects:

1. The Wigton Wind Farm – a 20.7 MW generating facility located in the parish of Manchester. The project is a wholly owned subsidiary of the Petroleum Corporation of Jamaica (PCJ) and financed by the National Commercial Bank (debt financing), Dutch Government (grant), and the Petroleum Corporation of Jamaica (equity). The project is expected to reduce 56,220 tones CO2/year.

2. Eco-Tec Compact Fluorescent Lamp (CFL) Replacement project – a country wide project to supply CFLs to the hotel industry expecting to replace 302,750 incandescent lamps. Estimated emissions reductions are 23,040 tones CO2/year

3. The Appleton and Clarendon Rum distillery factories are in the process of developing CDM project documentation under the kfW Klimafund. Both projects aim at the implementation of UASB biodigestion technologies for treatment of waste water. Expected emissions reductions from these two projects are 116,000 tones CO2/year[15].

[13] Jamaica Demand Side Management Demonstration Project. Project Document, Global Environmental Facility, World Bank, March 1992
[14] Draft Discussion Paper on Barbados Renewable Energy Centre, November 2005
[15] Personal Communication with Forrest and Associates in Jamaica, November 2005.

3.3. Status of Projects in the Portfolio

1. The Wigton Wind Farm began construction in 2004. The project is currently awaiting registration as a CDM project, having completed its Project Design Document and Validation process - see case study below for more details.

2. The Eco-Tec CFL replacement project is underway. The project proponent is currently considering whether to use the CDM to help finance this project by selling Certified Emissions Reductions (CER) certificates to the "Kyoto" carbon market, or use the more informal sale of Verified Emissions Reduction (VER) certificates to the voluntary market – see case study below.

3. The rum factories projects are currently finishing the required business plans for kfW. It is expected that once they are approved, project proponents will move forward with PDD development, validation in the CDM project cycle.

3.4. Identification of Other Areas of CDM Project Activity

3.4.1. Project Opportunities

The Ministry of Land and Environment (MLE) issued an RFP in 2005 asking for project suggestions that might be eligible for CDM financing in Jamaica. Several project opportunities were identified in response to this RFP.[16] During the OLADE/Jamaica workshop held in November 12-13, 2005, several other opportunities were identified. A summary of all these project opportunities is presented in Table 4.

Table 4. CDM Project Opportunities in Jamaica

Project	Type	Project Proponent	Contact	Notes
Wigton Wind Farm expansion	Renewable source of electricity	Petroleum Corporation of Jamaica (PCJ)	Mrs. Ruth Potopsingh Group Managing Director Tel:929-5380 Fax: 960-3108 Email:ruth.potopsingh@pcj.com	Location identified and basic design completed.
Wind/solar power systems for Palisadoes Peninsula	Renewable source of electricity	National Meteorological Service	Mrs. Sylvia McGill Director 65 ¾ HWT Road Kingston 5 Tel: 960-8990 Fax: 960-8989	Energy needs in the Norman Manley Airport could be provided from wind and solar energy, replacing the use of

[16] Project Possibilities under the CDM – Project Portfolio, Ministry of Land and Environment, July 2005

Project	Type	Project Proponent	Contact	Notes
			metja@infochan.com	fossil fuels. No technical information included in project summary
Bagasse cogeneration	Renewable source of electricity + elimination of bagasse decomposition	Sugar industry	n.a.	Recent work developed on assessing the Renewable Energies Potential in Jamaica identifies a potential and presents a summary case for the Frome Sugar Factory for a 28.8 MW cogeneration plant. The status of the project is prefeasibility.
Solar water heating for residential and commercial consumers	Renewable source of hot water	Water heater suppliers	n.a.	Industry estimates an initial phase of 4,500 SWHS for an emissions reduction of 6,000 tones CO2/year. Current status is at very early stage idea for CDM. Could be registered as a program (see below)
Solar Absorption Cooling in Buildings	Renewable source of cooling	Environmental Conservation Systems Jamaica Ltd.	n.a.	Project summary indicates the use of solar assisted air conditioning and dehumidification systems for an energy saving estimate of 50,000 kWh/year for a total of 41.7 tones CO2/year. Current proposal is of a pilot project type, hardly attractive as a CDM project. Could be registered as a program CDM type project if scaling up and technology is proven (see below).
Sea Water District Cooling Project	Renewable source of cooling	Ocean Engineering and Energy Systems/Petroleum Company of Jamaica	n.a.	Integrated SWAC system supplying AC loads for hotels in the Negril, Montego Bay and Ocho Rios areas. Idea is at the initial stages as a project requiring funding for measurements and prefeasibility development. Project proponent claims

