

The UNEP-European Partnership on Capacity Building  
for the Clean Development Mechanism (CDM) sub-  
component related to Multilateral Environmental  
Agreements (MEAs) in African, Caribbean and Pacific  
(ACP) Countries

## **Final Report**

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## **PREFACE**

Following an expression of interest, Botswana Designated National Authority (DNA) under the Ministry of Environment, Wildlife and Tourism (MEWT), housed under the Department of Meteorological Services (DMS), entered into a collaboration agreement with the United Nations Environment Programme Risoe Centre in Denmark to implement the Capacity Development for Clean Development Mechanism in September 2010.

The aims of the project were to develop the necessary framework for capacity development of CDM projects and to develop institutional and human capabilities that would allow the country to formulate and implement CDM projects.

The DNA is required to produce a final report of the activities undertaken during project implementation. This is the of the end-of-Project Report.

The DNA would like to extend appreciation to the UNEP Risoe Centre for providing technical support for the project, Energy, Environment, Computing and Geophysical Applications (EECG) Consultants for their assistance with the CDM development track, staff of the Attorney General Chamber for assisting with drafting of the approval procedures and letter of approval, other government departments, the private sector and non-governmental organisations for their support during the implementation of the project. Appreciation also goes to UNDP Country Office for administration of the funds.

The DNA would also like to extend its appreciation to all participants who attended the various National Workshops organised by the project. They offered ideas, proposals and advice that enhanced the benefits and the impact of the project.

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## **The DNA Team**

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2. Penny M. Lesolle – Head of Training and Research Division [the Division is responsible for coordination of climate change issues]
3. Chandapiwa P. Sebeela – DNA officer
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7. Edison S. Chaba – DNA officer

## List of acronyms and abbreviations used

ACAD	Africa Carbon Asset Development Facility
ACM	Approved Consolidated Methodology
AM	Approved Methodology
AMS	Approved Methodology Small scale
BEAB	Bio-Energy Association of Botswana
CBM	Coal Bed Methane
CDM	Clean Development Mechanism
CER(s)	Certified Emission Reduction(s)
CF	Carbon Finance (of the World Bank)
CO <sub>2</sub>	Carbon dioxide
CPA(s)	Clean Development Mechanism Program Activities
DMS	Department of Meteorological Services
EAD	Energy Affairs Division
DNA	Designated National Authority
EE	Energy Efficiency
EECG	Energy Environment Computer and Geophysical applications
EPP	Energy and Environment Partnership Programme
EIA	Environment Impact Assessment
EU	European Union
FVA	Framework for Various Approaches
GHG	Greenhouse Gas
IT	Information Technology
KT	Kilo Tonnes
LoA	Letter of Approval
MEWT	Ministry of Environment, Wildlife and Tourism
NAMA(s)	Nationally Appropriate Mitigation Action(s)
NMM	New Market Mechanisms
PDD	Project Design Document
PIN	Project Identification Note
RE	Renewable Energy
SAPP	Southern African Power Pool
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
URC	United Nations Environment Program Risoe Centre
WB	World Bank

## EXECUTIVE SUMMARY

ES-1. The office of the Designated National Authority (DNA) under the Department of Meteorological Services was contracted by the United Nations Environment Programme Risoe Centre to implement the Capacity Development for Clean Development Project (***referred to this document as the 'project'***) in Botswana in September 2010. The project sought to establish GHG emission reduction projects that are consistent with national sustainable development. Prior to project, there had been several initiatives carried out by different organisations. However, the level of awareness remained very low and the technical skills necessary to develop PINs and PDDs were limited.

ES-2. The project implementation included contracting EECG as the consultants who assisted with the Project Development Track of the project. United Nations Development Program came into the project as administrators of the funds from the sponsors. Other implementing partners were members from various government and private sector organisations who assisted the DNA with the review of CDM projects prior to issuance of letters of approval.

ES-3. The DNA team at the Department of Meteorological Services (DMS) developed documents such as project approval guidelines, templates for letters of approval and a website [<http://botswana.acp-cd4cdm.org>]. The DNA also developed Sustainable Development Criteria for Botswana which were validated nationally through the capacity building workshops conducted during project implementation.

ES-4. The project was also able to identify CDM project opportunities and to select those projects which were eligible, identify feasible CDM projects from a technical and financial point of view and to formulate PINs and draft PDDs for the projects.

ES-5. The project also embarked on operationalising the DNA office. Prior to the project, the Department of Meteorological Services had consulted with other ministries regarding the placement of the DNA office and it was agreed that the DNA should be under the office of the National Focal Point for Climate Change, which is DMS. Before the project, the DNA was not fully operational since no work related to its mandate was done. The DNA established task teams that assisted in the review of CDM project before approval.

ES-6. In support of the proper functioning of the DNA, the project undertook the following activities:

- Drawing up operational guidelines for approval of CDM projects that included: the approval procedures, criteria for sustainable development and the roles of the stakeholders, and these were validated nationally.

- Raising awareness at national level through seminars and a project website.
- Development of a CDM website: <http://botswana.acp-cd4cdm.org>

ES-7. Specific meetings were organised for target groups such as financial institutions to raise awareness on CDM with the view of having these institutions supporting CDM in Botswana.

