United Nations Framework Convention on Climate Change

TRAINING PACKAGE

ON PREPARING TECHNOLOGY TRANSFER PROJECTS FOR FINANCING

UNFCCC

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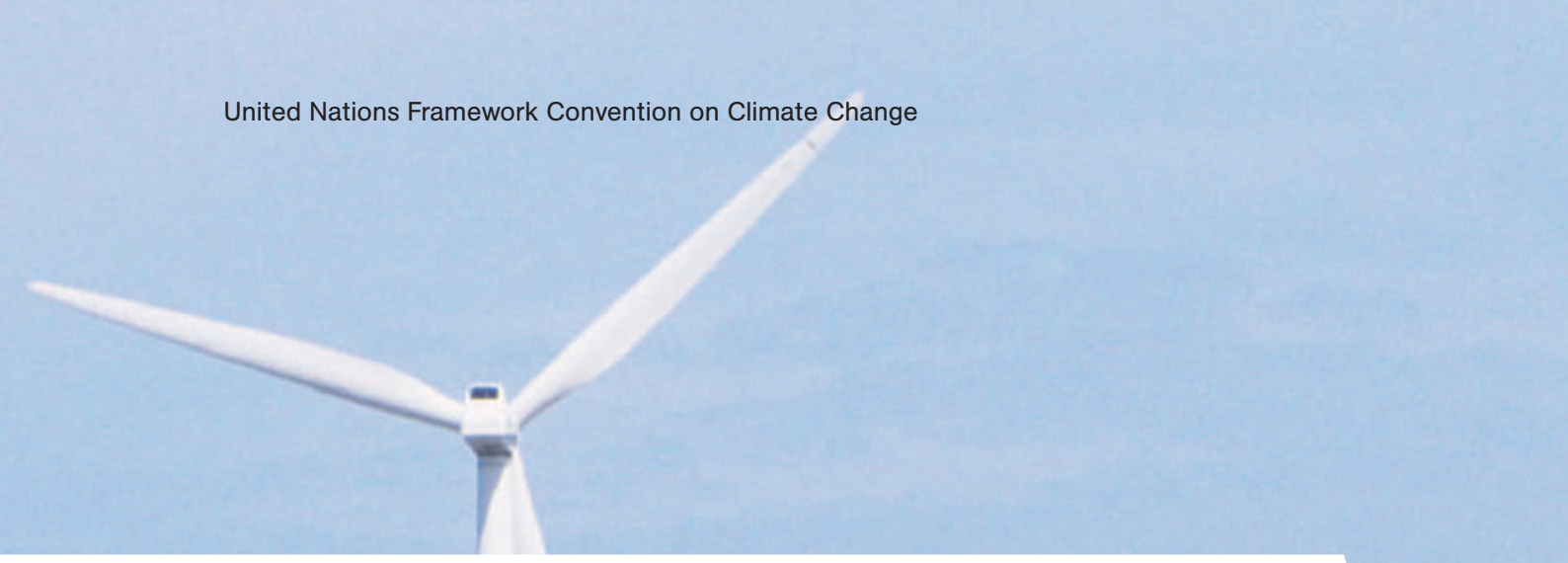

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FOREWORD

Developing and transferring technologies to developing countries is paramount to their capacity to act on mitigation and adaptation to climate change. The establishment of the technology transfer framework in Marrakesh in 2001 and the Technology Mechanism in Cancun in 2010 recognized that an early and rapid reduction in emissions and the urgent need to adapt to the adverse impact of climate change require large-scale diffusion and transfer of environmentally sound technologies.

Technology needs assessments (TNAs) form the centrepiece of the work on technology transfer under the UN Climate Change Convention. They reflect a country-driven approach to identify and determine the mitigation and adaptation technology priorities of developing countries. Additionally, they are essential in bringing together the relevant stakeholders at the national level to identify technology needs and in developing plans of action to meet those needs. These needs can form the basis for a portfolio of technology projects and programmes to facilitate the transfer of, and access to, environmentally sound technologies and knowhow.

Lessons learned from the work undertaken under the technology transfer framework highlighted the need for immediate follow-up actions in two main areas:

(1) to assist developing countries to assess, prioritize and update their technology needs;

(2) to provide technical assistance to project developers in developing countries in converting project ideas identified in TNAs into project proposals that will meet the standards of international financial providers.

In response to this need, the UNFCCC secretariat in close collaboration with the Expert Group on Technology Transfer developed the UNFCCC guidebook on preparing technology transfer projects for financing, which could be used as a tool to enable developing countries to convert project ideas resulting from TNAs and other sources into project proposals for financing. In addition, a series of regional workshops on project preparation were organised in close collaboration with international organizations aimed at enhancing the capacity of project developers in developing countries in preparing project proposals for financing.

The aim of this training package is to strengthen the capacity of project developers and other stakeholders in developing countries to prepare project proposals for financing. Better projects, increased funding and shorter funding cycles can be achieved through tools, such as financial software, that are accessible to both project developers and finance providers. It is our hope that this package and its accompanying tools will improve communication between these project developers and funders and thereby significantly increase the diffusion of and transfer of technologies.

Christiana Figueres, *Executive Secretary,*
United Nations Framework Convention on Climate Change
May 2011

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United Nations Framework Convention on Climate Change

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ON PREPARING TECHNOLOGY TRANSFER PROJECTS FOR FINANCING

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ACKNOWLEDGEMENT

This training package was prepared by the Technology sub-programme of the Adaptation, Technology and Science Programme of the UNFCCC secretariat. This training package is the result of close collaboration between the consultant, Philip LaRocco, who drafted the bulk of the text, and staff of the UNFCCC secretariat. In carrying out this task, they received valuable advice from participants who participated in a series of regional workshops on preparing technology transfer project for financing in which this training material was used. Acknowledgement is due to the participants who kindly agreed to include their project proposals in this training package.

Special acknowledgement is due to the European Community, for their generous financial support, without which the publication of this training package would not have been possible.

UNFCCC TRAINING PACKAGE ON PREPARING TECHNOLOGY TRANSFER PROJECTS FOR FINANCING

Module I

INTRODUCTION: DESCRIPTION OF COURSE CONTENT AND TRAINING PROCESS

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Photo: © **ESA**

I. BACKGROUND

Train-the-Trainer Documentation includes three supporting files:

- SLIDES_WITH-NOTES.PPT
- WORK_BOOK.PDF
- SAMPLE_PROPOSALS.PDF

Train-the-Trainer documentation should be used in conjunction with **Preparing and Presenting Proposals: A Guidebook on Preparing Technology Transfer Projects for Financing**[1] (hereinafter referred to as the guidebook). It may also prove helpful for trainers to consult and incorporate the **Handbook for Conducting Technology Needs Assessment for Climate Change.**[2] Technology Needs Assessments serve as both the strategic documents at the national level for technology R&D, deployment and diffusion but also as a valuable portfolio of potential technology transfer projects. Preparing such projects for consideration of financing is the prime objective of this training documentation.

[1] Available at <http://unfccc.int/ttclear/jsp/Guidebook.jsp>.
[2] Available at <http://unfccc.int/ttclear/jsp/TNAHandbook.jsp>.

II. TRAIN-THE-TRAINER DOCUMENTATION

2.1. PART 1: INTRODUCTION: DESCRIPTION OF COURSE CONTENT AND TRAINING PROCESS

- Brief review of the history of the guidebook and workshops to date
- Restatement of the purpose of these workshops
- Outline of the workshop content and the purpose of this documentation
- Outline of the process of workshop preparation and execution, with special emphasis on soliciting proposals from participants

2.2. PART 2: TRAIN-THE-TRAINER SLIDES WITH DELIVERY NARRATIVE AND ADDITIONAL GUIDANCE FOR TRAINERS TO CONSIDER

Using the "12 Session" format, a set of annotated slides – suitable for customization by trainers and distribution to participants – has been prepared (Slides_with-Notes.ppt). In "Notes View" these slides provide some narrative for trainers to use when presenting slides and as refresher materials for participants.

Each session is introduced, as appropriate, with the "information" to be conveyed during the session, the "technique" to be learned, an explanation of the session's "format", the "terms" to be mastered and the "exercise" to be conducted.

2.3. PART 3: WORK BOOK FOR DISTRIBUTION

This workbook (Work_Book.pdf) is a combination of session-by-session templates and exercises to be used within certain sessions. The templates include a cover, a schedule, session-by-session introductions, exercise materials and pertinent checklists. The workbook contains the space for case studies – but not the actual materials themselves, as these will vary from one workshop to the next.

2.4. PART 4: "SAMPLE PROPOSALS" THAT COULD BE USED IN TRAINING SESSIONS

Although it is expected that each workshop will include some original proposals for participants to evaluate, a variety of proposals are introduced in Part 4 for trainers to use. The full documents are found in Sample_Proposals.pdf. These are drawn from previous workshop and guidebook materials and represent a cross-section of quality as well as samples of "social" versus "commercial" proposals. Introductions to each case study provide sample issues for the trainers and participants to consider.

2.5. PART 5: TRAINING DELIVERY NOTES AND COMMENTS

This part introduces some of the principles of training for adult "learners" and some thoughts on the delivery of training (for both trainers and learners) incorporating distance-learning capabilities.

III. PART 1 INTRODUCTION: DESCRIPTION OF COURSE CONTENT AND TRAINING PROCESS

- Brief review of the history of the guidebook and workshops to date
- Restatement of the purpose of these workshops
- Outline of the workshop content and the purpose of this documentation
- Outline of the process of workshop preparation and execution, with special emphasis on soliciting proposals from participants

3.1. BRIEF REVIEW OF THE HISTORY OF THE GUIDEBOOK AND WORKSHOPS TO DATE

The publication in 2006 of **Preparing and Presenting Proposals: a guidebook on preparing technology transfer projects for financing** by the UNFCCC secretariat in collaboration with the Expert Group on Technology Transfer represented the end of one process and the commencement of another. The process that ended was the consultation with numerous stakeholders the preceding few years on the topic of innovative financing and the need to enhance the capacity of project developers to prepare climate change mitigation and adaptation proposals for public and private financing. From the time of its publication began a series of workshops to explore how to use this guidebook. It is largely on the basis of these workshops (in Austria, Botswana, Belize and Singapore)[3] that the documentation assembled here originated.

3.2. RESTATEMENT OF THE PURPOSE OF THESE WORKSHOPS

These workshops are single-minded: to improve the volume and quality of proposal submissions and thereby improve the likelihood of public and private funding for climate mitigation and adaptation. The workshops are "hands-on" with teams of participants using actual proposal submissions to apply the techniques set forth in the Guidebook. These techniques are themselves quite pragmatic and self-evident. The essential transition in the program design occurs after three initial learning and information sessions (lecture and discussion) into nine sessions that are largely team-based and interactive.

Besides being capacity enhancement activities for participants, these workshops have also served as consultations with policy makers, proposal preparers ("Champions" in the language of the Guidebook) and reviewers and decision-makers ("Enablers"). These consultations, largely in the form of evaluations and discussions mostly on the third of the three days of the workshop, tend to fall into four categories: how workshops could be expanded to more deeply investigate subjects and sectors; how workshops might address other issues perhaps as important as preparing proposals; whether different formats might be considered; and the logistics, timing and methods used.