Project	Type	Project Proponent	Contact	Notes
				emissions reductions of up to 80% com pared to same end use based on traditional technologies.
Air conditioning upgrade program in commercial / institutional buildings	Reduction in electricity consumption + destruction of HFCs	Eco-tec ltd	Chinyere Nwaogwugwu Bluefields, Westmoreland Tel: 955-8177 Fax: 955-8791 Email: chinyere@go2ecotec.com	No project summary available. Could be registered as a program (see below)
Energy efficiency retrofits in commercial / institutional buildings	Reduction in electricity and fuel consumption	Eco-tec ltd	Chinyere Nwaogwugwu Bluefields, Westmoreland Tel: 955-8177 Fax: 955-8791 Email: chinyere@go2ecotec.com	No project summary available. Could be registered as a program (see below)
Municipal water pumping leak reduction and electricity efficiency	Reduction in electricity consumption	Municipalities	n.a.	No project summary available. Could be registered as a program (see below)
Landfill Gas Recovery from Solid Waste Disposal Sites	Power production from waste	National Solid Waste Management Authority	Mr, Errol Greene Executive Director Tel: 926-3988 Email: egreene@mswma.gov.jm	Information available on annual estimated generated domestic waste by parish, waste collected by regions, lifetime information on several landfill sites in the country. No CDM action detected yet
Plasma Gasification of Municipal Solid Waste	Power production or fuel from waste	National Solid Waste Management Authority	Mr, Errol Greene Executive Director Tel: 926-3988 Email: egreene@nswma.gov.jm	Project summary describes the merits of plasma gasification as a way to treat MSW. No technical information included and no CDM action detected.
Biogas production from Municipal Sewage	Power production from waste	Scientific Research Council	Tel: 927-1771-4 Fax: 977-2194 Email: head@src-jamaica.org	Design, construction and operation of 5 biodigesters systems for treatment of sludge and other Waste water from municipal sewage. No emissions reductions information included. Project is at idea stage, no CDM action detected.
Biogas production from Municipal Sewage +	Power production from waste	Environmental Conservation Systems of Jamaica	Claude Naar 83 A Hagley Road Kingston, Jamaica Tel: 968-3199	Project summary proposes an IGGC cycle plant for the Riverton City dump

Project	Type	Project Proponent	Contact	Notes
IGCC				for an estimated 11-30 MW capacity an estimated emissions reductions in the range from 5-8 million tones CO2 over its lifetime.
Biogas production from Municipal Sewage	Power production from waste	Delanova Energy	n.a.	Installation of cogeneration systems in 3 wastewater treatment plants in the country. No CDM action detected.
Biogas production from Municipal Sewage	Power production from waste	Bariki International	n.a.	Biomass power plant for generation of 400 GWh to be sold to JPS. Project summary does not include estimations of emissions reductions.
Synthetic Fuels from biomass wastes	Fuels from waste	Jamaica Synthetic Fuels Ltd.	n.a.	Plant burning and processing tires and other materials. May not classify as CDM project due to the current definitions of biomass in the CDM.
New Forests	Afforestation	The Forest Division	Keith Porter Tel: 924-2667 Email: kporter@forestry.gov.jm	Afforestation and reforestation in up to 10,000 hectares. No CDM action detected.
National Forest Plantations	Afforestation	The Forestry Conservancy	Mr. Keats Hall Director 8 Manor Park Drive Kingston 8. Tel: 755-0257 Fax: 924-7329 hyacinth@cwjamaica.com	Establishment of national forest plantations, starting with a 4,000 hectares project.
Landfill Gas Capture		PhasCon	Patrick Douglas Advanced Power Systems	

The Wigton Wind Farm expansion could be quickly developed into a CDM activity as the project has already been designed and the location identified. No other project appears to be at a stage where project design documents could be prepared. Much more needs to be done in terms of project design, conventional financing, business plan development, and implementation schedule by the project proponents.