ES-8. The project developed 6 PINs of potential CDM projects which were presented at the African Carbon Forum in Ethiopia. EECG Consultants worked with several developers to produce the portfolio of projects. The PINs developed include:

- Efficient fuel wood cookstoves
- Wind Energy Project
- Energy efficiency in Building through application of ceramic coating
- Electricity generation using biogas in Mmamashia
- Biosys Biogas Project at Botswana Meat Commission
- A biogas plant at Mabesekwa village for cooking and lighting purposes
- 200 MW Up-draught Solar Power Station
- A decentralized power plant powered by biogas and wood chips
- Landfill gas through Pyrolysis for electricity generation

Among the 6 PINs the two most promising projects were selected and supported to the stage of PDD development and these include:

- Installation of 1 MW power generation from biogas in Mmamashia, Botswana by Bostrich International.
- Application of Ceramic Insulating Roof Coatings on Building Roofs, as an energy efficiency measure, to combat heat-build up in buildings and lower temperatures to comfort levels without the use of mechanical cooling systems by Agna Ventures.

ES-9. The project sponsored participation at Carbon Expos where developers were able to showcase their projects internationally in 2012 in Cologne, Germany.

ES-10. The following are some of the lessons learned from the implementation of the project:

- There are many limitations to CDM project development
- No assurance of implementation of CPA in Botswana for multi-national CDM Programme of Activities
- Low level of understanding of CDM in many organisations

- CDM to be viewed as a business opportunity that addresses environmental issues
- Corporate responsibility to be equally divided between social and environmental issues

ES-11. The following activities were ongoing at the time of preparing the internal review report:

- Operationalising of the DNA.
- Development of the DNA Website
- Support to project developers on their potential project portfolio
- Review of CDM guidelines and procedures for issuing LoA
- Exploring financial options for CDM project development in Botswana
- DNA participation at the carbon expos

ES-12. Botswana has attained considerable experience in developing CDM Projects. Some developers can now screen projects and develop the PINs for small-scale projects. Attempts were made to develop PDDs but none had gone through validation stage.

ES-13. The project has raised awareness, helped in the development of PINs, the preparation of PoA-DDs and the establishment of the DNA. There is still need for capacity enhancement and Technical Assistance to have at least projects going through the whole process to the issuance of CERs. This needs to be considered beyond duration.

# **1.BACKGROUND AND CONTEXT**

## ***1.1 Introduction***

The Capacity Development for Clean Development Mechanism project in Botswana was launched by the United Nations Environment Programme (UNEP) Risoe Centre having received financial support from the European Union through the Government of Denmark. The UNEP Risoe Centre (URC) was the implementer of the project.

The project was aimed at developing greenhouse gas (GHG) emission reduction projects that are consistent with national sustainable development priorities. The project also aimed at assisting Botswana to participate in the global carbon market and to be able to identify, design, approve, finance, implement and monitor CDM projects that address the country's sustainable development priorities as well as offer a cost-effective option for carbon credit buyers to comply with their obligations under the Kyoto Protocol.

Botswana was one of the selected countries within the Africa, the Caribbean and Pacific to participate in the project. Others countries in Southern Africa included Angola and Malawi.

In Botswana, the project was jointly implemented by the office of the DNA under the Department of Meteorological Services (DMS) in the Ministry of Environment, Wildlife and Tourism, and EECG Consultants. UNDP served as the body for receiving funds from Denmark and assisted with payments of all services needed by the project.

## ***1.2 The Original Situation***

Before the Project, Botswana DNA has been set by the DMS to be responsible for CDM issues in the country. The DNA was placed under Climate Change National Focal Point to the UNFCCC which is the Department of Meteorological Services under the Ministry Environment, Wildlife and Tourism. The DNA was assisted by the World Bank (WB), through the Carbon Finance Assist (CF-Assist), the climate change capacity building administered by the World Bank Institute, and implemented with administrative support of the World Bank's Africa Region, to develop institutional capacity within the DNA. The DNA undertook a bench-marking exercise to Brazil to learn how to set up the DNA. Through the World Bank project, initial procedures for approving CDM projects were drafted. Stakeholder workshops were held to sensitize potential CDM project developers on the CDM project cycle.

After the World Bank project, the uptake of development of CDM project still remained very low in Botswana. Project developers did not have sufficient funds to develop their projects to full PDD level; most of the projects were in the PIN stage with rough estimates of expected emission reductions from the projects.

Though the DNA has been set, it did not have the ability to issue approval letters because only PINs were submitted to the DNA office. In this regard, the DNA could only issue letters of no objection because the projects were not fully developed and needed to go through the validation stage, which is a prerequisite for issuing the project developer with a letter of approval. Other teams who could assist the DNA with the approval process of the projects were not formed by then, but various expertise was needed to assist the DNA to review the submitted projects before approval could be issued.

Consultants were available in Botswana who are knowledgeable in CDM project development, but there were no funds to assist the developers to meet the costs required by the consultants.

## **2.0 PROJECTS OUTPUTS AND IMPACTS**

The overall objective of the CDM sub-component was to provide Botswana with skills and expertise on the CDM, to strengthen Botswana Designated National Authorities DNA, to equip the DNA with the skills to assess and approve CDM projects; and to enable Botswana to develop national CDM portfolios to participate in the carbon market. The project impacts are discussed under the following specific objectives:

### **2.1 Capacity development for CDM**

#### ***2.1.1 Institutional strengthening of the DNA***

The project was aimed at assisting Botswana towards establishing an operational DNA capable of approving projects that are consistent with the Botswana's country's sustainable development priorities and this was to be achieved through the following activities:

##### ***a. Preparation of an introductory brochure***

The Office of the DNA prepared an introductory brochure about CDM and the planned technical assistance activities to be implemented. The introductory brochure was finalised in January 2011 and printed for distribution at the First National Capacity Building Workshop in February 2011.