3.3. OUTLINE OF THE WORKSHOP CONTENT AND THE PURPOSE OF THIS DOCUMENTATION

The short-title of the workshop and the guidebook, "How to Prepare and Present Proposals" is self explanatory. The not-so-obvious other agenda items of the workshops are to identify and enhance excellent ideas brought to the workshop; identify capable individuals; create networks and teams with similar interests; improve workshop materials; and, perhaps most important among these items, expose participants and funders to each other. It is therefore important for workshop leaders to remain cognizant of these objectives as well as the clear capacity building agenda that the title represents.

[3] See <http://unfccc.int/ttclear/jsp/Training.jsp>.

The design of the workshop reinforces all these objectives. The first day is information and technique intensive, passing along facts and skills that are second nature to some and for others completely new (e.g., a 30 year career scientist undertaking his first ever financial analysis). Because the exercises in the first day require team-work the day builds a team while exposing strengths within the team, creating opportunities for strangers to cooperate and setting the stage for the analysis of a specific proposal over the subsequent two days. The bulk of this proposal review, analysis and improvement occur on the second day. Sessions only have brief introductions. Teams work separately and report back to the larger group. Each team – five seems a very workable number – has five or six participants and a mentor. It is very helpful if one of the participants is the Champion or affiliated in some way with the proposal being analyzed. The job of the mentor is to monitor and push the process along and to deal with any intractable issues that arise. While important to be respectful of the proposal Champion, experience shows that is easy to accomplish by a concerted team effort to help make the proposal better; that is, more likely to succeed. Once everyone embraces that objective – versus finding mistakes or identifying missing elements – the tempo (and the learning) becomes lively. The final phase of the workshop involves "summing up" and "targeting" the hard work of preparation and improvement. This is the "presenting" part of the workshop with insights and information offered by experts from financial and development institutions or specialized programs. By this part of the workshop the documents and the skills are fading to the background and the trainer, mentors and participants are now "discussants" offering views and suggestions. It is a fairly natural flow from intense information transfer to flexible teamwork to constructive dialogue among professionals. It is the trainer's job to facilitate these transfers. Part five of this document summarizes some of the current and perhaps best practices related to this type of training.

3.4. OUTLINE OF THE PROCESS OF WORKSHOP PREPARATION AND EXECUTION, WITH SPECIAL EMPHASIS ON SOLICITING PROPOSALS FROM PARTICIPANTS

General agreement on the need for a workshop begins the process of preparation and execution. The sponsors (for example, the UNFCCC Secretariat and a local or regional organization) then undertake to identify specific needs, participants and candidate proposals to examine. The specific design of the workshop and the compilation of training materials can then commence. The sponsors have thus far handled logistics and participation (this documentation does not address that process). The trainer engages with the sponsor to assure that workshop needs will be met. The trainer prepares the workshop materials from this documentation and from proposals submitted by participants. The trainer prepares the workshop documents and slides and collaborates with the sponsor to assure that printed and electronic materials are prepared.

IV. PART 2
TRAIN-THE-TRAINER SLIDES WITH DELIVERY NARRATIVE AND ADDITIONAL GUIDANCE FOR TRAINERS TO CONSIDER

"DELIVERY NARRATIVE" APPEARS IN ITALICS

4.1. INTRODUCTION

The basic slides for each session can be customized and supplemented. One set of instructive slides is really a set of story boards to assist newcomers to finance by simplifying terms often portrayed as "sophisticated". This is done by applying these terms to a small transaction: the purchase of a coffee pot by two colleagues.

There are various "rules" concerning slides: keep the number of points manageable (four to six); try to not use full sentences, just so-called bullet points, and keep these to a few words; keep things simple; use pictures and illustrations where these reinforce (rather than distract) and never – never, never – read from slides. A slide reminds the presenter of the subject to be covered. (Note-if a presenter turns from the audience to read a slide he or she should not speak until facing the audience again).

In preparing slides it is also possible to provide details (in "Notes View" of PowerPoint, for example). These can be details regarding what to say, examples to use or points to emphasize. In the following session-by-session review of slides that will be the approach taken. The basic words of the slide will be followed by explanatory material, material that could also then be made available to participants.

Keep in mind: these are **just the core slides** from which to build a specific training program.

4.2. SESSION 1

HOW TO PREPARE AND PRESENT PROPOSALS: A TWELVE SESSION WORKSHOP

"Improving our capacity to prepare complete and balanced proposals shortens the path from good ideas to implementation."

DATES … LOCATION … Location Specific Graphic … such as flag or local co-organizer logo

Notes. *One of the most important skills any professional can master is the ability to clearly and completely present an idea to those people needed to convert that idea into reality. Yet this skill is rarely taught in higher education. In a world where only specialists in a field speak with other specialists in the same field, practical experience corrects this shortcoming. Engineers communicate with engineers, bankers with bankers, development field workers with development specialists – they all figure out a way to speak clearly among their peers. But in a world where many different specialists – policy makers, finance professionals, development experts, environmental planners and analysts, utility CEOs, investors – need to communicate outside their professions, beyond their jargon, this shortcoming can be dangerously distracting to what are important – perhaps essential – ideas that need to be presented well.*

Trainers: When participants arrive at the training room the title slide should be on display (the above **Notes** are only visible when in "Notes View").

Participants should be met by the trainer. Mentors and organizers should be there also, greeting participants and guiding them to their tables, where will be found their workshop materials and nameplates, table computers and teammates.

Often there will be opening welcoming remarks presented by the sponsors. It is recommended that these not use slides as the participants are settling into the workshop agenda. Long or off-topic presentations by others distract from that purpose. If opening remarks want to refer to data, this should be included in the workbook set of documents and referred to in the opening remarks.

The purposes of Session 1 are to:

- make everyone comfortable
- have them disengage from their day-to-day responsibilities
- introduce the agenda, the support materials and the core topics to be addressed

Once opening remarks have been concluded by sponsors and hosts, the trainer should introduce him- or herself by emphasizing qualifications and experience as well as the path that brought them to the front of the room.

A detailed agenda and schedule will be found in the printed Workbook – see Part Three – it is often useful to prepare an agenda and schedule slide and use that as a talking point. It is not useful to go through such a schedule line-by-line. What works well is to use the three blocks of time shown on the schedule as a way to explain that the workshop has three phases: information, teamwork and discussion, or learning, working and synthesis.

DAY 1: LEARNING	DAY 2: WORKING	DAY 3: SYNTHESIS
Session 1: Overview	Session 5: What and Where?	Session 10: Targeting and Presenting
Session 2: Method	Session 6: Who and How?	Session 11: Customization and Summarization as well as Discussions with Finance Professionals
Session 3: Numbers	Session 7: Why?	Session 12: Critique
Session 4: Process	Session 8: Base Case	
	Session 9: What If?	
Day 1 Evaluation	Day 2 Evaluation	Day 3 Evaluation

Notes. *Day 1 is a somewhat formal Learning Day emphasizing the following: Proposal Preparation & Presentation Principles, Introduction to Financing Concepts, Small Group Exercises with mentors and teammates. Day 2 is a highly interactive and informal Working Day emphasizing Proposal Analysis, Proposal Critique & Improvement, Presentation & Summarization Exercises. Day 3 is an interactive and somewhat structured Synthesis Day comprised of Summarization of Analyzed Proposals, Inputs from Finance & Development Professionals, Dialogue on the Needs of Participants & Financial Institutions, and Self & Group Evaluations & Recommendations.*

There are numerous points in Session 1 where it is also appropriate to introduce participants or have them introduce themselves (name, country, responsibilities, and the reason or expectations for attending). Depending on the circumstances, it can be done immediately in this portion of Session 1 or later in the session.

Regardless, the points the trainer should make are to:

- Explain that the workshop will be practical, hands-on and team focused
- Indicate that the raw materials to be used in this workshop are a set of proposals shown on the next slide and contained in their printed Work Book. The trainer should then provide a one-line description of each, associate it with the proper team and point out (if appropriate) who at the table represents the proposal's Champion.

PROPOSAL SAMPLES

SAMPLE 1: NAME & KEY WORDS
SAMPLE 2
SAMPLE 3
SAMPLE 4
SAMPLE 5

These are included in the back of the workbook

ALSO
- Ghana LPG-Koala Gas, used to introduce concepts and use of templates

Notes. *Sustainable development requires a broad range of innovations – in energy supply and use, in natural resource management and adaptation, in urban settings and in rural settings. Training that engages real ideas and real authors probably has the best chance of success and engagement as the variety of information and technique is conveyed. Describe and classify each sample.*

Trainers: It is after reviewing this material (emphasizing that a **workshop is a set of tools and a group of raw material to build something)** that the trainer puts forward the hypothesis that underpins the workshop: **all of us can and need to do a better job in preparing or reviewing proposals.** But to do so we have to be comfortable with the problems everyone face. The next slide highlights four significant problems. Each can be presented or all can be presented by the trainer but once presented the trainer should ask participants to then contribute their experiences with these problems or to add their own experiences.

TYPICAL PROPOSAL PROBLEMS

- Incomplete or Imbalanced
- Misdirected
- Non-responsive
- Terminology Gap

Notes. *The four problems highlighted at this point involve proposals that are: "long" on one kind of information (e.g. technical information) and "short" on other balancing information (e.g. market, team, financial); sent to the wrong entity (a technical assistance request is sent to a commercial lender); fail to be customized to the party to whom it is sent; and hard to understand.*

It is this last point that provides an interesting opportunity to explain that the origin of the Guidebook was in a series of meetings where specialists from development, finance, environment and policy spent days talking at cross-purposes because of a general language gap (is a proponent also a sponsor and also a developer and also an entrepreneur?) and a specific gap in using financing terms and methods as a way of communicating (finance is like musical notation: it represents something – a transaction – in a common way of representation). It is important to emphasize: this workshop uses financial tools to express transactions to a broad range of constituents, not just bankers.

After discussing proposals' typical problems the trainer should use the next block of time to explain the contents of the Guidebook itself. This is also a wonderful point to go through, section by section, the materials each participant has in front of them.

It is important to take the time to go through this material carefully. It is essential that the Trainer be thoroughly versed in the Guidebook materials and approach.

PREPARING AND PRESENTING PROPOSALS

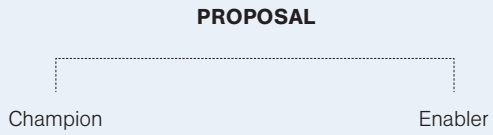
A Guidebook on Preparing Technology Transfer Projects for Financing

Chapter 1 … Summary
Chapter 2 … Before Preparing a Proposal
Chapter 3 … Preparing a Proposal
Chapter 4 … Presenting a Proposal
Chapter 5 … Customizing a Proposal
Information Boxes and Lessons Learned
Templates and Other Annexes

The substance of the workshop's value addition commences at this point. It begins by tackling the terminology problem, explaining that in order to bridge among different professions some newer, less familiar terms have been used (e.g., Champion, Enabler) and some other terms carefully defined (e.g., Proposal).