The projects provide a good cross section of opportunities. At present, gaps include projects related to transportation efficiency and renewable fuels. As well, there are no energy efficiency projects in the industrial sector – one of the largest users of power and fuel and the largest emitter of GHGs. Well represented in the project list are power generation from renewable energy and waste sources, as are

solar thermal and energy efficiency projects in the commercial and institutional sectors, which would reduce demand for electricity.

Initial assessments on the identified project list indicates that this tentative idea portfolio needs to be further assessed from different angles related to the status of actual project development and capacity of the project proponents, verification of feasibility and investment decisions undertaken already, definition of rights and access to MSW and Wastewater effluents from the perspective of entitlement to potential emissions reductions in several municipal service project ideas. A CDM portfolio needs to assess carefully these aspects in order to call for interested carbon buyers.

3.5. Generic Baselines

Some generic comments can be made with respect to the baselines that might be used for the above project opportunities. The following Table 5 shows the baseline methodologies that would be used for each project type. In some cases, more that one baseline methodology is needed. For example, in a bagasse cogeneration project, conventional grid power is displaced, bagasse decomposition eliminated, and conventional heating fuel displaced.

Table 5. Types of Baselines for CDM Projects in Jamaica

Project Type	Examples	Source of Emission Reductions	Baseline methodology
Renewable source of electricity	Wind	Reduced fossil fuel usage in Jamaica grid power plants	Grid emissions factor * power production
Renewable source of electricity with reduction of biomass decomposition	Landfill gas, municipal waste gasification, sewer gasification	Reduced fossil fuel usage in Jamaica grid power plants + reduced emissions from aerobic decomposition	Grid emissions factor * power production + biomass usage * difference in decomposition coefficients
Renewable source of electricity with reduction of biomass decomposition and displacement of fuel	Bagasse cogeneration	Reduced fossil fuel usage in Jamaica grid power plants + reduced emissions from aerobic decomposition + displaced heating fuel	Grid emissions factor * power production + biomass usage * difference in decomposition coefficients + displaced fuel * fuel coefficient
Reduction in electricity consumption	CFL replacement, solar absorption cooling	Reduced fossil fuel usage in Jamaica grid power plants	Grid emissions factor * electricity savings
Reduction in electricity and fuel consumption	Solar water heating, building retrofit	Reduced fossil fuel usage in Jamaica grid power plants +	Grid emissions factor * electricity savings + fuel emissions factor *

Project Type	Examples	Source of Emission Reductions	Baseline methodology
		reduced fuel use for water heating	fuel savings

3.6. Registering a Program as a CDM Activity

A program is normally defined as an umbrella activity under which a variety of projects or actions are implemented to meet a defined goal. This is different from a policy which can include regulations, tax incentives and other instruments that encourage implementation of programs, projects or actions, At COP 11/MOP 1 in Montreal in 2005, it was decided that

> "Project activities under a program of activities can be registered as a single clean development mechanism project activity provided that approved baseline and monitoring methodologies are used".[17]

This decision opens up new possibilities for smaller countries like Jamaica to establish or encourage programs serving a larger number of participants. This would be particularly useful for sector or regional programs supporting energy efficiency and renewable energy.

Policies are still excluded from the CDM. However, to ensure that national policies set up to support GHG reduction programs are deemed additional under CDM rules[18], the CDM Executive Board decided at its 22nd meeting that any such policy established after a country has ratified the Kyoto Protocol would not be considered the baseline for CDM project activities.[19]

Registration of a program as a CDM activity would be most useful in a situation where:

a) A technology is being installed in a large number of locations over a period of time and new locations are being identified during this period. Examples include a sales program implemented by a supplier of energy efficient equipment or solar heating/cooling systems
b) A public or private agency establishes a program to reach certain targets - providing guidance, technical assistance, a financing scheme, financial incentives, or removal of barriers. Examples would include a rural

[17] Draft decision CMP.1 COP 11/MOP 1: Further guidance related to the clean development mechanism, December 2005
[18] The CDM does not allow activities that meet regulations to be considered as projects, so that before this ruling was made, as soon as a GHG reduction policy was put in place, no projects or programs implemented as a result of this policy were eligible under the CDM.
[19] Minutes of the 22nd Meeting of the CDM Executive Board paragraph 22. November 23-25, 2005 Montreal Canada

electrification program, or a demand side management program implemented by a power or gas utility, or a natural gas or other transportation fuel switching program.