##### ***b. Operationalise Botswana DNA***

To be able to deliver on the mandate of the DNA, which is to issue letters of approval for CDM projects and verification that the project will contribute to

the national sustainable development, the DNA needed to put in place modalities for project review and procedures for approval, establish criteria for project approval submission, put in place criteria for sustainable development criteria and develop CDM investor's guidebooks. There was also need to purchase office equipment such as a computer, a printer/fax machine and a projector. Though the DNA was operational since past initiatives such as that of the Carbon Finance-Assist (CF-Assist) from the World Bank, there was still need to present nationally the drafted sustainable development criteria and approval process. These were presented at National Workshops under this project and it was only then that the approval procedures were adopted nationally. Since other dimensions have been introduced in CDM such as multi-national Programme of Activities, there is need to review these procedures to accommodate this. Regarding the acquisition of equipment for the DNA, two printers, a laptop and a camera were purchased for the project. An additional laptop and a data projector will be purchased for the project for use by DNA officers in presentations workshops for CDM awareness.

***c. Review and update existing Sustainable Development Criteria***

In order for the DNA to issue a letter of approval for a CDM project verifying that the project will contribute to the national sustainable development, there was need to define criteria to assess such a contribution. These criteria became the reference for a DNA to assess and certify the sustainable development contribution of a certain project in the country and end up with a decision to issue a letter of approval/rejection. The letter of approval is required for the project to go through registration since it will indicate that the project is a voluntary action and that it contributes to the sustainable development of the country. Such criteria and procedures were developed before the project but were never validated nationally. The DNA had to review the criteria and procedures and this project assisted in the criteria and the procedures to be presented to stakeholders who provided their input in these and were finalised at the Second National Workshop and these have been posted on the National CDM web page which is part of the global page of capacity development for CDM. The website address is <http://botswana.acp-cd4cdm.org>

***d. Design, update and maintenance of a national CDM website***

A website is necessary for the provision of information and promotion of CDM, therefore the project has a global website from which Botswana DNA website page was hosted to achieve the goal of information dissemination. The Botswana CDM websites contains information on:

- Contact details for Botswana DNA
- Sustainable development criteria, and procedures for issuance of letter of approval
- CDM projects in Botswana
- Publications (such as Botswana's Investor guide and others)
- Presentations and material from national capacity building workshops

- News and events
- What CDM is.

A national CDM project website exists from the global website: <http://www.acp-cd4cdm.org>. An IT-administrator from Department of Meteorological Services (DMS) Botswana has been identified to maintain the website. DMS is developing its website and a link will be created for the CDM website at the end of the project. The website has been an important tool for information dissemination since project developers have been referring to the website for information. Regional project developers have been able to access contact details of the DNA from the website.

### ***2.1.2 Capacity development of national experts and consultants in CDM project development***

Three national capacity building workshops were held over the project duration and participants were invited from CDM viable organisations. The workshops assisted the participants to appreciate general knowledge on the CDM project cycle. Before the first workshop, a consultant has been sought to assist potential CDM project developers to draft PINs and PDDs which were then posted on the national CDM website. Participants for all the three were almost constant especially for CDM developers, variations occurred with the underlying objective of the workshop, for example financial and legal institutions were invited for the second workshop were financial issues were discussed as well as how to negotiate an Emission Reduction Purchase Agreement (ERPA).

#### ***a. National Workshop 1***

The first national workshop on capacity building for the Clean Development Mechanism (CDM) took place at Fairgrounds Holdings, Gaborone from the 23<sup>rd</sup> to 24<sup>th</sup> February 2011 and a half day workshop was held for the energy sector on the 25<sup>th</sup>. The workshop attracted approximately about 60 participants on the 23<sup>rd</sup> and about 30 participants on the last two days. The workshop was aimed at improving the capacity of project developers from the public, private and civil sectors to identify potential CDM projects and develop Project Idea Notes (PINs) and Project Design Documents (PDDs). The workshop covered the following topics:

- Global carbon markets, CDM overview & mitigation analysis for Botswana
- Financing CDM projects in Botswana,
- National sustainable development criteria and approval procedures for Botswana
- Baseline methodologies and how to prepare PINs PDDs.

Among the presentations made at the workshop were the following:

- Presentations by the Botswana DNA on the sustainable development criteria and approval procedures developed in 2007, which were to be finalized and availed on the project website.
- Presentations of PINs from potential project developers who included Skip Hire, Agna Ventures, Power Tower, Debswana, Department of Energy Affairs, Bio-Energy Association of Botswana (BEAB) and Afrivestment.
- Group work to give the participants the feel of how to develop PINs. The area considered was energy and the participants practiced with PIN examples of solar water heaters, energy efficient stoves and landfill gas capturing.

### ***b. National Workshop 2***

The second national capacity building workshop was held from the 7<sup>th</sup> to the 8<sup>th</sup> of September, 2011 at Tlotlo Conference Centre. The objective of the workshop was to improve the capacity of project developers from public, private and civil sectors in areas of validation and verification of CDM projects. It was also intended to assist project developers to be able to negotiate an ERPA and be familiar with legal framework requirements in Botswana. The workshop covered the following topics: validation and verification standards (VVS), carbon contracts and national legal framework issues.

Workshop presentations included:

- A presentation by Dr. Karen Olsen who gave overview on the progress of the capacity building project implemented by UNEP/RISOE Centre (URC) and the office of the Designated National Authority (DNA) at the Department of Meteorological Services (DMS). The presentation also highlighted on the workshop agenda; stating how the workshop was going to proceed. Maneuvering through the project website at [www.acp-cd4cdm.org](http://www.acp-cd4cdm.org) was also demonstrated. Dr. Olsen further gave an outlook towards ongoing climate negotiations for COP-17 in Durban.
- Presentations by the Botswana DNA on the sustainable development criteria and approval procedures. The sustainable development criteria and the approval procedures were presented at the first CDM capacity building workshop in February 2011. These were revised by the DNA following comments made at the February workshop and were presented for national adoption.
- A presentation on Grid Emission Factor(s) (GEF) for the South African Power Pool including Botswana by EECG. The results were obtained under a project supported by German Ministry and facilitated by UNEP/URC and Africa Carbon Asset Development Facility (ACAD). It

was explained that project proponents need GEF to determine the carbon offset in a project.