BASIC CONCEPTS

- Proposal
- Champion and Enabler
- Money, time and other resources
- Idea + Request



Notes. *To obtain resources we must be able to explain our ideas clearly, be convincing that these ideas can be implemented and know what is needed to succeed. That is what a proposal does. A proposal consists of a plan to do something, combined with a request for resources. There are common, logical ingredients that most well-prepared proposals contain. Understanding and demonstrating a mastery of these common ingredients, combined with knowing the audience, will greatly increase the chance of success. Making sure that the finished product is as complete and as balanced as practical is the objective of proposal preparation; getting the resources needed to actually proceed with implementation, however, is the goal. A brilliant proposal that goes nowhere is but an intellectual exercise. A proposal that addresses a set of key questions will usually meet the entry requirements of lenders, investors, donors, grant-makers, carbon professionals and service providers. The challenge is to do a fine job on each and all of these points.*

A proposal is a bridge between two groups of people: for these discussions and in the Guidebook we call them Champions and Enablers. These designations were chosen to overcome a serious communications and semantic gap among various professional groups. Champions are the people who convert ideas into action. They take on the chores and responsibility and make the needed commitment. These are the men and women who generally understand best what must be done to succeed and are the ones who realize what resources – expertise, money or skills – must be obtained. Champions can be individual entrepreneurs in the private sector, or civil society representatives or part of government. The institutional home or title assigned to these men and women does not matter a great deal. It is their commitment that does. Enablers are the people who have the resources and knowledge Champions need. Enablers can be financial investors or representatives of government programmes; philanthropists or private voluntary organizations; niche professionals engaged in subjects such as carbon mitigation and adaptation; and many others. Enablers are looking for ideas to support. They may do so for financial, social, environmental or other reasons or for a combination of benefits.

In order to reinforce these terms a simple exercise – an "ice-breaker" of sorts – is introduced, with the trainer soliciting involvement and feedback from the participants.

SESSION 1 EXERCISE

- You are preparing a budget. How is this a proposal?
- You are asked to approve a trip. How is this a proposal?
- A school needs books. You decide to raise money for the school. Who is the Champion and how is your decision a proposal? Who are the enablers?
- Is it still a proposal if you simply buy the books yourself and send the books to the school?

The Trainer will want to end **each session** by summing up what was covered; introducing what is coming and asking if there are any specific questions or issues that need additional attention. If a session-by-session or day-by-day evaluation form has been prepared this is the time to call attention to it.

4.3. SESSION 2

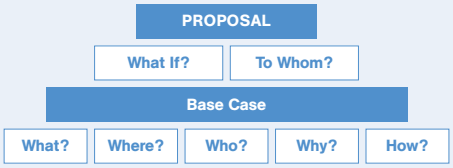
The session objective is to introduce the Seven Question Building Block Approach to preparing proposals. Our organizing principle is that **"a well-prepared proposal should answer a set of informative questions in a complete and balanced manner."** Consider displaying or writing this principle on a board. Our information content includes an introduction to the components of our core seven questions; an overview of a sample of the proposals prepared by participants; and, an introduction to checklists and sample proposal, "Koala Gas". If time permits and the teams appear to be coming together well, then they can begin a very preliminary inventory of their team proposal also, using the same checklist approach.

SESSION 2
METHOD: SEVEN QUESTIONS

- Information: the seven key questions
- Technique: building block approach
- Information: two proposals
- Exercise: as a group we will conduct a preliminary inventory of the "Ghana LPG proposal – summary", to become familiar with checklists and examine our assigned proposal … identify the seven key pieces of content (or not) and address a core issue: "Is it clear what is being requested?"

Notes. *In this session we introduce the question-driven building block method. Our objectives: to share information on the titles and content of each building block question … to share the technique of using five questions to build a base case and the two subsequent questions to refine and target what we have prepared. The exercise here is aimed at reinforcing what these seven questions are aimed at and to get us familiar with two of the proposals.*

PREPARING AND PRESENTING PROPOSALS: BUILDING BLOCKS

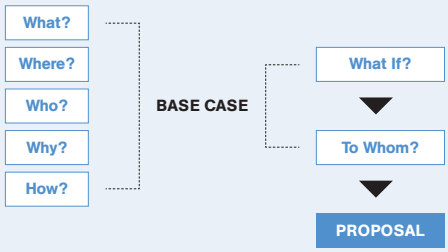


- **What?** Product, service, technology, client
- **Where?** Location, market, operating and regulatory conditions
- **Who?** Champion, owners, sponsors, team, approval bodies, stakeholders
- **Why?** Financial, social, environmental, market, growth
- **How?** Status, milestones, schedule, costs, revenues, grants, loans, investment → BASE CASE
- **What if?** Schedule changes, output and cost variances, key person events
- **To Whom?** Grant-makers, Lenders, Investors, Specialized Programs, Others

Notes. *Overview of our Method – Journalists are taught to make sure that their reports answer the questions "Who? What? When? Where? Why?" A complete proposal should answer a similar set of questions. And it should have a balanced set of answers. What is being proposed? → Concept … Where will the proposal be implemented? → Setting … Who will champion the proposal and see it to completion, and who else must be involved? → Team … How will the proposal be implemented? → Plan … Why is the proposal important and why should it be supported? → Expectations … What if things do not go as planned? → Contingencies … To Whom is the proposal addressed? → Audience.*

After going through this material with examples, it is extremely important to have the participants open their workbook to the Proposal Inventory Checklist (also found on Pages 16 – 17 of Guidebook) so that everyone realizes these are not just broad generic questions but categories of information that comprise completeness and balance.

METHOD



Notes. *This is another overview of how the seven question fit within a process to produce a proposal.*

This slide allows you to repeat and reinforce the individual terms and the process. It is important because some learners are more comfortable with a process rather than content organization structure. Put the Session 2 Slide up on the screen again, direct the participants to the Koala Ghana Gas Example in the workbook and if appropriate the individual team proposals and have them conduct inventories. You may ask one or more groups to report back to all participants or you may simply engage in some questions and participation.

SESSION 2
METHOD: SEVEN QUESTIONS

- Information: the seven key questions
- Technique: building block approach
- Information: two proposals
- Exercise: as a group we will conduct a preliminary inventory of the "Ghana LPG proposal – summary", to become familiar with checklists and examine our assigned proposal … identify the seven key pieces of content (or not) and address a core issue: "Is it clear what is being requested?"

Have the teams and mentors turn to Session 2 in the Work Book. There they will find two checklists and the shorter version of the Koala Gas example. Each table should organize itself to review the Koala Gas information and if time permits, also look at their assigned proposal (printed in the Work Book).

The point of this exercise is to have participants absorb a comprehensive list of what comprises a balanced proposal. (Wrapping this session up you might ask participants if they felt the checklist was useful or complete or organized in a helpful manner.)

4.4. SESSION 3

SESSION 3
NUMBERS: ACCOUNTING, FINANCE AND SCHEDULING CONCEPTS

- Information: key terms used in the quantitative portions of proposals
- Technique: debt service, net present value, internal rate of return … income statement, balance sheet … planning, construction and operations
- Exercise: simple payback Ellen and Niki Buy a Coffeepot) … various calculations

Notes. *Money and financial analysis serve as a language to communicate a substantial part of a proposal's fundamentals. Financial presentations do not convey everything. We will deal with social and environmental impacts throughout this workshop. But this session focuses on the terminology and techniques of financial planning and analysis. It covers most of what most of us would ever need to know to prepare and present proposals.*

BASIC CONCEPTS
TIME PERIODS AND MONEY

- Planning
- Construction
- Pre-operation
- Operation
- Capital Cost
- Capital Grants
- Loans, Debt
- Equity
- Revenue
- Operating Costs
- Operating Grants
- Net Operating Revenue
- Debt Service
- Cash Flow
- Dividends

Notes. *There are lots of terms on this slide but really only two concepts. The first is capital, as it applies to both time and money. Equals anything before what is proposed actually begins operations. Equals anything used to pay for the work done during this time. Includes "sweat equity" … the time of the Champion and the team spent on planning the capital phase. The second term is operating, which reflects the actual day-to-day implementation of what is proposed.*

In the PPT slide presentation this is actually three slides that add highlights and group these terms into these concepts.

TIME PERIODS AND MONEY

CAPITAL
- **Planning**
- **Construction**
- **Pre-operation**
- Operation

CAPITAL
- **Capital Cost**
- **Capital Grants**
- **Loans, Debt**
- **Equity**
- Revenue
- Operating Costs
- Operating Grants
- Net Revenue
- Debt Service
- Cash Flow
- Dividends

TIME PERIODS AND MONEY

- Planning
- Construction
- Pre-operation
- **Operation**

OPERATING
- Capital Cost
- Capital Grants
- Loans, Debt
- Equity
- **Revenue**
- **Operating Costs**
- **Operating Grants**
- **Net Revenue**
- **Debt Service**
- **Cash Flow**
- **Dividends**

Two additional slides are included in case elaboration is appropriate:

PLANNING INCLUDES

- Technical analysis
- Site selection
- Environmental and social assessments
- Feasibility analysis
- Obtaining all permits and approvals
- Finding, negotiating and "closing" the necessary funding to make a proposal reality
- During the planning period, the Champion must track and record time spent on activities. Sometimes called "sweat equity", this information becomes extremely helpful in later discussions, especially with new potential investor-owners.

CONSTRUCTION AND PRE-OPERATION INCLUDE:

- Site acquisition
- Preparation of land
- Building of structures
- Installation of infrastructure
- Acquisition and installation of equipment
- Setting up offices and distribution points
- Acquisition of operating equipment (vehicles, office, maintenance)
- Fees to be paid to experts
- Fees to be paid or credited as shares of ownership to Champions

The point to summarize here is that before we can analyze a project we need to organize blocks of information into categories (planning, construction etc.) and time horizons.

BASIC CONCEPTS
FINANCIAL ANALYSIS

- Cash Flow
- Interest
- Debt Service
- Net Present Value
- Internal Rate of Return
- Debt Service Coverage Ratios
- Project "Rate of Return"

Notes. *In order to introduce a series of important financial analysis concepts we are going to use a small, relatively simple transaction. We are going to use the purchase of a $158.00 coffee pot by two colleagues to illustrate all of these concepts. We will look at the transaction in three different steps and construct a work paper such as the one appearing in our workbook.*

It is extremely important to promote teamwork and fun into this exercise and for mentors to make sure that everyone is involved. Participants uncomfortable with finance need to be engaged; participants for whom simple exercises might seem demeaning need to be engaged as coaches for those who might be intimidated.

Ellen and Niki Buy a Coffeepot ... The Story: Lesson One of Three:

Ellen and Niki work in the same office ... Every day Ellen and Niki stop at the local coffee shop on the way to work ... They each spend $1.70 ... Equals $3.40 per day ... and they do this for at least 20 days per month.

Their conversation, fact-finding and rough feasibility analysis goes something like this:

- **"We're spending $68 a month. What would it cost if we made coffee instead of buying it?"**
- **"We would need a good coffee pot. We would need to buy coffee, milk and sugar. They find out that coffee, milk and sugar would cost about $12.00 per pound of coffee and that it would make about 17 cups per pound.**
- **"How much will each cup then cost? $12.00/17 = $0.71 per cup ..." So, every cup we make saves $0.99 ($1.70 minus $0.71). Together we save $1.98 each day ..."**
- **"But we need to buy the coffeepot, which costs $158.00.**
- **"How many days of savings pay for the coffeepot?" ... 79 Days ... $158.00/$1.98 = 79**

Lesson: This is called the "simple payback period" $158.00 = new investment; $1.98 = savings per period – days in this case – realized from the new investment; 79 Days = Simple Pay Back Period

The story needs to be transferred to a spreadsheet at each table. This serves multiple purposes depending on the learning style of the participant and their level of comfort with financial analysis. The data should be entered for each month to both create the impression of time and to set the stage for the remaining parts of this lesson. But before progressing you need to sum up this lesson with this slide:

WHAT IS ITS LIMITATION?