Issues that need to be dealt with when considering registering a program as a CDM activity include ownership of the CERs, baseline and monitoring, and structuring payments.

It is normally assumed that the party making the emissions reductions (and normally paying most of the cost of the project) is the owner of the credits and can offer them for sale through the CDM. In a program project with a large number of participants (such as a solar water heater DSM program), then if the program participant purchases the water heater, then they own the credit. If the supplier wants to register the program under the CDM and sell the credits, then some arrangement must be made with participant to pass on the value of the sale – normally by discounting the water heater cost.

As long as the multiple activities under the program all have the same baseline, then it should be relatively straightforward to register the program under the CDM. For example, in a DSM program that provided a wide variety of efficient lighting technologies and measures, all measures save grid electricity and therefore the program can use a single approved grid power baseline. The same would be true for a natural gas conversion program or ethanol blending program.

3.7. Presentation of Case Studies on Current Projects in the Portfolio.

Two case projects are presented. The first focuses on the baseline development and application of the additionality tool in the Wigton wind farm project. The second shows how the Eco-Tec CFL replacement project might be structured and how methodologies for selecting baselines, estimating emissions, and testing additionality might be applied. The first case study illustrates the derivation of a generic grid emissions factor that could be used for any renewable electricity project or electricity savings project or program that supplies electricity to the Jamaica grid. The second illustrates how an energy efficiency project or program could utilize the CDM.

3.7.1. Case Project 1: Wigton Wind Farm Project

<u>Project Details</u>

Wind Generation Capacity = 20.7 MW
Expected annual output = 69,970 MWh
Emission reductions = 56,220 tones CO_2/year
Internal rate of return = 12.1 % (including sale of CERs through the CDM)

<u>Baseline Selection</u>

Any zero emissions project that provides power to the grid or saves electricity can use the consolidated UNFCCC methodology AM0005 to estimate the grid emissions factor and therefore the baseline emissions.[20] The Wigton wind farm project references this methodology to estimate a grid emissions factor for Jamaica.[21] Note that this factor may be used by any other CDM project supplying power to the grid in Jamaica. Each project would need to reference the consolidated methodology, complete the required proof of additionality (using the tool provided – see below), and estimate emissions using the same approach as the Wigton project.

Consolidated methodology AM0005 allows a proponent to use a 50/50 combination of the emission coefficients for the "operating" and "build" marginal power plants in a grid. The emissions factor for the operating margin is the weighted average emissions from each power plant providing power into the grid divided by the power produced by that plant – averaged over a three year period. The emissions factor for the build margin is the weighted average emissions divided by power output for the most recently built plants providing at least 20% of the grid power requirements.

The emissions factors estimated for the Jamaica grid was estimated by the Wigton Project were:

- Operating margin emissions factor = 0.893 tones CO_2 per MWh based on total emissions from all plants supplying the Jamaica grid over the years 2001-2003,

- Build margin emissions factor = 0.776 tones CO_2 per MWh based on emissions from the 8 most recently built plants in Jamaica representing 23% of the power supplied to the grid,

- Jamaica grid emissions factor = 0.834 tones CO_2 per MWh based on average operating and build margin factors.

The Wigton project is estimated to provide 69,970 MWh per year into the grid so that the baseline emissions (and emission reductions in this case) are equal to 56,220 tones per year CO_2.

The factor of 0.834 tones CO_2/MWh can be used to estimate emissions reduction for any other renewable power or energy efficiency project (see case study below).

Monitoring a project like the Wigton wind farm that provides power to the grid is straightforward. The amount of power produced is always measured as it is the basis for payment. The grid emissions coefficient may vary in the future as the mix

[20] http://cdm.unfccc.int/UserManagement/FileStorage/AM0005.pdf
[21] http://cdm.unfccc.int/Projects/DNV-CUK1137055328.94/view.html

of generating plants changes, but all CDM projects providing power to the grid can use the same coefficient.

Using the UNFCCC Additionality Tool

Another important aspect of a CDM project is that the proponent must demonstrate that the baseline project would have gone ahead if the CDM had not been available to provide extra financing. This is to ensure that the emissions reductions from the project are additional to what would have happed without it. Without this requirement, there is no guarantee that the project actually lead to a real reduction in global emissions.