- Presentations on CDM legal and regulatory framework in Botswana by Ms. Yvonne Chilume of Chilume and Company Attorneys. She stressed the importance of domesticating the UNFCCC related treaties and the need for DMS to have regulations for existing National Meteorological Services Act of 2009. It also stated that a Letter of Approval (LoA) from the DNA is a legal document and should carry conditions in accordance with CDM projects. Ms. Chilume also gave a presentation on how to negotiate a CDM contract.
- Dr. Olsen gave a presentation on the CDM project cycle. This was intended to reiterate on the procedures and standards within the CDM project cycle.
- Jonathan Avis from ERM Certification and Verification Services, Ltd took the participants through the processes of validation and verification. He stated that the objective of validation is to check for compliance with CDM rules while verification is an audit of emission reduction achieved by the project. Mr. Avis also highlighted on the pitfalls that may be encountered during these processes and how to avoid them.

### ***c. National Workshop 3***

The aims of the third workshop were to evaluate progress and lessons learnt from the capacity building project implementation in Botswana with the following specific objectives:

- To assess the achievements made so by CDM participants (project developers, consultants, DNA and other players)
- To present challenges encountered during project development and seek possible solutions
- To take stock of outcomes and impacts
- To facilitate that capacity developed and results achieved are sustained beyond project closure
- To finalize activities according to the work plan by 31<sup>st</sup> December 2013

The following topics were covered during the workshop:

- A presentation on the overview of project progress, the workshop agenda and ongoing climate negotiations for a new climate agreement by 2015 by Karen Olsen from UNEP Risø Centre
- A presentation on institutional capacity developed for CDM highlighting on lessons learned by the DNA represented by Chandapiwa Sebeela.
- A presentation on CDM project development in Botswana highlighting on the achievements and challenges by Dr. Peter Zhou of EECG Consultants
- A presentation towards a National Climate Change Policy and Action Plan for Botswana: up-scaling mitigation actions based on CDM experience by Balisi Gopolang from DMS.
- An introductory presentation on NAMAs (Preparation – Implementation) by Todd Ngara from UNEP Risø Centre.
- Showcasing of CDM Programme of Activities: Energy Efficient Ceratech for buildings in Botswana by Percy Lekoba from Agna Ventures.
- Showcasing of CDM Programme of Activities: Biogas Projects for buildings in Botswana by Carl de Bruyn from Bostrich International.
- A presentation on how to attract climate finance under an emerging framework for LCDS and NAMAs? - in the context of a weak carbon market by Todd Ngara from UNEP Risø Centre.
- A presentation on the outlook for the future role of CDM towards a global carbon market with New Market Mechanisms (NMM) and a Framework for Various Approaches (FVA) by Karen Olsen from UNEP Risø Centre

The workshops were important in that they increased the capacity for CDM project development in Botswana. Those who attended the workshops acquired basic understanding on CDM modalities and procedures and have the ability of at least drafting a PIN. Awareness was raised especially for the financial institutions who came to the workshops; they expressed interest in investing in CDM provided the projects were developed in line with their procedures.

#### ***d. Sector-focused workshops***

During the first national workshop which was held in February 2011, sectors with potential for CDM project development were identified and prioritized. Focused workshops were held back-to-back with national workshop to assist developers with their projects. The sectors which were identified were the energy and waste. Special meetings were arranged with local banks and entrepreneurs to sensitise them on CDM issues. Though Botswana does not have any project funded by a local bank, the level of

awareness on CDM has slightly increased in financial institutions through this project.

### **2.1.3 Development CDM Investor's guide**

Regarding promoting CDM in the country and beyond, the DNA has developed a CDM Investors' Guide for Botswana. The CDM Investors' Guide has recently been printed and will be distributed to strategic places such as at Botswana's Embassies with the intention of stimulating interest in CDM by potential investors. The impact of the guide will be evaluated once it has been distributed both nationally and internationally.

## **2.2 Project development track**

### **2.2.1 Development of 6 PINs and 2 PDDs**

Within the CDM development tract, a consultant was contracted with the aim of assisting project developers to produce 6 PINs from which he would develop at least 2 PDDs from the 6 PINs. The consultant developed criteria in collaboration with the DNA to select two projects from the PINs which would be developed into PDDs.

#### **a. Selection of sectors**

The selection of the sectors which are viable for CDM project development was done following the first national CDM capacity building workshop held in February 2011. The sectors were selected based on the potential of emission reductions that can be gained using past national greenhouse gas inventories and the consultant's past work in the development of PINs. The sectors which were selected were the waste and energy sectors.

#### **b. Development of 6 Project Idea Notes (PINs)**

The project required development of 6 PINs but from national interest, more PINs were developed. The consultant assisted the project developers with the calculations of emissions that were expected to be reduced from the CDM activities.

##### **(i) The developed PINs**

The table below shows the list of PINs developed since the first workshop.