- It does not take into account the value of money spent today ($158.00) versus the savings to be realized over the next seventy, eighty or one hundred days.
- Our next lesson takes that into account
- It also assumes you have access to the $158.00. Our third lesson addresses this issue.

Notes. *Simple Payback is a quick and useful concept for looking at whether a decision might make sense. But it has significant limits.*

- Interest
- Net Present Value
- Internal Rate of Return
- LESSON 2 of 3

Investment equals $158.00
Savings = $68.00 less $28.40 per month = $39.60 per month
12 Month Savings = $475.20
Savings After deducting Investment = $317.20

If i = 12% per year = 1% per month
NPV = $284.85

Notes. *This slide and the following two assume something very important. They assume that money received today is more valuable than money received next month (because you can use or save that money now). Conversely, it assumes that money that is not spent until next month is more valuable than money spent today (because you get to keep it for an extra month). Financial analysis places a value on this time difference usually in the form of an interest rate. This analysis assumes a rate of 12% per year or 1% per month.*

This assumption greatly impacts results so it must be tested to current and local conditions. Further, some traditions and faiths do not acknowledge the payment or receipt of interest as acceptable, so it is important to refer to this technique as an analytical tool to measure the effect of time not to stress the payment or receipt of interest. This entire lesson could be re-constructed to satisfy other financial models, such as Islamic Finance.

	Period	0	1	2 to 12
	Month	Dec 31st	Jan	Feb to Dec
Number of Cups of Coffee			40	40
Cost per Cup of Coffee	$ 0.71		$ 28.40	$ 28.40
Avoided Cost per Cup	$ 0.70		$ 68.00	$ 68.00
Savings per Month			$ 39.60	$ 39.60
Savings for the Year			$ 475.20	
Investment to Realize This			$ 158.00	
Savings				
Cash Savings for the Year			$ 317.20	

Notes. *This slide shows a portion of the months. The work paper prepared by each team should expand Months 2 to 12 to show each month separately.*

Mentors should be especially mindful of the need for everyone to be involved in the construction of this work paper. This is as much teambuilding as it is analytical.

Cash Savings for the Year	**$ 317.20**			
Value of Money per year	12%			
Value of money per month	1%			
		Dec 31st	Jan	Feb to Dec
Initial Investment		$ 158.00		
Monthly Savings			$ 39.60	$ 39.60
Cash Flow by Month		$ (158.00)	$ 39.60	$ 39.60
Net Cash Flow		$ 317.20		
Net Present Value of that Cash Flow		**$ 284.85**		

Notes. *This slide summarizes the results each team should reach.*

This finished work paper should be available on the "memory stick" distributed with the workbook. Even if cumbersome it is important to make sure that enough time and attention is invested in increasing every participant's comfort level with the concept of the time value of money.

TIME PERIODS AND MONEY

- Debt Service
- Financial Model

Borrow $130 of the required $158 ...
pay $26 a month for 12 months ...
What is the interest rate being paid ...
how does the original transaction
(without Debt) compare to the new one ...
what is a debt service coverage ratio
and what does it mean?

Notes. *The word "leverage" refers to a situation where you do not just use money of your own but borrow some of what is needed for a purchase or investment. In this third part of this exercise a portion ($130 of $158) of the money needed to buy the coffeepot is borrowed. By adding this layer to this transaction we can see how the transaction changes with the addition of borrowing.*

This concept and the exercise proves important in helping participants see that any revenue potential of a project, be it charitable, social enterprise or commercial in nature, can be used to make limited resources go further; that the choice is not just between all grant or all commercial funding.

A set of explanatory slides are included to present details of interest, net present value, internal rate of return and debt service coverage. Trainers need to determine to what degree reviewing these slides in detail will assist this session and different learning (e.g., learn by doing) styles.

INTEREST

Year 0 (when the money is borrowed) = 1,000

... Add 12% for year 1 = 120
Balance at end of year = 1,120.00

... Add 12% for year 2 = 134.40
Balance at end of year 2 = 1,254.40

... Add 12 % for year 3 = 150.53
Balance at end of year 3 = 1,404.93

... Add 12% for year 4 = 168.59
Balance at end of year 4 = 1,573.52

... Add 12% for year 5 = 188.82
Balance at end of year 5 = 1,762.34

FV = P (1 + R) N
1762.34 = 1000 (1 +.12) 5

Notes. *This and the next two slides allow interested participants to delve more deeply and algebraically into the concepts of interest and discount rates, net present value, internal rate of return and debt service.*

TIME PERIODS AND MONEY

	Year 0 Amt. out	Year 1 Amt. in	Yr. 2	Yr. 3	Yr. 4	Yr. 5	NPV @ 13%	IRR
1.	-1,000	300	240	240	270	350	-22	12.0%
2.	-1,000	350	280	350	280	140	+17	13.9%
3.	-1,000	350	350	300	200	200	+20	14.1%

DEBT SERVICE AND DSCRS

Debt service options	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Case A	120	120	120	120	1,120	1,600
Case B	277	277	277	277	277	1,385
Case B	320	296	272	248	224	1,360

Year	1	2	3	4	5	1 – 5
Funds Available	400	420	440	460	480	2,200

Debt service coverage ratio	Year 1	Year 2	Year 3	Year 4	Year 5	Year 1 – 5
Case A	3.3	3.5	3.7	3.8	0.4	1.4
Case B	1.4	1.5	1.6	1.7	1.7	1.6
Case B	1.3	1.4	1.6	1.9	2.1	1.6

FINANCIAL CONCEPTS

- Interest — **i**
- Principal — **P or p**
- Debt Service — **P+I**
- Net Present Value — **NPV**
- Internal Rate of Return — **IRR**
- Debt Service Coverage Ratios — **DSCR**

It is important to close this session with recognition of everyone's hard work and good humor. While it may not seem so at first, the preceding slide can be used to "poke fun" (laugh at, politely) at finance as a field and the hard work of this session: every concept studied is referred to by a term that is neither a word or able to be pronounced as one ... the acronym is the word or words in this field.

4.5. SESSION 4

SESSION 4
PROCESS: FACT-FINDING TO BASE CASE TO FINISHED PROPOSAL

- Information Content: taking the seven questions and using these to complete a proposal
- Technique Content: template – paper or Excel-based – proposal building

Exercise: As a group

(1) open and skim templates;

(2) using both the Ghana LPG Proposal-Summary and Ghana LPG Proposal-Detailed in the back of this workbook, look for the key information;

(3) enter some of this information on a set of What? Where? And then on the Who? templates, sufficient to gather a comfort level;

(4) open and examine the How? Templates, various steps, and enter some information. If time permits use the raw data presented in Session Eight to practice data entry on the HOW template.

Notes. *Our session objectives are to reintroduce the qualitative, building block process (after the quantitative exertions of Session Three) and transition from gathering information to treating the information as input to be assembled and analyzed ... to begin team work with a proposal inventory. Our information content involves opening and entering data on templates that are part of the Guidebook (on CD-ROM and memory stick, as well as printed in the back of the Work Book). Our approach will now transition from learning to learning by doing, transition to teams examining specific proposals.*

Exercise: As a group:

(1) open and skim templates;
(2) using both the Ghana LPG Proposal-Summary and Ghana LPG Proposal-Detailed in the back of the Work Book, look for the key information;
(3) enter some of this information on a set of What? Where? And, then on the Who? templates, sufficient to gather a comfort level;
(4) open and examine the How? Templates, various steps, and enter some information.

Here are two helpful hints and shortcuts: at the end of the Ghana LPG Proposal-Detailed will be found some manually entered templates. On the CD will also be found a completed Koala Gas set of templates, which match this proposal. Divide into sub-groups to examine and report back on the content of the Koala Gas Proposal and the layout of the template and then enter some data as subgroups just for practice.

Exercise: familiarize yourself with your team's proposal. You will be working with this extensively tomorrow.

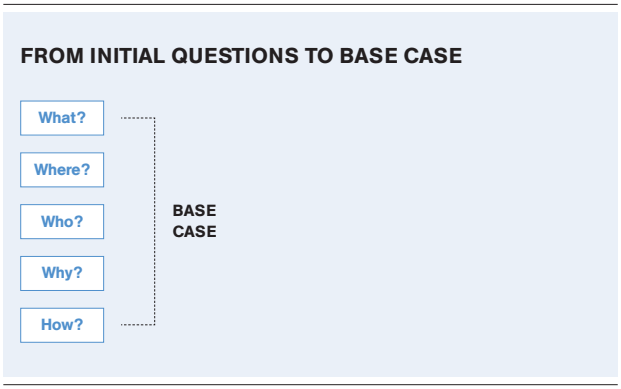
A summary and refresher regarding key terms should begin (and end) this session. It should also be noted that once this session is completed we will have put in place ALL the information and techniques needed to construct and critique proposals, beginning in the next sessions. So we need to make sure all our foundations pieces are solid.

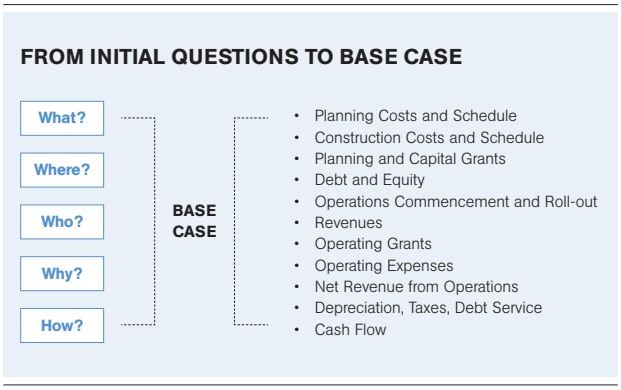
PREPARING AND PRESENTING PROPOSALS: INITIAL QUESTIONS

What?	Product, service, technology, clients
Where?	Location, market, operating and regulatory conditions
Who?	Champion, owners, sponsors, team, suppliers, approval bodies, stakeholders
Why?	Financial, social, environmental returns, benefits and issues, market and replication potential, sustainability
How?	Current status, milestones, metrics, schedule, costs, revenues, grants, loans, investment

Notes. *In preparing a proposal the Champion must wrestle with the first five questions – What, Where, Who, How and Why – as a set of connected pieces, where changes in one can cause many other changes. Rarely are all the pieces crystal clear even as great volumes of information are amassed. As a result, the Champion needs to assemble as much information and as many answers as possible, all the while making reasoned assumptions of what is not known. The purpose is to construct a realistic picture of how all the pieces will come together. This realistic picture is called the base case. It reflects both what is known at the time of its preparation and what is assumed. Much of the base case uses the data gathered and the accounting and finance concepts discussed earlier.*

Base case: the collected facts and assumptions about what is proposed, especially in regard to time, money and resources; that is, approvals, schedule, initial costs, revenues, ongoing expenses, people and equipment needed, and sources of funding.





Notes. *Let's go over line-by-line all the pieces of information that comprise a Base Case, making sure each item on the right of this slide represents something concrete to each of us.*

Use a question and answer approach at this point. As participants or tables "what is the difference between debt and equity?" "What is this thing called 'debt service? Is that the same as P+I?"

4.6. SESSION 5

SESSION 5
WHAT? AND WHERE?

- Information Content: the different dimensions of defining product, service, technology, clients, market and setting
- Technique Content: us of templates

Exercise:
(1) conduct a detailed review of your assigned proposal
(2) identify the key elements (included and missing)
(3) if desired the team can enter inputs to templates
(4) prepare a 5 minute or less report regarding What?, Where? and the apparent completeness and balance of the submission
(5) preparing a list of the items the Champion needs to explore.