The Project Design Document (PDD) for the Wigton Wind Farm project provides a good example of how the additionality issues should be addressed.[22] The PDD follows the additionality tool provided by the UNFCCC to be used with consolidated methodology AM0005.[23]

Step 0: Screening: If project has already started show that the CDM still was considered in the design. The Wigton project started construction in September 2003, but the CDM was factored into all economic analyses of the project.

Step 1:Alternatives: Identify alternatives to the project and show that they all comply with current laws and regulations. Besides the Wigton project, alternatives that meet all regulations include a new diesel or bunker C power plant, or the status quo (no additions – also used as the baseline for the project).

Step 2: Investment Analysis. Show that the project is not the most financially viable alternative or the CDM makes the project financially viable. The project IRR was chosen as the indicator for comparison. At the negotiated price for CERs, the CDM would increase the IRR of the Wigton project from 6.1% to 10.2%, which is lower than a benchmark IRR of 10.8%. The benchmark IRR was assumed to be equal to the 2004 Jamaica government bond rate. A sensitivity analysis shows that CDM consistently is the most significant variable in determining IRR.

Step 3: Barrier Analysis: Identify significant barriers to the project. The Wigton project faces investment, technology, prevailing practice, and resource uncertainty barriers that the identified alternatives do not face.

Step 4: Common Practice Analysis: Show that the project is not common practice. Wigton is the first commercial wind farm in Jamaica.

Step 5: Impact of CDM Registration: Show that registration of the project under the CDM has significant value to the project. Without the CDM the Wigton project is not

[22] http://cdm.unfccc.int/UserManagement/FileStorage/UMNAHD7XC9EJ7DFOLM61O94WAH5J3V see page 10
[23] http://cdm.unfccc.int/methodologies/PAmethodologies/AdditionalityTools/Additionality_tool.pdf

a financially attractive project, and sale of CERs makes it significantly more attractive.

Different types of CDM projects will require slightly different approaches. For example, an energy efficiency project is usually financially attractive on paper compared to alternatives, but faces systemic barriers such as aversion to higher first cost, and embedded less efficient common practice (see example below).

3.7.2. Case Project 2: EcoTec CFL Replacement Project

Project Details

This project plans to replace up to 302,000 incandescent lamps in Jamaica's hotels with compact fluorescent lamps (CFL). No details are available on the rating of the two lamps but a 60 watt incandescent lamp would normally be replaced by a 10 watt CFL. The proponent estimates that over an 8 year lifespan of the CFLs, the project would reduce emissions by over 270,000 tones.

As noted above, the proponent is currently deciding whether to use the CDM – selling CERs into a carbon market that has evolved to help parties to the Kyoto protocol meet their commitments, or sell VERs into the informal voluntary market for emissions reduction projects that offer more benefits than just GHG emissions reductions. The advantage of the VER option for small projects is that the CDM transaction costs (registration, verification, validation, etc) are eliminated while at the same time prices for VERs may be higher. The disadvantage is the informal nature of the market for VERs.

One interesting consideration of a project or program like the Eco-Tec CFL project is on how the benefits from the sale of CERs or VERs would be passed on to the hotels – the buyers of the CFLs. The income from CER or VER sales would be spread over the 8 year life of the lamps, while the lamp cost would be paid when delivered. One approach would be to sell each lamp at a discounted price. Eco-Tec would recover the discount from the annual sales of CERs or VERs. One CFL would produce 0.6 tones in emissions reductions over its 8 year life (see below). If this could be sold as a CER or VER at $5 per tone, over an 8 year period it would bring in $3.00 – i.e. more than half the cost of the lamp. To allow for the cost of financing the program and to cover the transaction costs of participating in the CDM, Eco-Tec might be able to sell a $5 CFL discounted to about $4. Another option that would not require long term financing by Eco-Tec would be to issue 8 coupons with each lamp that could be exchanged for say 35 cents every year, or used towards the purchase of other lamps.

While discounting the price of a $5 CFL to allow an energy user to benefit from a sale of CERs may seem trivial, it becomes less so when the same principles are applied to a large energy efficiency investment. For example the cost of a major energy efficiency retrofit of a hotel or hospital would be significant. Income from the

sales of CERs over the subsequent 8-10 year period that paid for half of cost of the retrofit would allow much higher savings levels to be achieved.