SECTOR	Name of organization	Contact Persons	Project Title	CERs tCO <sub>2</sub> /year	applicable methodologies	Status
ENERGY	Botswana Power Corporation / Re Botswana – BPC Lesedi (Pty) Ltd	Contact: Mr Walter Kgabung Tel: 3911299 Fax: 3911300 <a href="mailto:wmgabung@bpclesedi.co.bw">wmgabung@bpclesedi.co.bw</a>	PoA-Biomass burning energy efficient cooking technologies in households, institutions and small	50000	AMSIG & AM0094 for cook stoves	A complete PIN on efficient fuelwood cook stoves has been developed under another project support but BPC would like the project activity to be considered for support under the EU-ACP-MEA CDM project. The original PIN has been submitted at

			<b>businesses in Botswana.</b>			this stage. EECG will transfer it into EU-ACP-MEA PIN format.
	Wind Edge Botswana	Contact: Dr Wayne Edge Tel: Fax: E.mail: <a href="mailto:wayneaedge@yahoo.com">wayneaedge@yahoo.com</a>	<b>Botswana Wind Energy Project:</b> 50 large wind turbines producing 100 MW of power for Botswana.	228000	ACM0002Consolidated Methodology for Grid-Connected Electricity Generation from Renewable Sources	This project has attracted attention both of government and other investors and soon wind measurements will be carried out to verify wind speeds for design of the project. There are also a number of investors that will work with the proponent going forward. Full PIN has been included with this report.
	Agna Ventures	Contact: Mr Percy Lekoba  Tel: 3187914/722 40621 Fax: E.mail: <a href="mailto:percyl@botsnet.bw">percyl@botsnet.bw</a>	<b>Efficient Cool Buildings Programme in Botswana.</b> Application of ceratech coating to building roof surfaces	11000 (based on past performance)  44000 (based on capacity of Agna)	AMSII-EE/Fuel switching (FS) in various buildings; AMSIIF on Agric bldgs;AM0091 EE/FS in new buildings	Proponent has used some baseline data to estimate how much surfaces can be painted in the next 10 years of crediting period. The PP is however undertaking active marketing and the surface area is expected to increase. The CERs have been estimated based on the projected baseline data and also on the capacity of the PP to paint surfaces per year. PIN for the project has been attached. Financial analysis is outstanding at the moment.
<b>WASTE SECTOR</b>	<b>Bostrich</b>	Contact: Mr Callie Rapula de Bruyn Tel: 72333155 Fax: E.mail: <a href="mailto:veridebt@opqnet.net">veridebt@opqnet.net</a>	<b>1 MW power generation from biogas in Mmamashia, Botswana</b>	28000	ACM0010;AMSHIID; AMSIIIAO;AM0075	Feasibility study supported through EEP. The project is going into EIA.Full PIN is attached .
	Bio sys	Contact: Mr Simon Mahosi Tel: 72474730 Fax: E.mail: <a href="mailto:simonmahosi@yahoo.com">simonmahosi@yahoo.com</a>	<b>Biosys Biogas Project at Botswana Meat Commission</b>	78505	ACM0010;AMSHIID; AMSIIIAO;AM0075	Full PIN attached in a slightly different format. PP still needs to be granted permission to use land and animal waste and abattoir waste. EECG has made a suggestion to Bostrich and Biosys to collaborate on a PoA and that is being actively pursued but no final decision has been made yet.
	EAD-biodigester	Contact: Ms Gina Wright Tel:3914221 <a href="mailto:mwright@gov.bw">mwright@gov.bw</a>	<b>A biogas plant at Mabesekwa village for cooking and lighting purposes</b>	600	ACM 0010; AMSIIID; AM0075; AMSIIIAO	Project has passed feasibility stage and is seeking investors. Full PIN has been attached as part of this report.
<b>OTHER ENERGY</b>	Kalahari Energy	Contact: Mr Julian Scales Tel: 3973386 Fax: E.mail: <a href="mailto:julian@scales.co.bw">julian@scales.co.bw</a>	<b>90MW Diesel generator to CBM</b>	Not determined	AMS IIIAG; AMS111AH	Full design done, working on acquiring land, PPA with BPC and working on tariff structure Plant constructed currently running on diesel. Raising finance for pipe line and production well. Setting up gasifier factory and acquired gasifier to start manufacture of gasifiers in Botswana

						PP met once but no PIN developed to date. PP now difficult to find.
	Power Tower (Pty) Ltd	Jack Thipe 3105240/732 78548 <a href="mailto:jackthipe@nbc.co.bw">jackthipe@nbc.co.bw</a>	<b>Power Tower</b> 200 MW Up-draught Solar Power Station (Botswana)	788 400	ACM 0002 - Consolidated Methodology for Grid-Connected Electricity Generation from Renewable Sources	The PIN is ready but is being submitted to various potential sponsors. PP has actively participated in the EU-ACP-MEA CDM workshops and is also seeking support from EEGC on the way forward with regard to preparation of the PDD. Will require permission of PP to release PIN. The Project activity can however be show-cased at the carbon Expo 2012.
OTHER-WASTE	Department of Forestry and Range Resources / Forestry and Range Management Section	Dr Ralf Zimmerman/ Mr Manene	A decentralized power plant powered by biogas and wood chips	not determined	ACM0010;AMSIID;AMSIIO;AM0075;AMSIF for invasive species	Has drafted a project proposal for financing of a project feasibility from the Global Environment Facility. That feasibility will inform whether the project can go ahead or not. Meanwhile EEGC is guiding how to frame a CDM project activity
	Zillion Investments		Landfill gas through Pyrolysis for electricity generation	not determined	AMS IIIL; ACM0001	PIN not yet developed until a landfill site has been identified and provided for project use. PP will approach local authorities in Palapye.

Development of several PINs (more than those intended in the project) is an indication that there is national interest in CDM project development. It is important to note that there are limitations that inhibited CDM project development to registration stage and these include, among other:

- No financial resources for project developer to undertake validation of their projects
- Project developers need continued technical support to develop projects to validation stage

For these reasons most of the projects were only developed to PIN stage since the developers did not have the resources for further development, but national interest was stimulated during the project period.

