

**Development and Energy in Africa (DEA) project
A case for Botswana**

Second National Workshop

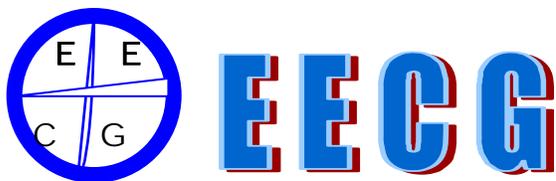
PHAKALANE GOLF ESTAGE, Gaborone. Botswana

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WORKSHOP PROCEEDINGS

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1. INTRODUCTION

1.1 Background

The second national workshop was undertaken mainly to report on the Case studies, which constitute WORK PACKAGE 6 (out of the nine Work Packages) of the DEA project. The results of the case studies are intended to feed into the development of the Assessment Framework (AF)¹, which is the main output (WORK PACKAGE 5) of the DEA project. A brief description of the DEA project and its objectives are provided in the Box below for reference.

DEA is a project under the European Commission's Intelligent Energy-Europe programme COOPENER. The project commenced in May 2005 and it is expected to last for 30 months, until October, 2007. The principal aims of the DEA project are (i) to identify and examine the developmental impacts of energy interventions linked to improving energy access and poverty alleviation and (ii) to use the information and insights gained to improve on-going and future energy interventions by energy policymakers and institutions in six Sub-Saharan African countries: Botswana, Ghana, Mali, Senegal, Tanzania and Zambia. The immediate objectives of the DEA project are (i) to establish and apply an Assessment Framework for evaluating development and poverty impacts of energy interventions and (ii) to engage in a dialogue with energy policy makers and other stakeholders on the basis of the framework, with a view to incorporate these issues in energy policy.

1.2 Workshop Objectives

The objectives of the second national workshop for Botswana were therefore to:

- a) Report on the findings of the Case Study for Botswana. The selected case study was on Rural Electrification by Grid Electrification (REGE). The workshop was also to present in brief, the case studies that were carried out in the other participating countries of Ghana, Mali, Senegal, Tanzania and Zambia.
- b) Solicit input from stakeholders that attended the second national workshop and their views on how best the Assessment Framework could further be developed to be useful to Botswana's future Energy Planning and Policy Development.
- c) Initiate a coordination framework under which stakeholders could continue to engage each other when designing policies and projects that are intended to positively impact on development and poverty alleviation.

1.3 Attendance

Various stakeholders attended the workshop and Table1 (Annex 1) depicts the stakeholders that attended the national workshop. A critical mass of the key stakeholders were able to attend but the Case Study report on REGE was circulated to many other stakeholders that did not attend.

¹ The AF is a universal method for evaluating development impacts of energy intervention

The stakeholder organizations that are on the mailing list for the DEA project are listed in Table 2 in Annex I.

1.4 Workshop Programme

This was largely a technical meeting that didn't involve much formal opening sessions.

The workshop started by welcome remarks from the national project coordinator, Dr Peter Zhou, followed by an opening prayer by Mr. Ragton Mazhani of the Ministry of Education.

All the workshop participants got a chance to introduce themselves indicating what organizations they represented.

Mr. Raymond Kwerepe of the Ministry of Agriculture kindly chaired all the morning sessions and Ms Ncheng Lesedi of the Department of Energy chaired the afternoon sessions.

Five formal presentations were made and are summarized in Chapter 2 and stakeholder participants had an opportunity to make comments to the presentations. The stakeholders broke into two working groups in the early afternoon to provide inputs to the case study and how best the AF could further be developed.

2.0 PRESENTATIONS

The detailed power point presentations are included to the workshop proceedings as attachments. What is presented here are just summaries of the key points presented to the stakeholders.

Presentation 1: DEA Project Introduction by Dr Sten Dieden, UNEP Risoe Centre

The presentation was on the overview and methodology of the DEA project.

In Terms of overview, DEA is to develop a framework of impact analysis from small/medium energy interventions² in six African countries focusing on development and poverty alleviation. The project aims to engage multi-stakeholders in exploring how information on impacts can influence policy and intervention design. The DEA project is also intended to raise awareness on potential links between energy and development

² energy interventions in the list of catalogue presented as Work Package 3 consisted of policies, projects and programmes- in the areas fuel substitution, electrification, mechanical power and fuel improvement and efficient use..