Baseline Selection and Estimation/Monitoring of Emissions Reductions

The unique characteristic of an energy efficiency project is that there is no measured output that can be used to estimate emissions from either the baseline or the project. Efficient air conditioning systems do not have their own meters. The baseline for an energy efficiency project is also either the energy consumption before the project was implemented, or the consumption of an alternative set of less efficient products that would have been installed without the project. Both of these baselines are difficult to measure or estimate.

To address this difficulty, several measurement protocols are available to measure energy efficiency. These are normally available at two levels – i) measuring savings from an individual project and ii) measuring savings from demand side management programs. Both have been developed over a past two decades, the first to serve the needs of energy service companies that are paid on the basis of the savings achieved, the second to serve the needs of energy utilities that need to evaluate and report DSM program achievements to their management and public regulators.

Three basic approaches can be taken to estimate the savings from a retrofit of an existing facility:

- Adding a dedicated meter that measures energy consumption before and after project implementation of only that part of the equipment affected – e.g. for an industrial boiler
- Using computer software to estimate the savings from total metered energy or energy bills before and after project implementation – e.g. for a major retrofit of a building
- Using standard performance specifications of the baseline and project equipment along with measured or estimated, or statistically checked run times if needed – e.g. an air conditioning system SEER rating, or CFL wattage times run time.

For situations where increased efficiency is being used in a new building, process, etc., then only two options exist.

- Using computer software to estimate the performance of the baseline and to estimate the savings from total metered energy or energy bills after project implementation.
- Using standard performance specifications of the baseline and project equipment along with measured of estimated, or statistically checked run times if needed.

When estimating savings from DSM programs, protocols have to determine the level of participation in the program, and take into account the fact that not all savings may have been due to the program. For example, some participants may have intended/planned to make the energy efficient choice anyway (so called free riders), while others may enthusiastically influence people outside the target population (free drivers). However, when estimating energy efficiency gains for the purposes of emissions reductions, the motivation is irrelevant and it is the total effect that is important. Proponents of energy efficiency CDM projects programs therefore need not account for these factors.

In any energy efficiency project, once the savings have been estimated, the emissions reductions can be calculated using the appropriate emissions factor for the energy saved:

- Electricity savings – approved grid emissions factor (0.843 tones CO_2/MWh in Jamaica)
- Transport fuel savings – gasoline or diesel emissions factor
- Industrial fuel savings – bunker C or other fuel emissions factor
- Solar water heating – LPG or approved grid emissions factor

Currently there are only two baseline and monitoring methodologies that have been approved by the UNFCCC for energy efficiency projects. These are consolidated methodology AM0017 for industrial steam efficiency resulting from replacing steam traps and returning condensate, and AM0020 for estimation baseline emissions for water pumping efficiency improvements.[24] No CDM project has yet referenced these methodologies, however. For small scale energy efficiency projects that result in less than 15 GWh/year savings, there are simplified methodologies that may be used for energy efficiency resulting from improvements in buildings, industrial facilities, and the installation of individual pieces of efficient equipment.[25] An excerpt from the simplified procedures for small scale energy efficiency projects is provided in Appendix 1.

To date, the only energy efficiency project that has used the simplified procedures for small scale CDM project is the South South North Kuyasa low-income housing project in South Africa.[26] In this project, the homes were upgraded with compact florescent lamps, solar water heaters, and insulated ceilings. The baseline and emissions reductions for the CFLs were estimated by using the differences in power between CFL and incandescent lamp times the number of hours per day they were used. Monitoring consisted of verifying that a sample of CFLs was still is use with occasional checking of hours per day usage. The baseline and emissions reductions for the ceiling insulation were estimated from computer modeling of the homes with and without insulation. Monitoring consisted of simply verifying the ceilings were still in place. Emissions reductions from the solar water heaters are

[24] http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html
[25] http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html
[26] http://cdm.unfccc.int/Projects/DNV-CUK1121165382.34/view.html

estimated from the amount of heat supplied by the unit times the emissions coefficient for fuel that would have been used to heat water.