***(ii) Criteria for selection of 2 PINs to be developed into PDDs***

From the above list, two PINs were selected to be further developed into PDD stage. At this juncture, the project has made some savings and it was decided that the scope be changed from development of PDD to PoA-DD so that other developers could participate as CPAs. A selection criterion was developed by the consultant and the following points were considered to qualify the project for further development:

- Investment capital

- CERs TCO<sub>2</sub>/year at least >15KT/year
- Availability of methodologies to be used
- Feasibility study done/to be done
- Land/resource ownership
- Sources of financing
- Technology maturity
- Strength of proponent; technical knowledge of the project and enthusiasm to implement the project
- Prospects to be registered by 2012
- Prospects of being implemented
- Variety of project types that can be combined to share transaction cost

Two PoA-DDs were developed with 2 generic and 2 specific CPAs, one from the energy sector and the other from the waste sector. The selected PINs have been developed as PoA from additional funding of USD 15 000 saved from activities carried out in previous years and availed for EECG to be able to help developers with PoA-PDD. The DNA drew a contract for EECG to that effect. The developed projects are:

1. Installation of 1MW power generation from bio gas in Mmamashia, Botswana by Bostrich International
2. Application of ceramic insulating roof coatings on building roofs, as an energy efficiency measure to combat heat build-up in buildings and lower temperatures to comfort levels without the use of mechanical cooling systems by Agna Ventures

The two were the only projects which reached PDD stage; others proponents had financial and technical limitations to further develop their projects. This implies that without the project, no CDM projects could have been developed to this level in the country.

### ***2.2.2 Exploration of financial options that could support CDM projects***

#### ***a. Financial institutions that were visited***

EECG consultants ventured into finding out if there are options available within financial sector, private investors and government representatives that can assist in CDM project development. The consultations revealed that most financial institutions had low level of awareness with regard to CDM and those who had little knowledge found CDM to be of low importance to their business. This was indicated by a number of banks such as Standard Bank, First National Bank, Stanbic and Capital Banks who cancelled appointments with the consultant because they found CDM out of their investment criteria. Other organisations such as Botswana Development Corporation and Botswana Chamber of Commerce, Industry and Manpower (BOCCIM) also cancelled the appointments with EECG due to low level of awareness on CDM. Such institutions did not attend the capacity building workshops though they have been invited. The following

financial institutions were visited and the 'status' column indicate the institution's stand with regard to CDM.

BANK VISITED	STATUS
Barclays Bank	<p>EECG arranged to make a presentation on CDM to Barclays officials in the Marketing Department. Barclays indicated that they financed any project that met their investment criteria. However they did not have a particular package specifically designed for CDM project. Though the Barclays Bank Botswana office did not have CDM expertise, they could tap into international experience from their global network of banks especially from the London Africa Desk.</p> <p>Barclays was also invited to the 2<sup>nd</sup> workshop and representatives from Barclays Bank gave a presentation at the second workshop. Barclays Bank further expressed a desire to know more about the CDM opportunities in Botswana and how they could exploit them.</p>
Citizen Empowerment Development Agency (CEDA)	A presentation was made at CEDA at the request of CEDA management to explain CDM and the EU-ACP-MEA CDM Project in particular. EECG made a presentation to CEDA officials covering the both aspects. CEDA mentioned that they support any project that can at least break even. With regards to CDM the institution did not have any portfolios or packages designed specifically for CDM as they did not have in house expertise to cater for CDM. Furthermore it was resolved that EECG link CEDA with developers that have projects that could qualify as potential CDM projects.
Department of Waste Management and Pollution Control (DWMPC)	A presentation was made at the Department of Waste Management and Pollution Control as they are the ones making the policies on waste and sanitation. The department gave a perspective of some of its programs and how project proponents could secure the rights to use landfills for waste to energy CDM projects. Prospective landfill gas capturing projects have not taken off due to uncertainty of how to get permission to secure landfill waste for energy generation. In this regard, there is no landfill gas project that has been developed under the project. The DNA also attended the meeting, represented by Janet Selato.
Development Bank of Southern Africa (DBSA)	<p>The DBSA emphasize on large energy infrastructure projects on generation transmission and distribution. The size of projects that they finance should justify investment and contribute to regional integration through meaningful development e.g. interconnections. DBSA's current projects portfolio is currently 60% RSA and 30% SADC and focuses on</p> <p>Investment banking, capacity building, Project development facility, Monitoring and Evaluation. The bank can support project developers to fund prefeasibility, feasibility, pilot and demonstration of renewable energy and energy efficiency (RE/EE) projects. EECG engaged with DBSA on their potential support for RE/EE projects in the SADC region and they can have a window for investment if convinced of the merit.</p>
Energy and Environment Partnership Programme (EEP)	The Energy and Environment Partnership (EEP) is a programme which promotes renewable energy (RE), energy efficiency (EE), and clean technology investments in

	Botswana that is being managed by the DBSA and financed by the Finnish and Austrian Governments. The project is already financing 3 projects in Botswana and ran up to the end September 2012. One of the projects selected for PDD development, the one for Bostrich benefited from the EEP support to undertake feasibility study.
Industrial Development Corporation (IDC) of South Africa	The IDC finances industrial development project mostly in South Africa but partly also in the rest of Southern Africa. The organisation has committed R25 billion to Green projects in the next 5 years. 22.4 billion On RE/EE projects e.g. waste to energy, bio-fuels/bio-ethanol.

### **2.2.3 Selection of country representative to participate at Carbon Expo**

Participation at carbon expo is meant to avail opportunities to project developers to develop partnership with those interested in CDM; this include financiers, Designated Operational Entities (DOEs) and other parties that can be interested in partnership with local project developers. The project developers participated at the carbon expo in Cologne Germany in June 2012. From the reports submitted to the office of the DNA by the CDM project developers, it was clear that the participation at the Carbon Expo was beneficial. The reports indicated that they were able to meet with various organisations such as DOEs, financial institutions and CER buyers. The office of the DNA also participated at DNA forums organized by the UNFCCC Secretariat, one in Côte d'Ivoire and the other in Poland. The DNA also participated at various African Carbon Forums during the project duration. At the Forums CDM project development in Botswana was advertised. The table below indicates the carbon forums and meetings attended during the project implementation period.