On methodology, the presentation focused on the causal chain adopted in the DEA project and the complexities that arise in attributing impacts to energy interventions as other factors are also at play. The four level causal-chain of Input, Output, Outcome and Impacts are a simplified way of associating direct effects of an energy intervention with development. There are other indirect factors that would exist and that would make analysis more complex.

The presentation indicated the outcomes of the 2nd workshop as to obtain the response of stakeholders on the usefulness of the DEA methodology and how it can be improved.

Presentation 2: Activities of the Department of Energy- Botswana by Ms Ncheng Lesedi

The Energy Affairs Division (EAD) representative highlighted some of the undertakings in EAD as a way of demonstrating EAD's interest in the DEA project. The department is in the process of undertaking the following activities:

- Electrification of 30 villages and extension of the grid network in 12 villages.
- Feasibility study of the Mmamabula Power Station,
- Development of a contract with BPC on the RE Project being funded by GEF
- Biomass project to reduced dependency on fuel wood especially by government institutions such as schools, hospitals, clinics etc. Promote sustainable utilization of bio-fuels.
- Finalization of the first energy policy, that is currently at Cabinet level and is still to be approved by Parliament. It is expected to be enacted by November, 2006.
- Construction of Oil storage facilities in the country
- Development of a coal depot in Ghanzi and installation of coal cooking pots at Gaborone Senior Secondary School
- Energy efficiency (EE) in councils, government institutions. There is also a EE project for the Building sector. EAD is also encouraging EE in other sectors including industry
- The major NRES initiative is the RE-Botswana funded by GEF.

EAD has also made funding requests from the EU/ACP Facility for the following projects.

- Cross-border oil pipeline linking South Africa and Botswana
- Community Based Natural Resources management involving creation of woodlots. This would be implemented with the Ministry of Agriculture.
- Network extension to improve grid electricity connectivity
- Improving distribution of LPG infrastructure in the country
- Development and exploitation of Coal Bed methane
- Supporting Solar Thermal Power Generation

It is in the context of all its initiative that it would welcome initiatives that have an add-on effect.

Presentation 3. The Fringilla Process- A framework for Collective planning by Dr. Peter Zhou, EECG.

The Fringilla process was presented as a planning process leading to the execution of the case Studies.

In the case of the DEA project, the Fringilla Process involved

- Refinement of the 4-level Causal Chains for the selected Case studies in each of the six participating countries.
- Elaboration of the causal chain to show what information could be measured as part of the case study and what indicators would be generated to show energy-development linkages.
- Learning and adopting similar survey methods for the data collection in the case studies
- Developing a Research Plan- in terms of defining activities to be undertaken, sources of data, sample sizes, and then attributing inputs required to accomplish the activities in the form of human resources and time allocation .
- The stakeholders were presented with both the elaborated causal chain for Botswana REGE case study, the data requirements envisaged and the research Plan.

The Fringilla Process was also indicated as adaptable to multi-stakeholder planning involving energy or other interventions.

Presentation 4 REGE Case Study Dr. Peter Zhou, EECG

The presentation on the Botswana REGE case study emphasized the case study selection³ criteria used, the selection of the study area. The link between REGE through Rural Electrification Collective Scheme was demonstrated. The methodology adopted for data collection was presented- involving a combination of informal interviews, some questionnaires and focus groups.

The presentation further presented the results found that links grid electrification to some development in the selected village of Manyana. The results were presented for each of the sectors operating in the village namely, Domestic, Education, Health, Commercial, Industrial and Local Government.

³ In Work Package 3, there were 9 energy interventions in the Botswana catalogue-constituting of grid electrification, several solar PV projects, sustainable fuelwood use; LPG distribution and coal projects

Utilization of electricity for various end-uses in the six sectors was evident, with some obvious link to development in the form of creation of businesses, better life style and infrastructural development. The Focus Group of stakeholders held at the end of data collection was able to confirm that grid electricity has brought development into the village.