Using the same approach as in the Kuyasa project, the baseline for Eco-Tec project would be an incandescent lamp providing the same light output as the CFL. The grid baseline emissions coefficient of 0.834 tones/MWh developed for the Wigton wind farm could be used for the Eco-Tec project because both projects would reduce emissions from existing plants in the grid in the same way. Assuming the same time of daily use for both lamps, the emissions reduction in any year of the project would be as follows:

Emissions Reduction = ($Watts_{incandescent}$ – $Watts_{cfl}$) * annual hours of use * number of lamps * grid emissions factor

Using the following assumptions:

$Watts_{incandescent}$ = 60
$Watts_{cfl}$ = 10
Hours per year = 1825 (5 hours per day)
Number of lamps = 302,750
Grid Emissions factor = 0.834 tones CO_2/MWh (see Wigton above)

Annual reduction = 23,040 tones CO_2/yr
Reduction per lamp = 0.6 tones over 8 years

Monitoring and verification of emissions reductions in the Eco-Tec project would consist of a) checking that a statistical sample of lamps installed under the project were still in operation, and b) verifying that the average number of hours the lamps were used was the same as in the baseline, and if not, estimating a new average time of use (again using a statistical sample). The emissions reduction would then be based on the estimated number in operation, average time of use, and the grid emissions factor for the year (if different).

Additionality Test

The following shows how the UNFCCC Additionality Tool could be used to prove additionality in the Eco-Tec CFL project.

Step 0: Screening: If project has already started show that the CDM still was considered in the design. The Eco-Tec CFL project is already underway, but the there was always an expectation to sell CERs or VERs from the project.

Step 1: Alternatives: Identify alternatives to the project and show that they all comply with current laws and regulations. Alternatives to CFLs are the currently used incandescent lamps. Both lamps meet all current regulations, laws, and codes.

Step 2: Investment Analysis. Show that the project is not the most financially viable alternative or the CDM makes the project financially viable. The project IRR will depend on the sale price for the CFL and the expected price for the CERs or VERs. The simple pay back on a life cycle for a CFL is less than one year at any electricity price over 5 cents/kWh. However, the first cost of the incandescent lamp is much lower than a CFL, therefore on this basis, the project is not the most financially viable alternative. The structure of the project and income from the sale of CERs or VERs makes the CFL project more finically viable for both users and Eco-Tec.

Step 3: Barrier Analysis: Identify significant barriers to the project. The largest barrier that CFLs face is their highest first cost. CFLs are also not available in all retail stores that sell incandescent lamps, and myths still exists as to their light quality and use for short periods.

Step 4: Common Practice Analysis: Show that the project is not common practice. Incandescent lamps still hold the largest market in Jamaica and are common practice in most applications.

Step 5: Impact of CDM Registration: Show that registration of the project under the CDM has significant value to the project. Registration of the Eco-Tec project as a CDM project would make the CFLs more attractive to the hotels buying the lamps, and would allow Eco-Tec to finance the project on the basis of the significant income from the sale of CERs.

4. Conclusions

The objective of this report has been the presentation of the current state of affairs related to institutional development as well as the environment for CDM project development in Jamaica.

The work presented in this report is based on two in-country visits implemented by the team of consultants to Jamaica in late 2005. The purpose of the first visit was to get acquainted with the level of institutional development taking place in the country, and the conducting of several meetings with representative stakeholders involved in CDM project in order to identify and report on CDM project development status in the country. During the second visit to Jamaica, the implementing team of consultants visited Jamaica with the objective of delivering a National Workshop on the CDM to key identified local and regional stakeholders, within the English speaking island states, on relevant CDM issues.

Jamaica set up an interim National Designated Authority for the CDM in September 2002, based on a Government of Jamaica Cabinet Decision that gave the approval status of Interim DNA to the Ministry of Land and Environment (MLE). As such, the MLE was therefore reported to the UNFCCC Secretariat as the DNA in Jamaica, allowing MLE to sign letters of national approval for CDM projects hosted by Jamaica.

MLE has undertaken different levels of activities related to the CDM in country. Amongst them, have been the issuance of several letters of no objection requested by project participants, the issuance of at least one formal letter of national approval given to the developers of the Wigton Wind Farm Project, a 20 MW wind development, currently requesting registration in the CDM to the Executive Board of the mechanism. Other activities have been related to the implementation of request for Proposals for CDM project ideas that was open in Jamaica during 2005, receiving around 13 proposals in a sample of sectors related to renewable energy, treatment of municipal effluents and MSW, and afforestatio7reforestation activities.