<b>Recent Event and Place</b>	<b>Date</b>	<b>Participants</b>
<b>Regional Events</b>		
5 <sup>th</sup> Africa Carbon Forum, Abidjan, Côte d'Ivoire	3 <sup>rd</sup> – 5 <sup>th</sup> July 2013	DMS: Selato DMS: Chaba
4 <sup>th</sup> Africa Carbon Forum, Addis Ababa, Ethiopia	18 <sup>th</sup> to 20 <sup>th</sup> April 2012	DMS: Selato EAD: Maswabi
3 <sup>rd</sup> Africa Carbon Forum, Marrakech, Morocco	4 <sup>th</sup> – 6 <sup>th</sup> July 2011	DMS: Selato EAD: Koveya
<b>Global Carbon Expos</b>		
Carbon Expo Exhibition Cologne, Germany	30 <sup>th</sup> May – 1 <sup>st</sup> June 2012	Bostrich: C. De Bruyn Aгна Ventures: P. Lekoba
<b>Others</b>		

International Centre for Environmental Technology Transfer Forum, Johannesburg, South Africa	13 <sup>th</sup> - 17 <sup>th</sup> February, 2012	Biosys: Simon Mahosi
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#### ***2.2.4 Community meetings***

Community meetings were held at localities where CDM project activities will be carried out. Some of the meetings formed part of the consultative process that lead to producing Environmental Impact Assessments (EIAs). The consultative process helped in discussing issues of equity with the communities affected by CDM.

The first community meeting was held on the 18<sup>th</sup> November 2011 and it was intended to discuss the Biogas CDM project impact around Mmamashia (Mmamashia is the project area). The project has been moved to an industrial area after it was realised that it was not possible to collect the needed cow dung from the site. The new site is now at the Multi-Species Abattoir where there is plenty of animal waste from slaughtering of the animals.

Apart from issues of equity, the community meetings helped in raising awareness on CDM; prior to these, communities only knew of development projects such as the construction of schools, roads, clinics, etc, but after the meetings they were able to appreciate that there are other types of projects that can bring development in their communities.

#### ***2.2.5 National approval of projects concepts***

The objective of this activity was for CDM project developers to seek national approval of project concepts from DNA. These projects were both national and regional submissions to the DNA whose activities are to be implemented at a regional scope under the programmatic modality of the CDM. Several CDM submissions were made to the DNA requesting for letters of approval. The DNA Botswana is now capable of reviewing CDM projects. To date, six LoA and one letter of rejection have been issued by the DNA. From the six projects issued with LoA, one of the projects was developed by this initiative; the other project is still undergoing the EIA process.

### **3. DEVELOPMENT OF A REGIONAL GRID EMISSION FACTOR**

A study for carbon dioxide (CO<sub>2</sub>) emission factors for the interconnected electricity systems of the Southern African Power Pool (SAPP) was commissioned by URC, UNEP and ACAD and funded by the German Ministry of Environment. The objective of the study was to facilitate investments in renewable energy projects in the SAPP region by submitting the emission factors as a standardized baseline. The standardized baseline provides the values of the CO<sub>2</sub> emission factors for the interconnected electricity system of the Southern African Power Pool (SAPP) and it is

applicable to the group of countries of the SAPP, of which Botswana is a member. The development of the standardized baseline was important to Botswana's CDM project development because Botswana did not have its own Grid Emission Factors. The CDM projects developed within this project used the standardized baseline for the expected emission reductions.

## **4.LESSONS LEARNED**

The following are some of the lessons learned from the implementation of the project:

### ***4.1 Limitations to CDM project development***

There are still many limitations to CDM project development in Botswana and these include:

- CDM transaction costs – CDM project developers have difficulties in going through the CDM project cycle to registration due to high costs associated with CDM project development.
- Declining CER Price – the Price of CERs has been declining since the end of the first commitment period of the Kyoto Protocol and this has become a deterrent to CDM project development.
- No CDM projects in Botswana – there are currently no CDM projects that have been registered from Botswana and in this regard there is nothing that developers can benchmark with.
- There is low interest in local financial institutions to sponsor CDM project development because of lack of knowledge on how to assess CDM for financial viability and the associated risk.
- EU-Emission Trading Scheme's exclusion of CERs from non-LDCs like Botswana during the second commitment period has decreased foreign investors' interest to invest in Botswana's CDM projects.

### ***4.2 No assurance of implementation of CPA for regional CDM***

Several LoA have been issued to multi-national PoA Coordinating and Managing Entities, who indicated that they intended to start implementation before the end of 2012; up to now none of these proponents have started their operations in Botswana. This therefore requires the DNA to review the procedures for issuing LoA to ensure that CPAs are implemented.

### ***4.3 Low level of understanding of CDM in many organisations***

The level of understanding of CDM is still low especially in financial institutions that showed very little interest to hold meetings with the project consultant, EECG. Very few financial institutions attended the national capacity building workshops where CDM was discussed. There is still lack of knowledge on investment potential on carbon related projects. The

institutions still do not have knowledge on how to assess CDM projects for financial viability. Regionally, there are some banks such as Standard Bank who have started creating portfolios for supporting implementation of CDM projects; this was shared with local institutions at the first national capacity building workshop.