Stakeholder Comments on the Presentation

- The case study found out that some of the consumers of grid electricity have been disconnected in Manyana and in that regard would not continue benefiting. The reasons given were that either BPC did not tell them when to start repayments (and hence they have arrears) or that BPC sometimes disconnects them by mistake. Costs of connection are a major factor and some customers may have connected but cannot sustain the repayments. Stakeholders however indicated that new structures are being put in place for better service delivery in the Botswana Power Corporation, including for revenue collection systems, which was also mentioned as inadequate at the moment.
- Whilst some of the results generated in the case study were anticipated, the case study has been able to substantiate the effect of grid electrification on development at village level.
- The issue of subsidies for electrification was raised, to the extent that lessons were required in terms of how subsidies have been used in other countries, including developed countries with regard to electrification. Stakeholders indicated that decisions are now influenced by neo-liberal policies of moving away from subsidies. It was however mentioned that although subsidies have driven development even in advanced countries, it is important to build the capacity of the private sector to deliver services
- There is a need for cost/benefit analysis for grid versus non grid systems
- It was mentioned that BPC has been planning for 40% connections when grid electrification reaches a village but average result is 15% connections.
- Whilst the RCS supported connections are evident, there must also be a demand graph showing consumption.
- It was indicated that in Botswana there is too much dependency on government hence lack of accountability on the part of communities. Communities must be involved in all stages of project development. Due to the nature of poverty at independence government provided everything and did not have to consult or involve communities. The DEA method and approach used in this study was said

to be embracing and participatory, and was recommended to be applied in similar situations in the country.

- The challenge is to undertake collective planning where all stakeholders are involved. The current DEA project is an attempt to do that and there should be a Multi-stakeholder task group that will assume ownership and implementation of the AF beyond the DEA project.

Presentation 5 Case Studies in Other Participating Countries (Dr Sten Dieden-UNEP Risoe Centre)

Case studies for Senegal, Zambia and Tanzania were presented as a way of sharing lessons emanating from the other countries energy interventions.

The Senegal case study involved analyzing the impact of a project PROGEDE focusing on the introduction of energy efficient improved stoves. The case study demonstrated that for both charcoal used in urban and peri-urban, and wood used in rural areas, the improved stoves saved on cost of fuel and cooking time. The improved stoves also lasted longer. This translated into lesser times for fuel wood collection for girls and women, saved forests particularly for charcoal production, saved costs on stoves and improved health.

The Zambian Case Study was an assessment of improvement in livelihoods as a result of solar PV systems installed through ESCO system at homes, businesses and institutions. Homes were found to make savings on cost of lighting fuels, to have improved security, reduced fire hazard, media access in the form of TV and communication access in the form of cell phone charging facilities. School children were able to study and were motivated to study. Adults are also able to read and write and make housework in friendly lit homes. Businesses are able to extend business hours with increased sales and can package merchandise after business close. They are also now enjoying security. Institutions have demonstrated higher Metric pass rates and can provide services that extend into the night . Security has also improved for institutions.

The Tanzania Case study was on assessing the Use and Impacts of Modern Energy Technologies for small scale irrigation schemes- the case for wind and solar PV systems. The assessed impacts were increased awareness on the use of modern energy for productive uses, increased farms sizes, crop productivity, empowerment of community groupings on farming as a result of increased access to water. The Tanzania project however did not operate for long as the source of water dried up. This points to the need for planning beyond just providing energy.

3.0 WORKING GROUPS

3.1 Items for Discussions, Issues raised and Responses

The Working Groups were given the items in the Box 2 to guide their discussions

Box 2 Items for Group Discussions

<ul style="list-style-type: none"> • Feedback on the results of the case study. • To what extent can the current initiative be improved as a decision making tool? • How best can stakeholders work together to realize impact on development from energy interventions? • What additional information would have been useful?
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The general points raised in the Group discussions are presented and some responses

Points Raised	Response
This case study is a snap shot of a particular village, it may not be representative of the whole country.	The case study is not a national study but creates information that can be incorporated in the Assessment Framework. National Studies should then be the responsibility of stakeholders using the AF. Resources permitting, additional case studies would be helpful, to add to the results of Manyana
What were the selection criteria for Manyana?	Clear in the case study report and was agreed upon with EAD
Some causal relationships have negative impacts, the study must show these	The negative impacts were also presented in the case study report e.g. effect of TV on children. The Fringilla Process mapped positive and negative impacts.
What are we doing with the framework?	The AF is available for use by stakeholders in the six participating countries and other countries as well. The final product will be presented to a Regional workshop of African country representatives in Arusha Tanzania. A training session on the AF is also being planned for selected key national stakeholders in 2007. Multi-stakeholder Task Groups are needed to drive the use of the AF in their own countries starting now and beyond the DEA project.
Doing the study in one village provided useful insights.	Thank You.
The data collected is qualitative and not quantitative	Considering the adopted survey methods (mainly focus groups) and small samples, presenting quantitative results would not be meaningful. It is important to note that qualitative results (perceptions and views) also have an important role, besides putting figures. In undertaking national studies (that stakeholders are expected to conduct employing AF), a combination of quantitative and qualitative results can be then be derived for decision making. DEA has limited