Through some support of international agencies, which has been limited, Jamaica has been able to conduct a small number of capacity strengthening events over the last couple of years on issues related to the CDM.

Over the last few months, MLE has been preparing a submission to the Cabinet, in order to receive the clearance to establish the permanent nature of the DNA, to be based in the ministry. As such, there have been discussions on the type of organizational chart to be used for placing the operational responsibilities related to the CDM. As part of those discussions, Jamaica has been considering different models related to the scope of the DNA as it pertains to the regulatory aspects, the involvement or not of the DNA in promotional aspects of the CDM, etc. As a central core of the discussion, obviously the establishment of a specific unit within the MLE responsible for CDM is being considered, against the other possibilities in

which an existing unit of the ministry could be charged with the responsibilities for technical/regulatory matters related to the CDM. One major aspect in the future cabinet submission is that any request to the Cabinet has to be accompanied by the relevant request for allocation of human and budgetary lines.

So far the Jamaican Interim DNA has been performing a myriad of activities related to the regulation and promotion of the CDM, and is presently confronted with the delicate task of defining the roles it wants to keep playing over the next few years.

Although, few projects have requested the national approval letter for the CDM, Jamaica has been able to establish a two tier process of approval in the CDM. The first part of the process is aimed at supporting prospective project developers through the issuance of letters of no-objection, based on a simple procedure assessing project ideas, that gives the developers the possibility of receiving some initial response from the government, issue that is important in commercial carbon markets, in order to reduce risk perceptions on the national level regulatory aspects. The DNA has been very careful in expressing the right of the government to assess the project under the full procedure for national approval.

There is an existing procedure for national approval of CDM projects that leads to the issuance of the national approval letter. The procedure is correctly expressed in several steps and includes a set of criteria to be used by the DNA in judging a proposed CDM project activity.

This report reviews existing procedures used for the approval of projects in Jamaica, discussing some of the implications of existing texts. The report makes a series of specific recommendations to the DNA in four specific areas related to: guidelines and principles that drive the approval process (definition of scope, transparency, criteria, sustainable development), requisites for documentation to be presented by project proponents, criteria to be used for assessment) and slight amendments to the approval process in order to improve transparency and understanding in the business community interested in the CDM.

The report then identifies the status of CDM project development in Jamaica, firstly assessing the potential in some specific sectors (renewable energy, sugar cane processing, treatment of effluents from the alcohol distilleries, etc); that offers estimates ranging from around 400,000 to 600,000 tones of CO_2/year identified in a handful of projects. Special effort has been put into the assessment of the potential contribution of energy efficiency activities as a mean to mitigate emissions reductions in Jamaica, rendering very important potentials on the order of up to 800,000 tones CO_2/year. Obviously, realizing such potentials needs the concerted effort of complementary regulatory, policy and investment support activities in Jamaica. Other important opportunities relate to application of existing methodologies for PDD formulation as well as the development of programmatic type CDM activities related to the energy efficiency, in which the country´s potential is very large.

Three projects can be said to be making progress in the CDM project cycle, information is provided on the status of each as on some of the lessons learned from their development. Information is presented on a portfolio of potential project ides that have surfaced in the country over the last few months. The presentation of the portfolio creates the need to focus promotional activities as well as CDM project development efforts in the country.

First of all, the project portfolio needs to be assessed from the perspective of completing estimations required for determining emissions reductions, degree of risk associated to the proposed ideas, solving of legal rights and entitlement to emissions reductions to be generated, and other standard commercial activities of the market.

Secondly, efforts for CDM promotion and capacity building in Jamaica need to be systematised through a national strategy, aimed at increasing the links with productive sectors and development of national capacities for PDD formulation. This linkage becomes very important since a fair percentage of the projects may be of a small scale nature.

The report concludes that in the interest of developing the CDM potential in Jamaica, an effort should be placed in the development of programmatic type activities as well as on “bundling” of smaller scale projects. As such, different government institutions as well as universities can play an active role in developing the necessary tools used for their formulation according to the modalities and procedures of the CDM, assisting in reducing transaction costs, and reducing validation risks to projects in the portfolio.

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