At the 3<sup>rd</sup> national capacity building workshop a resolution was raised that there is need for support to continue awareness rising and enhance understanding of the CDM to project developers through the renewable energy forum. Already there is a Bio-Energy Association of Botswana, which can serve as a platform for increasing awareness to potential CDM developers. It was suggested that the DNA can offer support to the BEAB by organizing workshops where there can be continued discussion on CDM related issues.

#### ***4.4 CDM to be viewed as a business opportunity that addresses environmental issues***

During the first national capacity building workshop, stakeholders suggested that CDM projects should be exempt from Environment Impact Assessment (EIA) since CDM addresses environmental problems. The DNA discussed the issue with the Department of Environmental Affairs who were able to exempt several projects from doing an EIA. Now only projects that need to put up a structure are required to do an EIA, other projects can either be exempted or required to do only a preliminary EIA.

#### ***4.5 Corporate responsibility to be equally divided between social and environmental issues***

Due to low level of awareness in climate change including CDM, many organisations' corporate responsibility is limited to the social part; environmental issues are not given much priority. In this regard, there is need to continue with climate change awareness activities that will help bring out CDM issues to the corporate world.

#### ***4.6 CDM Project Development***

There is still no project that has gone through the entire CDM project cycle from Botswana. Dedication is realised from the few that have been consistent in attending the national capacity building workshops. Most projects in Botswana are almost all of the small scale type. Although these are easier to write up, get approval, register and implement, the estimated CERs are low to attract foreign investment. For other local prospective CDM project developers, there is still expectation of upfront finance to start CDM projects which is an indication of low level of awareness. Regionally, there have been requests for LoA but to date none of these projects have been implemented.

Though there are currently no registered projects from Botswana, local consultants are available who have the capacity to guide CDM project

developers throughout the CDM cycle. The table below is a list of the organisations with such capacity:

Name of organization/expert	Core competence	Contact Details
<b>EECG Consultants (Pty) Ltd</b>	DNA support (preparation of rules and procedures; preparation of resource materials that PP can use e.g. grid emission factors, forestry baseline data) Project/programme identification and development (PIN, PDD, methodologies development and reviews for validation and registration). Seeking financiers for PDD development and carbon buyers.	Dr Peter P. Zhou Tel +267-3910127 Mobile: +267-71693104 <a href="mailto:pzhou@global.bw">pzhou@global.bw</a> ; <a href="mailto:pzhou@eecg.co.bw">pzhou@eecg.co.bw</a>
<b>African Carbon Exchange</b>	Support for biodiversity/REDD projects development Advice on Carbon markets	Mr David Lesolle Mobile +267-72857121 <a href="mailto:rralekgotla@yahoo.co.uk">rralekgotla@yahoo.co.uk</a>
<b>StenStenbeck Consultancy and Training</b>	Advising, training and capacity building on CDM & VER Find carbon merchants and investors. Assist in the development of Project Design Documents (PDD) Support Registration of CDM/VER projects	Sten Stenbeck Cell ph (Botswana): +267 744 35 159 Ph (Sweden): +46 (0)8 559 255 31 <a href="mailto:sten@stenstenbeck.se">sten@stenstenbeck.se</a> Skype: sten.stenbeck
<b>Afrivestment(Pty)Ltd c/o P.O.Box 5347 Main mall Gaborone</b>	Project development up to PDD Policy advice Institutional support	Matlhogonolo Victor Sebate <a href="mailto:msebate@yahoo.com">msebate@yahoo.com</a> (267)71203480

## 5. PENDING ACTIVITIES

The following activities are ongoing at the time the report was drafted:

- Operationalising of the DNA – there is need to acquire additional equipment for the office of the DNA; one laptop computer and a printer. Support will be extended to organisations such as the Department of Environmental Affairs, Ministry of Trade and Industry to be able to assess projects for issuance of LoA.
- Development of the DNA Website– DMS is in the process developing its website from which a link will be created to the current Botswana CDM website from the CDM global website.
- Support to project developers on their potential project portfolio – there are currently no registered CDM projects and the DNA will continue assisting the projects developed to PDD level to seek for funding to enable their projects to undergo validation.
- Review of CDM guidelines and procedures for issuing LoA – the approval procedures for CDM projects have been reviewed since the first national capacity building workshop, but due to the dynamic nature of CDM, there has been need to review the guidelines to cater for multi-national CDM activities since the initial guidelines were applicable to national CDM activities. The DNA is in the process of the review of the guidelines.
- Exploring financial options for CDM project development in Botswana – the local institutions have been consulted with regard to financing CDM, but they have shown reluctance in participating in CDM due to lack of knowledge of the associated risk in CDM. There is need to find other options beyond the local institutions to assist the developers continue with their projects towards registration.
- DNA participation at the carbon expos – the participation of the DNA at carbon expos will assist in advertising the CDM national portfolio. Material such as the national CDM Investor’s Guide has been developed and can form part of the exhibits that can advertise CDM in Botswana.
- At the last national capacity building workshop held in September 2013, CDM developers suggested that there was need for support of a continued dialogue with the renewable energy project developers. It was suggested that the DNA can offer support to the BEAB by organizing workshops where there can be continued discussion on CDM related issues.

## **6 THE WAY FORWARD**

Regarding the project, activities such as awareness, the development of PINs, the preparation of PDDs and the establishment of the DNA have taken place. It is noted that these are the initial activities in the CDM cycle and the development of project portfolio. The DNA, in collaboration the EECG, has made considerable contribution toward the success of these. Activities such as project registration, monitoring, validation and CERs trading are going to be challenging. There is need to have an implemented CDM project on the ground from which other prospective developers could benchmark. There is

a need for capacity enhancement, technical assistance and sharing of experiences with other countries to be able to improve in the remaining activities. The objective of having at least the two projects developed under this initiative is key to the DNA since these will be the first projects to be registered from Botswana.