Notes. *This session can be well described by a series of questions that can be re-phrased to meet your own management or professional style*

- *Why is this product the correct one to offer to these customers?*
- *Why choose this technology?*
- *What makes us think we can succeed with these customers, this technology, this product offering here?*
- *What are the laws, regulations and local conditions that must be observed?*
- *What permits must be obtained and from whom?*
- *What formal and informal approvals and permissions must be obtained in advance and observed throughout the period of operation?*
- *What products and services are used now?*
- *Why would customers switch to the proposed product or service?*
- *Who else offers products and services that these customers might use?*
- *Why would they choose the proposed product or service*

In this session we begin the intersection of the question method, the templates, either printed or in spreadsheet form, and the sample proposals at the back of this work book (by now these have been assigned to teams that include the Champion, a colleague mentor and other colleagues).

Begin this session with a summary of everything done and learned in the first four sessions. Slides aren't necessary but review six to ten things from the previous day and ask participants how they think that will affect what they are going to do today. Make a special effort to acknowledge the bravery of Champions who are going to work with their tables and expect to be asked hard and sometimes unanswerable questions. Emphasize the goal: better proposals not perfect proposals!

Allow plenty of time for tables to complete and inventory and prepare their first report to the larger group. Make it clear that everyone in the group is expected to speak for the group at least once over the remaining sessions. While the tables are working the trainer should stop by, listen and encourage.

4.7. SESSION 6

SESSION 6
WHO? AND HOW?

- Information Content: the variety of human and institutional skills and motivations to be considered in creating an implementation teams and a plan
- Technique content: use of templates to build such an inventory

Exercise: using the assigned proposal

(1) conduct a detailed review of your assigned proposal
(2) identify the key elements (included and missing)
(3) if desired the team can enter inputs to templates
(4) prepare a 5 minute or less report regarding What?, Where? and the apparent completeness and balance of the submission
(5) preparing a list of the items the Champion needs to explore.

Notes. *This session focuses on evaluating and presenting the team and the stakeholders; showing who will be involved and examining the elements of the plan.*

- *Describe the Champion and evaluate his or her strengths, weaknesses and motivation.*
- *Describe the owners or sponsors, what they are bringing, the level of their commitments and their motivation.*
- *Describe the employees, staff and advisors who will be involved and match the assembled skill set of the Champion, owners, employees, staff and advisors against a list of the skills required for the proposal's implementation.*
- *Show how the plan will be organized at its various stages. This is an important juncture for being clear about the schedule and timing of what is proposed.*
- *Describe all the formal and informal parties who will be involved, including different levels of civil society and government. Start thinking about all the things that others might do to disrupt what is planned, for personal or political gain.*

  Questions: What are the shortcomings of the team? What skill sets and experience are missing? How will this be managed? What are the roadblocks that others can put in the way of getting the plan implemented? What will it mean? How can this potential roadblock be avoided?

Explaining the plan (answering the question "How?") – organizing and presenting the steps to implementation: How will the core idea be turned into an operating reality?

- *Describe the proposal in terms of blocks of time ("To finish planning" "To reach financial closure" "To build" "To commence operations"). Under each block of time itemize the subtasks that need to be accomplished and the approvals that need to be obtained. Add for each subtask an estimate of the cost and revenues.*

- *Sketch out how the proposal will be managed (organization chart).*

  Questions: Is everything included? Do all critical tasks fit within identifiable blocks of time? What are the critical items that can bring the plan to a halt? Have cost and other resource estimates been prepared for each and all of the tasks? Are there details for just the construction or roll-out phase or have the operational tasks been planned for the entire life of the project? Are there different staffing plans for the different phases? How are these reflected in estimates? How will the technology, product, service or facility be built or acquired? What are the sources of equipment, raw materials and labour? Is there a clear division of labour and accountability during each phase?

The Importance of Champion and Team Assessment cannot be overstressed. A Champion is willing to invest his or her money, time and reputation to turn a viable core idea into a successful enterprise and a full-time opportunity. Early in the relationship, an enabling organization needs to have a tangible sense as to the money, asset and time commitment of the entrepreneur. Champions need help especially easy-to-use guidance that responds to the needs of enabling organizations. Further, Champions need information to access, particularly with respect to sources of funding and other support. Providing active assistance and support entails a three – five-year "marriage" with a Champion that has much against it. Enablers need to choose the right Champion and vice versa. This is the session where two core questions must be addressed clearly:

(1) Does the proposal reflect the Team needed to succeed? If not, what must be investigated further?

(2) Does the proposal have the core data needed to determine its financial implications? Do we know the costs, the revenues, and the timing etcetera?

Using the following points the trainer needs to engage the participants in a focused conversation.

- The "right partner" for a Champion is a good **business** partner, though he or she might not be someone with whom you want to share a social meal. Yes, No, Sometimes?

- Do we need to be careful of Champions who come to business sectors via politically connected entry points?

- There are many good ideas, and for every good idea that is successfully implemented, there are hundreds that never go forward. And while there are many ingredients that need to come together for a good idea to translate to successful implementation, the most important ingredient is the Champion: that individual or small group committed to the idea. However, **more than commitment is needed.** Before beginning the serious work of preparing a proposal, its Champion needs to undertake a rigorous inventory of two things: motivation and capabilities. What does that mean?

4.7.1 MOTIVATION & CAPABILITIES CHECKLIST

The first order of business is for the Champion to take inventory of his or she or the team's motives (consider writing these on sheets or asking questions to stimulate participant insights):

- Regular income
- Wealth creation
- Permanent organization
- Gain experience
- Social improvement
- Environmental improvement
- Other

The second order of business is to determine, honestly and openly, whether these motivations are consistent with the proposal being prepared or if there is a mismatch. Proposals are difficult enough to implement without having a conflict between the Champion's motivation and the work in hand.

Capabilities: having the will and the motivation is not enough (being ready to do something is not the same as being ready and prepared). Enabling organizations will look closely at the skill set and experience base presented in a proposal. The greatest engineering design capability must be balanced with many other skills, and the financial wizard needs to possess and demonstrate planning and implementation skills. Most proposals require a mix of skills, including:

- Day-to-day operations and management
- Financial planning
- Legal and regulatory matters
- Negotiations
- Bank and investor relations
- Design
- Engineering
- Procurement and purchasing
- Construction
- Operations and maintenance
- Sales and marketing
- Reporting, monitoring and evaluation

What the Champion possesses needs to be honestly evaluated. What are weak or missing needs should be balanced by additions to the team or be clearly identified as gaps to be filled (and budgeted for!). These additions can come from other owner-investors, employees or contractors. The finished picture, however, should show the requisite expertise across a number of disciplines:

- Technical
- Operational
- Financial
- Legal
- Sales and service
- Marketing
- Political
- Fund-raising

It is quite easy and natural to overrate what we each bring to a proposal; investors, donors and lenders can be convinced sometimes. However, the reality will be much harsher during implementation. An honest self- and team assessment may result in a more costly proposal. It may even result in a proposal that is not feasible. Nevertheless, having a smaller project or an infeasible proposal is quite a bit easier on the Champion than having an approved, underresourced proposal that fails in the field.

4.8. SESSION 7

SESSION 7
WHY? IMPACTS AND BENEFITS

- Information Content: classifying the type of project from an environmental perspective and creating an inventory of the benefits offered by a proposal
- Technique Content: recognizing project differences and impacts, thinking beyond conventional classifications to realize the maximum "triple bottom line"

Exercises: with the close assistance of the Champion

(1) itemize all the benefits and consequences of the proposals
(2) begin to synthesize the benefits with your prior descriptive materials into what should become a compact, brief, positive presentation of the proposal
(3) deal with the negative aspects of the proposal upfront and integrate these into the summary.
(4) discuss various ways to "pitch" the proposal to different audience.
(5) summarize this material and present to the larger set of groups. Get their feedback on possible improvements.

Notes. *Organizing Principle: "Assess everything. We cannot know in advance what might be attractive to all donors, lenders and investors. Nor can we anticipate where or when lightning will strike." This session is devoted to describing the benefits and impacts (answering the question "Why?") as well as estimating the impacts, outcomes and expectations of the proposal. This involves itemizing benefits, and making an inventory of proposal impacts and mitigation measures.*

Benefits: There are just a few parts of the process that require sitting back and thinking outside the confines of the evolving plan. This is one of those. Proposals tend to begin and evolve around a core idea or two, but often there are many other benefits. Not only that, there are potential impacts that need to be understood earlier rather than later. A proposal to build a hydroelectric facility can begin with a renewable energy focus, but there are construction job, operating jobs, land reclamation, rural development, greenhouse gas, reforestation and market development possibilities.

Champions tend to be driven by their core objectives and that is a very good thing because focus gets things done. It is not suggested that side activities should be added to core ones for the sake of gathering up additional benefits. What is suggested here, however, is to make a careful appraisal of all the impacts, positive and negative that might occur because it is essential to understand them as they may prove important to others.

Donors, lenders and investors are all conscious of these issues, so a complete assessment and an understanding of the language (the language of category A, category B and category C projects) will make a proposal more balanced and complete. Make sure to count all the potential benefits of the proposal and make sure to account for all its potential social and environmental consequences.

Consider using the same technique of writing on sheets of paper while asking participants to identify benefit examples, such as:

- Introduction of new technology, construction and operating skills and jobs
- Income value of new jobs
- Indirect income benefits
- Land area improved – soil, vegetation, water, appearance
- Number of new seedlings and trees
- Improved public areas and infrastructure (linear feet of road or hectares of land)
- Clean water (litres)
- Sustainable fuel (kg of oil equivalent)
- Total funding mobilized
- Public utilities (electricity, water) supplied
- Educational and informational activities

Special benefits for "strategic" investor or donor

What follows is a short but potentially important subtask depending on whether a specific type of investor (strategic investor) has an interest in a proposal. The Champion should identify any special knowledge, infrastructure, experience or reputation benefit that the proposal might offer to a special type of investor: one who wants to learn and gain experience or "test the water" but would rather do so through someone else.

- Will the proposal create groundbreaking policy changes that could open the market to others?
- Will the proposal offer information and experience at a fraction of the cost of someone new gathering the information directly?
- Will the proposal teach skills that will allow others to expand if they had those skills and that experience?

Impacts: Not all projects or proposals are created equal. Some are destined to disturb the environmental and social status quo quite a bit. Some, less so. And some will have significant impacts – both positive and negative.

A classification system of sorts has been adopted by organizations, especially multilateral development and commercial banks, which tries to create broad categories of projects. Introduce this classification system as a way of looking at a few examples of A, B and C proposals.

4.8.1. CATEGORY A

A proposal is classified as category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse or unprecedented.

Projects that require particular attention include:

- Dams and reservoirs
- Large-scale industrial plants and estates
- Major oil and gas developments, including major pipelines
- Large thermal and hydropower developments
- Domestic and hazardous waste disposal operations
- Pest management (significant use of man-made pesticides/agrochemicals)
- Properties occupied by indigenous peoples or containing cultural heritage sites or critical natural habitats
- Locations requiring the involuntary loss of land, housing or livelihoods by occupants
- Forests (commercial logging operations or logging in primary humid tropical forests)
- International waterways
- Hazardous materials, air pollution, noise or odours
- Use of chlorofluorocarbons (CFCs) or other ozone-depleting substances

4.8.2. CATEGORY B

Projects are classified as category B if their potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – are less adverse than those of category A. Impacts are in this case site-specific; few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects.