	resources and hence would not generate results for decision-making but provides a way (the AF) of generating such results.
Be specific on the design of the hypothesis and balance it with the use of the frame work	The link between energy intervention and development should exist whether you are in peri-urban or rural (RCS covers both). Knowing what impacts in what type of village is important but would require more resources. The DEA budget allowed survey of small/medium projects and or limited to small geographical areas such as one village. Manyana sitting at the boundary of peri-urban and rural was thought to be most appropriate.
Stakeholders can work together through collaboration and networking	Hence the need for Multi-stakeholder Task Group
We need to know how the project was conceptualized, who is the process leader, what are the objectives?	Origin has been prompted by the need to know if African Rural Energy Enterprise Development (AREED) projects and other Poverty Alleviation energy projects were making development impacts they are expected to make. The other 5 countries involved in AREED started the idea. Botswana was at the early stage also part of the AREED, and has undertaken some useful energy interventions that need similar evaluation. Objectives of DEA are listed in Chapter 1 of these proceedings, and also in the Case Study Report.

3.2 General Comment

Involvement of new stakeholders in subsequent national workshops requires that the project be introduced all over again. In other words, continuity becomes a problem. There are some who have been involved and are getting to a stage of driving the national process around the DEA project. The Multi-stakeholder Task Group (MTG) could be built around such stakeholders.

It was apparent that some new stakeholders were not able to grasp the purpose of DEA as demonstrated by the questions asked and the lack of solutions to making the AF more useful. Those who realized the AF potential were able to identify where to apply it.

The need for immediate formation of a MTG remains imperative.

4.0 FOLLOW-UP ACTIVITIES AND FUTURE OF THE PROJECT.

Item	Responsibility	Time frame
Report Back to EAD on workshop	EECG	After the workshop
Mention the project to EC Head of Delegation in Botswana	EECG	“
Preparation and dissemination of workshop proceedings	EECG	“
Continue dialogue	Stakeholders	Until next national workshop (February, 2007)
Explore how to form a Multi-stakeholder Task Group	EECG and Mr. Kwerepe	To approach DOE on the matter and indicate opportunities for the initiative
Possible Training of Key Stakeholders on AF in each participating Country	Risoe, ECN and National Participating Organizations	February, 2007- under debate

ANNEXES

Annex 1 Stakeholders That Attended The Workshop and those being consulted on the DEA project.

Table 1. Stakeholder Workshop Participants

	MEMBERS	Title	ORGANISATION	CONTACT DETAILS
1	Mr. Raymond Kwerepe	Chief Forestry and Rangeland Ecology Officer	Department of Forestry and Range Resources Ministry of Environment Wild Life and Tourism	Tel: +267 3954050/3180334 Fax: +267 3954051 rkwerepe@gov.bw
2	Ms Ncheng Lesedi	Senior Energy Officer	Energy Affairs Division	Tel: +267 3640200 Fax: +267 3914201 olebogang@gov.bw olebogang@yahoo.com
3	Mr. Vincent Seeletso	Assistant Energy Officer	Energy Affairs Division	Tel: +267 3914221 Fax: +267 3914201 vseeletso@gov.bw
4	Dr Andrew Mears	Chief Technical Advisor	UNDP/ Botswana Power Corporation Rural Division	Tel: +267 3603348 Fax: +267 3953300 mearsa@bpc.bw
5	Mr. Akabalang Gwapela	Graduate Engineer	Botswana Power Corporation	Tel: +267 3603350 Fax: +267 3953300 gwapsy@yahoo.co.uk ; gwapelaa@bpc.bw
6	Mr. Peter Simango	Project Engineer	Botswana Power Corporation	Tel: +267 3603349/71311635 Fax: +267 3953300 simangop@bpc.bw
7	Mr. Geoffrey Mothooagae	Graduate Trainee	Botswana Power Corporation	Tel: +267 3603350 mothooagae@bpc.bw
8	Ms Thapelo Montshosi	Secretary	Village Development Committee Manyana Village	Tel 72736162
9	Mr. Tshepo Mangwe	Wild Life Officer I	Wildlife and National Parks	Tel: +267 3971405 Fax: +267 3180775 tmangwe@gov.bw tmangwe@yahoo.com
10	Ms Maipelo Gonie Mojalemotho	Officer	Wildlife and National Parks	Tel: +267 3971405 Fax: +267 3912354 mgmojalemotho@gov.bw
11	Mr. Sam Obonye	Senior Rural Extension	Ministry of Finance	Tel: +267 3950264