4.8.3. CATEGORY C

A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening (documenting), no further action is required for a category C project.

Wrap up this Session with a quick round of What Do We Know or Not Know Concerning the First Five questions?

4.9. SESSION 8

SESSION 8
THE BASE CASE

- Information Content-base case components
- Technique Content-template entry and review of basic assumptions
- Exercise: using supplied information practice data entry and understanding of base case inputs and outputs … conduct inventory of assigned proposal with this process in mind.

Notes. *There is no more important part of proposal preparation and presentation that knowing what to ask for: The Request. It is on the basis of a careful assessment of all the steps that must be implemented (How?) combined with most realistic picture possible (Base Case) that both what is missing and what is needed for success can be shown. It is not enough to simply look for "money" or other resources as many ill-prepared project proponents do.*

Among the categories of resources that might be missing may be found items such as:

- *Funding or technical assistance to complete planning*
- *Seed capital to test or roll out part of what is proposed*
- *Partners to complete the team*
- *Advisors and experts to assist with critical tasks*
- *Systems and staff to manage implementation*
- *Financing for construction in the form of loans and equity investment*[4]

Placing the request in its proper time frame is also important to narrowing the search for resources that can fill the request. Asking a government-sponsored laboratory for construction financing is a waste of time for both parties involved.

The critical ingredient of this session is for each table to use everything that has been studied as well as the template exercise in the back of the Work Book to address two questions, one already "answered" in the prior session:

(1) What do we know or not know that is **essential** to this proposal succeeding? The key word here is essential. We will never know everything but we need to know key things. What are these factors and what is missing?

(2) What does the proposal need? What are we asking for? We have to do this based on what we know (we can change later) but what is the "Ask" from the Champion to the universe of Enablers out there?

These questions should frame the report by each table to the entire group.

[4] Loans are made based on the ability of the proposal to repay what is borrowed under clearly defined terms. Equity investments are made in return for a share of the profits upon the success of what is proposed.

4.10. SESSION 9

SESSION 9
WHAT IF? SENSITIVITY ANALYSIS

- Information Content – discussion of things that might go wrong … review of typical "risk" categories used by financiers
- Technique Content – risk analysis, sensitivity analysis … grouping like events and impacts

Exercise:

(1) classify various events into What if? Impact Groups;
(2) prepare a contingency list and begin the discussion of Risks
(3) identify the major risks, possible mitigation measures
(4) incorporate into your groups summary
(5) report to the larger group on both the base case and your What if? Scenarios.

Notes. *Notes-What If? Analysis is also called Sensitivity analysis – What If things do not go as planned? This question tests the planning assumptions and describes outcomes and impacts that may differ from what is expected. First of all, what can go wrong? After making a list, the probability of each event and its impact on the previously described inventory of benefits must be examined. What is the impact of differences in time: what if things take longer periods of time to be completed or are completed more quickly than planned? What about money differences: what if things cost more (or less) or revenue units are higher or lower than planned? And, what about output: what if the number of units of things produced or consumed is higher or lower than planned?*

Then there are combinations of events: what if it takes longer and costs more to get something ready for operations and fewer units are produced than originally planned?

- *Time events: if things take more or less time than planned*
- *Cost and revenue events: if things cost more or less than planned or if revenues are greater or less than planned in the base case*
- *Performance events: if what is planned does not produce the production originally expected*
- *Other events: such as the death of the proposal's Champion, or severe weather such as a hurricane or drought*

Sensitivity analysis is the foundation of what is called "risk management". We all believe that events will roll out as planned and we all know that such is rarely the case. Not only the Champion but all the other participants want to know "What If" this or that happens.

RISKS

- Completion
- Technology
- Supply
- Economic
- Political
- Environmental
- Social
- Force Majeure
- Financial
- Currency

This slide should be used as a way to review all the different things that can go wrong. By now, each table and proposal has its own well established identity. Use this list to ask pointed questions. If there is a cogeneration project being considered, ask that group what they think "completion risk" means and ask if they think a bank would assume that risk?

- Completion risk involves the risk that something started might not be completed after a lender has made funds available. This can happen when a proposal costs far more than originally expected or the market has changed significantly during construction. Completion risk can be managed through the type of contract entered into to design, build and commission (start operation).

- Technology risk involves something not performing as planned or becoming obsolete far more rapidly than expected. If the technology never performs as agreed to in the installation phase this can be part of completion risk, but generally it is considered to be in a separate category. Technology risk is most often managed through guarantees and warranties from the suppliers of equipment and also through the acceptance testing process. Longer-term performance can be enhanced through operations and maintenance contracts and various types of insurance.

- Supply risk involves raw materials not being available. This can include resources which the project is going to use (e.g., a mine or a plantation forest) or buy (e.g., fuel or supplies). Managing supply risk sometimes requires entering contracts for sufficiently long enough periods of time and with predictable prices to assure an uninterrupted supply of inputs.

- Economic risk exists even after a project is completed, the technology is working and the inputs are available. The result might be inefficient or the estimated market ("demand") evaporates. Confidence in (conservative and realistic) market projections and the Champion's demonstration of market knowledge and awareness are crucial in managing economic risk.

- Political risk involves the risk that the rules and regulations governing a proposal might change. A good example might be the risk that a government may arbitrarily raise the taxes on a project to render it not economic.

- Environmental risk involves unknown environmental conditions that might disrupt a plan after it is begun.

- Social risk is a category that takes into account all manner of social disturbances or disruptions that can impair a proposal's implementation.

- Force majeure risk is the risk that something catastrophic – a storm, an earthquake, a devastating accident – may cause a project to fail. Insurance programmes directly address force majeure risks.

- Financial risk occurs either when variable interest rates are used, refinancing of the project is assumed sometime during its life or additional financing is required in the future. Interest rates change. Large changes can make an enterprise non-competitive or not "liquid" ("liquidity" means having the cash to meet repayment obligation to lenders).

- Currency risk is closely related to financial risk and could be lumped into that category, but the very nature of technology transfer projects warrants it being treated separately. Currency risk involves the difference between the value of the currency that impacts income or expenses and the value of the currency in which the loan repayments must be made.

4.11. SESSION 10

SESSION 10
TO WHOM?

- Information Content: types of enablers and funders, relationship of funders to rates of return
- Technique Content: classifying and matching funding needs to enablers

Exercises:
(1) Groups should examine the below matrix and identify needs and possibilities for their proposal
(2) Prepare a list of options, both as to the need for resources and possible targets.
(3) Prepare a 5 minute summary of the proposal
(4) Prepare a 5 minute presentation of the proposal to your most likely target audience
(5) Summarize these finding to the larger set of groups

Notes. *To Whom is the proposal addressed? This session is concerned with the target audience for whom a proposal is prepared. It concentrates on their expectations, their needs and, their processes for considering, approving and disbursing resources requested in a proposal.*

The spectrum of enabling organizations – organizations that can provide funding and services – is quite well defined. It ranges from the purely charitable to the purely commercial. At one end of the spectrum one finds charitable foundations and individual donors. At the other one finds high-return venture capital funds and investors. Few if any proposals appeal to all the organizations and individuals along this spectrum. Research on the general and specific needs of each is a crucial investment of time during the proposal preparation process. The following description is simplified but not oversimplified. It represents general principles and experience to guide Champions as searches are conducted.

The colours of money – Financial inputs for proposals fundamentally come in four different "colours": revenues for products and services, including operating subsidies; grants that do not need to be repaid; loans that need to be repaid on defined terms; and equity, which is repaid from the profits, if any, from a proposal.

Revenues are the payments made by end users and others on their behalf (e.g., a government-sponsored subsidy programme is a revenue in the form of an operating subsidy).

Grants come from donors: charitable foundations, government-sponsored programmes (including multilateral development organizations and specialized programmes) and other specialized organizations.

Loans come from lenders: government-sponsored development institutions and banks, some charitable foundations, socially responsible and specialized investment funds and from commercial banks.

Equity comes from investors: owners of businesses or sponsors of social programmes, government-sponsored investment organizations, socially responsible and specialized investment funds, individuals and financial institutions.

Generally speaking – and there are many exceptions – a technology transfer proposal must explore and consider all four types of funding for a variety of needs. In this session the Trainer wants to assure that each group is considering all possibilities. In addition, it is very important to make sure that groups realize that the same tools that analyze a highly profitable proposal also analyze a heavily subsidized one. If it hasn't come up by now it is helpful to review a cross-section of social & environmental enterprises, from the highly subsidized to the highly profitable.

- Revenues are the most logical funding source, first to cover the cost of the product or services provided and, second, to contribute to the operation of the company or programme providing the product or service. Ideally, there will be funds left over to be applied to any loans that have been made and to make a payment (called a dividend) to the providers of equity. This is sometimes called a "waterfall", where monies received are first applied to the cost of the product or service provided (called "cost of goods sold"), second to other operating expenses (these would include taxes, for example, and any interest on loans); third, to loan payments (such payments are called "principal" or "amortization", while the combination of principal and interest on loans is called "debt service").

- Operating grants are a logical addition to revenues when revenues from customers cannot cover the cost of goods and services and there is a compelling social, environmental or other reason to provide this good or service to this customer or client group. Operating grants can come from government-sponsored programmes and charitable foundations.

- Capital grants are used to reduce the cost of a proposal so that loans and equity can cover the balance. Capital grants often reflect a larger set of issues: to make a product or service affordable to customers by lowering the initial cost or to offset an unfair cost disadvantage in one technology versus another or to defray one-time costs of introducing a technology that has important advantages over time.

- Loans are made to fund the construction of a project or the purchase of goods or the provision of services where the revenues from the goods or services are expected to be more than sufficient to repay the loans as and when promised. Some lenders are flexible in their loans for a variety of reasons. Others are absolutely not.

- Equity is also called risk capital and, in some situations, venture capital. Providers of equity – also called "investors" to differentiate them from "lenders" of loans and "donors" of grants – are repaid only if a proposal is successful and profitable.

  There are a few other ways to finance projects, goods and services but these, upon examination, are actually revenues or grants, loans or equity. Leasing, build-own-operate and transfer (BOOT) contracts and instalment sales or purchases (hire purchase) are loans dressed up in more complicated clothes. So are financing or credit terms from a supplier. Mezzanine debt, preferred shares, quasi-debt and quasi-equity are combinations of loans and equity. Monetization (converting to cash) and sale of carbon credits or pollution benefits are revenues from different customers for the same basic product or service being offered.

BEGINNING THE SEARCH

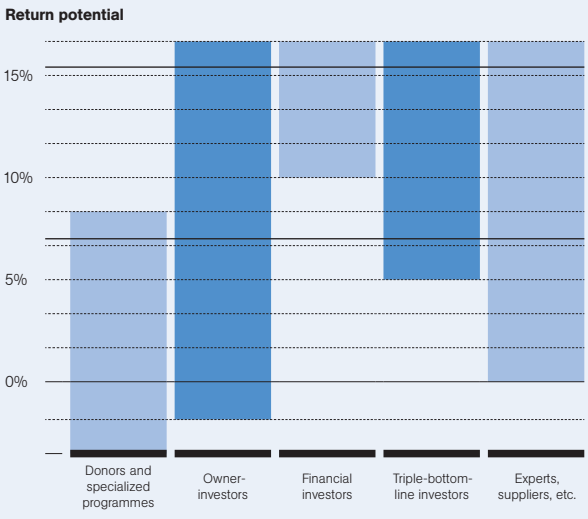
Estimated rate of return	Type of funding
Negative or zero →	Grants and subsidies
Zero to between 5 and 7 per cent →	Donors and investors who consider social and environmental returns as well as financial ones
Over 5 – 7 per cent →	Specialized lender-investor-donors who see the blended value potential of investments are likely targets
Above 10 per cent →	Private-sector investors and lenders

Notes. *Champions and Enablers alike must (1) avoid being dazzled by financial engineering jargon; (2) understand the different "colours" of money; and (3) master the various returns that customers, donors, lenders and investors are seeking.*

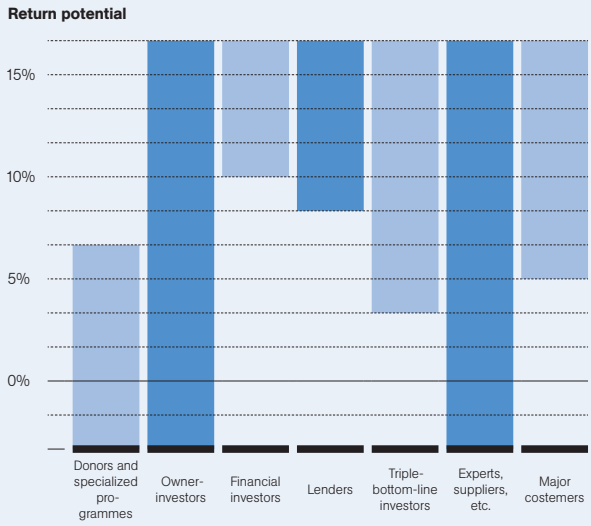
This latter point is important. When you calculate the cash incoming and outgoing amounts over a period of time it is possible to determine something called a project or proposal rate of return. This is a very rough but important indicator of two things: the proposal's financial feasibility (a negative rate of return means there is more outgoing cash than incoming and it will run out of money at some point in time without additional resources) and the audience which might be interested. Negative and near zero returns require grants and subsidies. Returns above 0 per cent to between 5 and 7 per cent must be examined from the standpoint of both donors and investors who consider social and environmental returns as well as financial ones. Above 5–7 per cent a proposal becomes more and more attractive to larger segments of the private sector (some would argue that 10 per cent is the cross-over point but a lower threshold does not signify lack of interest, merely that the proposal should be examined as requiring a combination of debt and equity and other funding). To be comfortable categorizing a proposal as private-sector-oriented, a "double digit" return is generally needed.

The next three slides reflect Pages 83–86 of the Guidebook. They are aimed at showing the range of prospects to be explored depending on the return profile – negative, single digit or double digit – of the proposal. These are worth studying because the range of possibilities usually adds at least one to each of our previous lists.

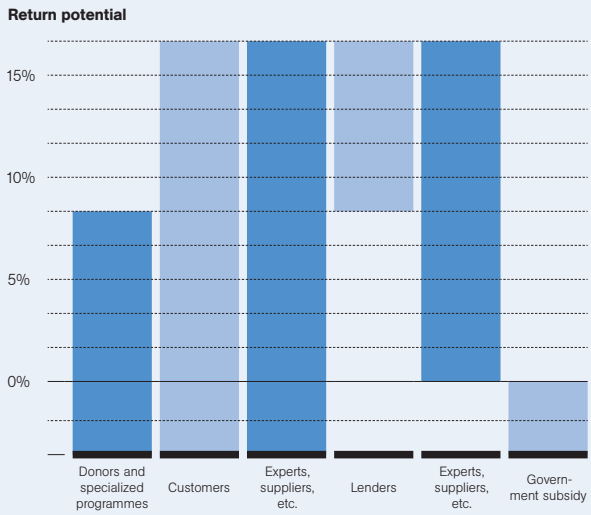
LOOKING FOR PLANNING SUPPORT



LOOKING FOR CONSTRUCTION FINANCE



FUNDING FOR OPERATIONS



The preceding slides are very important to go through slowly. Have participants open the Guidebook and go through each example. Opening their minds to the universe of possibilities – e.g., going to a potential supplier to assist with planning – is the point of this exercise, which should not be rushed. It is the ideal segue to the next session.

4.12. SESSION 11

SESSION 11
CUSTOMIZING AND SUMMARIZING

- Information Content: types of customization, key elements of summarization
- Technique Content: carbon monetization

Exercise:

(1) Groups determine if their proposal would require some customization for a particular group

(2) More important, each group prepares and rehearses its best "elevator pitch or presentation" (5–7 minutes) directed at an important person whose interest and attention they wish to get and who they hope will invite a follow-up discussion.

(3) This presentation is made to the other sets of groups and if possible other finance professionals, for comment.

Notes. *Some features of even a well thought out "triple-bottom-line" proposal – one that combines development, environment and financial returns – may require greater emphasis for particular audiences. These customizations are introduced here to begin us thinking about our different audiences and their needs.*

Logical frameworks are statements of the larger context into which a proposal may fit. These are often important to charitable and social change organizations, and can be helpful in placing a proposal in the "larger world" that may underpin decisions by such organizations.

Carbon benefits can sometimes be monetized – converted to cash – but this requires understanding special processes. The core concepts to understand can be called "baseline", "incremental benefit" and "value".

Loans require an understanding of the requirements and process of lenders. Metrics such as debt service coverage ratios and clear descriptions of collateral and guarantees[5] *advance discussions regarding loans.*

Return on equity is a key indicator for certain private sector investors and a clear presentation of this will determine how much attention some commercial investors will give a proposal. This is simply a measure of the cash flow that remains after all other participants in the proposal have been paid as agreed and after all agreed-to amounts have been set aside for future purposes. When financial experts talk about the bottom line this is usually the line they are referring to.

This session is a summing up. Its content serves largely as a placeholder and a way to point out that even when a proposal is finished to the satisfaction of the Champion it is often not finished because certain specialization expect proposals in a certain way. As a placeholder it allows the trainer to introduce guests representing various institutions and financing. This session needs to be flexible. Guests may have presentations but these should not interfere with the opportunity of each table to present the product of its hard work.

4.13. SESSION 12

SESSION 12
… THE LAST SLIDE

- Information Content: review of the information and techniques conveyed, methods used and exercises
- Technique Content: feedback and improvements … suggestions on adaptations and usefulness
- Exercise: team feedback, author feedback, individual feedback … critique of materials and process … on-line & distance learning feedback … interest in follow-up

Notes. *This session focuses on feedback: on the flow, content, exercises and focus of the previous 11 sessions. Were sessions too long or too short? Not enough or too much interaction and teamwork? Too broad or narrow an agenda etcetera. After reviewing the flow of the eleven sessions this session should be conducted by one of the organizers. The over-riding questions:*

(1) Was the workshop effective?
(2) Will it help you improve proposals?
(3) What next, for you, for your proposal for the work shops themselves?
(4) How can we improve?

[5] Binding promises to pay or turn over particular property under certain conditions.

V. PART 3 WORKBOOK FOR DISTRIBUTION

WORK_BOOK.PDF

This Work Book is a combination of session-by-session templates, slides with notes and study materials. The templates include a cover, a schedule, and pertinent checklists. It provides space for proposals to be inserted. In preparing for a specific workshop, these materials will be new proposals from participants. In the event insufficient proposals are submitted trainers can make use of the materials contained in SAMPLE_PROPOSAL.PDF

5.1. HOW TO PREPARE AND PRESENT PROPOSALS-WORK BOOK

- Contents
- Workshop Structure Template
- Session 1 Notes
- Session 2 Notes, Proposal Inventory Checklists and Koala LP Gas Proposal Summary
- Session 3 Notes
- Session 4 Notes
- Session 5 Notes
- Session 6 Notes and Checklist on Motivation and Capabilities
- Session 7 Notes and Checklists on Benefits and Impacts
- Session 8 Notes, Samples of Inputs and Reference to Koala LP Gas Proposal-Detailed-and template entry
- Session 9 Notes
- Session 10 Notes
- Session 11 Notes
- Session 12 Notes
- Annex I: Koala Gas Detailed Proposal and Template Entry Examples
- Annex II: Placeholder for proposals submitted by workshop participants

VI. PART 4
SAMPLE PROPOSALS THAT CAN BE USED IN TRAINING SESSIONS

SAMPLE_PROPOSALS.PDF

6.1. INTRODUCTION

Although it is assumed that each workshop will include some original proposals for participants to evaluate, a set of "sample proposals" are available to trainers (SAMPLE_PROPOSALS.PDF). These are drawn from previous materials and represent a cross-section of quality as well as samples of "social" versus "commercial" proposals.

- Sample Proposal A: biomass cogeneration proposal with detailed fundamentals and analysis materials. Good material for examining project finance.
- Sample Proposal B: solid waste landfill proposal with gas flaring, carbon monetization and possibly electricity production. Good material for technical and financial learning and consideration of issues such as project phasing.
- Sample Proposal C: beach erosion protection proposal that serves as good material for examining proposal clarity, completeness and balance.
- Sample Proposal D: solar PV powered grinding proposal to eliminate drudgery that is a useful example of a small but very detailed social enterprise.
- Sample Proposal E: small-scale agro-processing proposal that is useful for exploring both the social dimensions of development and the completeness and clarity requirements of a proposal.
- Sample Proposal F: large-scale agro-industrial proposal with good analytical, technical and technology transfer dimensions.
- Sample Proposal G: water saving proposal to increase economic development via multiple partners and actors.

VII. PART 5
TRAINING DELIVERY NOTES AND COMMENTS

This part explores both the underlying theory of training for adult "learners" and some thoughts on the delivery of training (for both trainers and learners) incorporating distance-learning capabilities.

7.1. TRAINING NOTES

Training for adults employs a teaching style known as "andragogy" versus the better known term "pedagogy", which defines learning for children. The former focuses on the learners – the participants – while the latter focuses on the content. Resources to explore include ASTD.org, an organization of training professionals, and Malcolm Knowles 1970s book The Adult Learner.

The difference in the two styles recognizes that adults

(1) have experience to contribute,
(2) their interest is in real-life matters and solving problems and
(3) engagement interactive not one-directional. The trainer's job is to make sure that the content and process fulfill these conditions.

Among adults there are numerous ways and combinations through which we learn. Three common ones are visual (learn by seeing and reading), listening (learn by watching and hearing) and doing (learn by activity). The trainer needs to be cognizant of these three styles and reinforce content as many ways as possible: for example, tell the story, support it with information and visual material and have participants prepare a worksheet.

Sponsors of training need to assure that there is a match between the needs of participants and the training described here. Past experience, interviews and discussions with potential participants and others in their organizations are useful ways to conduct advance match-making. During and after workshops formal and informal assessments serve the purpose of improving the training design.

An essential part of the training described here is the obtaining of initial proposals from participants, the selection of teams (including if possible the proposal champion) to work on improving this proposal and the assignment of a mentor and-or trainer to guide the effort. The format of this train lends itself to being broken into modules of individual study, group analysis and group discussion and feedback.

7.2. INCORPORATING DISTANCE LEARNING

This training material lends itself to individual self-study, moderated or group analysis and group discussion. Most, perhaps all of these segments could be done over the Internet as well as face-to-face. Many of the parts of this training could be spread out over time (but for the travel requirements of face-to-face meetings) and the training could move into more customized modules (by region, technology or sector) with sub-groups as the training progresses.