	Mokolwane Digwa	Coordinator	and Development Planning Rural Development Coordination Division	Fax: +267 3900763 sdigwa@gov.bw
12	Mr. Ragton Mazhani	Acting Head of Information Technology	Ministry of Education	Tel: +267 3181797 Fax: +267 3975315 rmazhani@gov.bw
13	Mr. Machao Joshua	Communication Officer IEC-seconded by ACHAP	Ministry of Health	Tel: +267 3632312 Fax: + jmachao@gov.bw
14	Dr. Sten Dieden	Researcher	UNEP Risoe Centre RISOE National Laboratory-Denmark	Tel: +45 46 775188 Fax: +45 46 321999 Sten.dieden@risoe.dk
15	Dr. Peter P. Zhou	Director	EECG Consultants	Tel: +267 3910127 Fax: +267 3910127 pzhou@global.bw
16	Moses Samson	DEA Socio-economist	EECG	Tel 3651208'71686135 msamson@ripco.co.bw

Table 2 DEA Project Stakeholders-Organizations List

	STAKEHOLDERS TO WHICH CASE STUDY WAS SENT
1	Department of Energy Ministry of Minerals, Energy and Water Resources
2	Ministry of Local Government
3	Department of Tourism and Wildlife
4	Solar International
5	UNDP Small Grants Program
6	Ministry of Agriculture
7	Ministry of Finance and Development Planning
8	Forestry Department Ministry of Environment
9	Somarelang Tikologo NGO
10	Botswana Technology Center
11	Rural Industries Promotion Company Botswana
12	Ministry of Health
13	Ministry of Education
14	Boipelego
15	Botswana Telecommunications Corporation
16	Botswana Power Corporation
17	Department of Industrial Affairs- Ministry of Trade and Industry
18	The Tribal Authority Manyana Village
19	Village Development Committee Manyana Village

Annex 2 Presentations Made at the National workshop
See attachment

Annex 3. DEA Second National Workshop Agenda-Botswana

Presentations

08 30 – 09 00	Registration
09 00 – 09 05	Prayer & participant Introductions
9.05 – 9.30	Introduction and status of DEA project <i>(Risø/ECN representative-S Dieden)</i>
9 30 – 10 00	Energy and Development – national update <i>(Dept. of Energy N Lesedi for Director)</i> Proposals for the EU/ACP Energy Facility
10 30 – 11 00	Tea/coffee break
11 00 – 11 30	The Assessment Framework – the Fringilla Process <i>(local project coordinator-P Zhou)</i>
11 30 – 12 30	National Case Study <i>(local project coordinator P Zhou)</i>
12 30 – 13 00	Discussion of National Case Study
12 30 - 14 00	Lunch Break
14 00 – 14.15	Case studies in other 5 DEA countries <i>(Risø/ECN representative S Dieden)</i>
14.15 – 15 30	Group Work
15.30- 16.00	Groups Reporting
16 00 – 16.05	Concluding remarks (P Zhou)

Annex 4 Case Study Report
[See attachment](#)

ABBREVIATIONS AND ACRONYMS

AF	- Assessment Framework
AFREPREN	- African Energy Policy Research Network
BPC	- Botswana Power Corporation
DANIDA	- Danish International Development Assistance
DEA	- Development and Energy in Africa
EAD	- Energy Affairs Division
EECG	- Energy, Environment, Computer and Geophysical Applications
ESCO	- Energy Service Company
EU/EC	- European Union- European Commission
GVEP	- Global Village Energy Partnership
HIV/AIDS	- Acquired Immuno Deficiency Syndrome
ICT	- Information and Communication Technologies
kWh	- kilowatt hour
LPG	- Liquid Petroleum Gas
MDG	- Millennium Development Goals
M&EED	- Monitoring and Evaluation for Energy and Development (GVEP-facilitated international working group)
MTG	- Multi-Stakeholder Task Group
PV	- Photovoltaic
RCS	- Rural Electrification Collective Scheme
REGE	- Rural Electrification by Grid Electrification
REFAD	- Renewable Energy for African Development
SME	- Small and Medium Enterprises
SMME	- Small, Medium and Micro-Enterprises
TV	- Television
UNDP	- United Nations Development Programme
US\$	- United States Dollar
VCR	- Video Camera Recorder
VDC	- Village Development Committee
WSW	- West South West