A few examples to consider:

- Proposal is shared among a team to complete a Seven Question Inventory. Team members divide up questions by category, communicate by email and then via **Skype** or similar VOIP system, and then "meet" with a mentor-trainer in separate call (after consolidating their inputs on to a single document). Documents would be collected and maintained on a private "Wikispace" or "drop-box". Improvements to the proposal would be made.

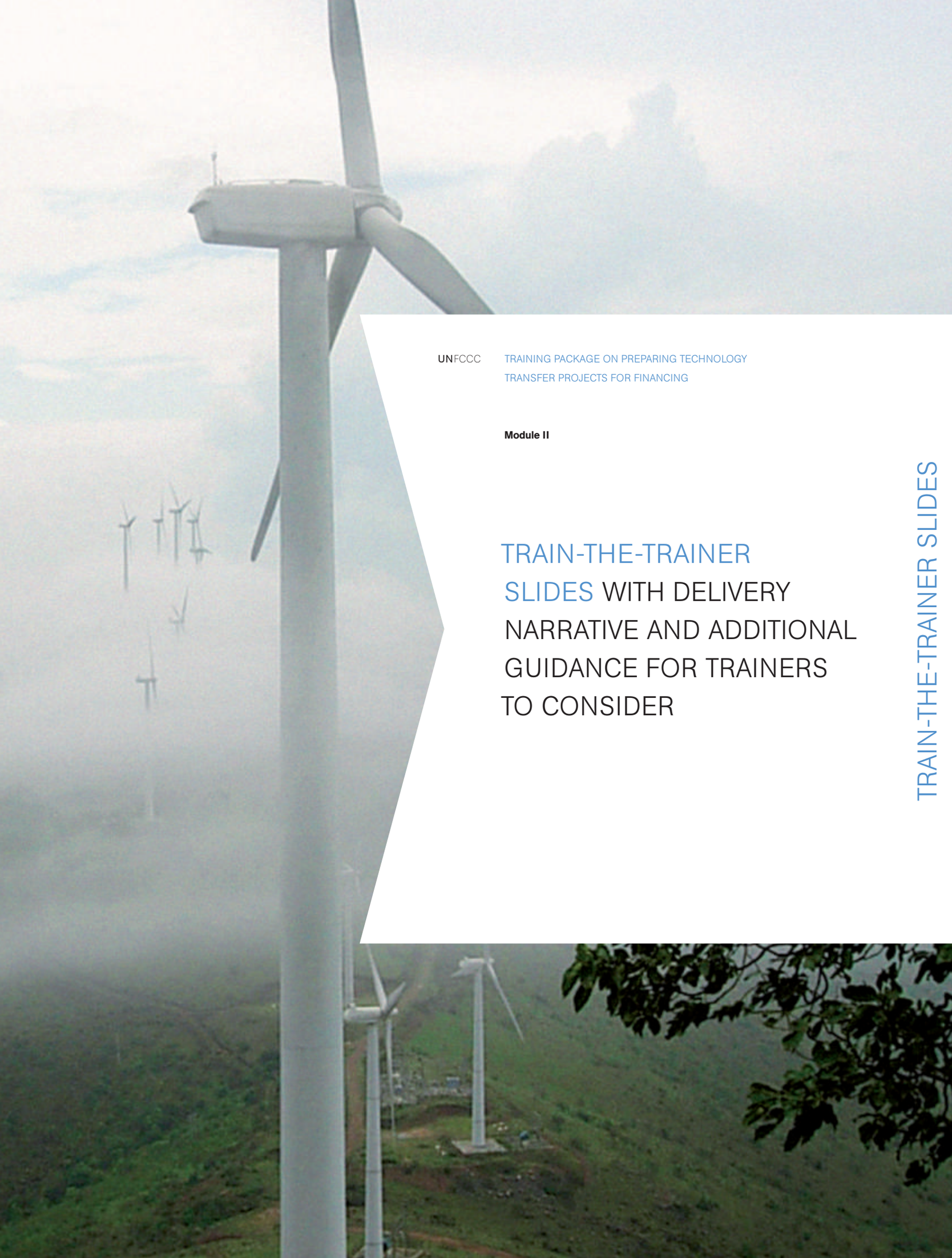
- From a more detailed proposal, individuals or teams would grow proposal data into data entry and analysis using the Guidebook templates. Similarly, slide presentations could be prepared and showcased via WebEx-type voice, data, and moderated discussion systems. When ready, experts could be added to the discussion and concrete suggestions offered on next steps.

- Individual assignments to learn financial concepts are first demonstrated via an animation that leads to a test of each of the three successive phases of analysis set forth in the "coffee-pot purchase" exercise. Going beyond these basics of financial literacy a "portfolio" exercise of ten or more different projects reinforces the financial analysis skills in a work-paper that would be reviewed with a mentor, trainer or team colleague via "drop-box" sharing and then Skype discussion.

- Regional, sector or sub-sector profiles could be assembled along with pertinent proposals (past and under development). Groups of proposals could be developed simultaneously with "guest mentors" from the appropriate agency or funder.

- Case studies can be offered via self-paced learning in dedicated classrooms. This work has been advanced on one classroom of a four class-room e-learning environment. The first beta level work (on energy access; provision for climate change, entrepreneurship and metrics has been made) on this phase can be found at: <http://invisible-schoolhouse.bfmdev1.com/index.html>. A beta site for self study has already been created also at: <http://energy.invisibleschoolhouse.net> (guest login and password: entrepreneur2011). A well organized library of resources, case studies, tutorials, sector-specific white papers as well as detailed information on "process" would round out information and course. What such a focused library might contain and how it could be organized is hinted at here: <http://energyaccess.wikispaces.com>, a site intended for development practitioners instead of entrepreneurs. The site's could all branch off the technology transfer clearing house (TT:CLEAR) or other institutional websites. Work has just begun on pairing participants with mentors to complete the business planning and proposal writing, possibly using a collaborative business plan authoring tool such as that provided by Project Economics (<http://projectfinance.org>).

- Insofar as participants have reacted positively to the idea of a session within this training devoted to exploring a cross-section of existing project, enterprise and program examples – bilateral, ODA, public sector, public-private partnerships and private sector – the design of such a session with the specific purpose of conducting an experiment to test both the content and delivery combining Internet and face-to-face resources might prove a good beginning point to create new materials. In a similar vein, expanding and refining the financial literacy materials to include more "triple bottom line" might serve a similar purpose.



UNFCCC TRAINING PACKAGE ON PREPARING TECHNOLOGY TRANSFER PROJECTS FOR FINANCING

Module II

TRAIN-THE-TRAINER SLIDES WITH DELIVERY NARRATIVE AND ADDITIONAL GUIDANCE FOR TRAINERS TO CONSIDER

TRAIN-THE-TRAINER SLIDES

Photo: © **Ramesh Kumar**

UNFCCC

TRAINING PACKAGE ON PREPARING TECHNOLOGY TRANSFER PROJECTS FOR FINANCING

Module III

WORKBOOK
FOR DISTRIBUTION

WORKBOOK

TABLE OF CONTENTS

Photo: © **Pedro Guinle**
CDM Project 1843: Primavera Small Hydroelectric Project

I. WORKSHOP STRUCTURE

Day 1 is a somewhat formal **Learning Day** emphasizing the following

- Proposal Preparation & Presentation Principles
- Introduction to Financing Concepts
- Small Group Exercises (with mentors)

Day 2 is a highly interactive and informal **Working Day** emphasizing

- Proposal Analysis
- Proposal Critique & Improvement
- Presentation & Summarization Exercises

Day 3 is an interactive and somewhat structured **Synthesis Day**

- Summarization of Analyzed Proposals
- Inputs from Finance Professionals
- Dialogue on the Needs of Participants & Financial Institutions
- Self & Group Evaluations & Recommendations

1.1. EXERCISES BY SESSION

(1) Ice-breaking exercise
(2) Five page inventory of Koala Gas: completeness and balance
(3) Calculating simple payback, IRR & NPV, Debt Service implications (spreadsheet with facilitators)
(4) Data entry
(5) Specific Assigned Proposal Analysis: what & where plus first small group explanation to the larger group
(6) Proposal Analysis: who & how ... inventory of questions, inventory of financial data gaps: second group explanation
(7) Why? Beginning to shape the various possible "pitches"
(8) Template Practice: what is feasibility?
(9) What if Planning: contingency planning and analysis: third group explanation
(10) Generic Presentation of the Project (including understanding the options): fourth and most comprehensive explanation
(11) Specific presentation: choose who you meet in the elevator and what you say in 5 minutes

Day 1: Learning	Day 2: Working	Day 3: Synthesis
Session 1: Overview	Session 5: What and Where?	Session 10: Targeting and Presenting
Session 2: Method	Session 6: Who and How?	Session 11: Customization and Summarization as well as Discussions with Finance Professionals
Session 3: Numbers	Session 7: Why?	Session 12: Critique
Session 4: Process	Session 8: Base Case	
	Session 9: What If?	
Day 1 Evaluation Notes	Day 2 Evaluation Notes	Day 3 Evaluation Notes

II. SESSION ONE
WORKSHOP OVERVIEW

Organizing Principle: "Improving our capacity to prepare complete and balanced proposals shortens the path from good ideas to implementation."

Session Objectives: to set forth the workshop agenda, method and its schedule ... to introduce the challenge being addressed and its urgency ... and, to propose collaboration on how to improve and share the content of this workshop.

Information Content: This session deals with logistics, schedule and deliverables. It defines the objectives of this Workshop and how it fits within the larger scheme of capacity and network building. Each participant will have a "Work Book", a set of slides, a copy of the UNFCCC Guidebook (including CD with templates). All these materials will also be stored on a web-based "Wikispace" for participants to access. Individual Wikispace accounts will be established during the workshop.

Technique Content: We are trying to bridge a substantial communications and language gap among professionals. Without offending anyone's professionalism or the vocabulary of their specializations, we are attempting to introduce a broader, more common vocabulary and technique regarding what should be included in a complete and balanced proposal. This session introduces a series of terms and related concepts.

Structure: Lecture covering Information and Technique Content, followed by an introduction of the participants, a question and answer exercise and a first feedback session to reinforce participants' role as part of a larger process of capacity building.

"Ice-breaking" Exercise and Questions

(1) You are preparing a budget: how is it a proposal?
(2) You need to get a trip authorized: how is this a proposal?
(3) A school needs books. You decide to raise money for the school? Who is the Champion and how is your decision a proposal? Who are the enablers?

There are different ways to communicate the importance and relevance of the content and the course. Here we have chosen to emphasize the need to accelerate the transition to sustainable development. We could have used other "hooks" to emphasize the importance of this training – for example, career advancement, skills diversification, growth of a person's work unit. Given the international government organization audience being trained but the final target of business people, development advocates, environmental specialists as well as government and IGO – what reasons do you think should be emphasized to capture the attention of participants?

Terms and Concepts from this session: Proposal ... Champion ... Enabler ... Seven Question Method (or Approach)

The Challenge: This Workshop, the training you may provide to others in the future, the UNFCCC publication "Preparing and Presenting Proposals", other text and software products and the network of professionals you are now part of, these have a single, focused purpose: to improve the odds that good ideas – ideas essential to sustainable development, climate change mitigation and adaptation and myriad other challenges – will attract the resources needed for successful implementation.

There are many good ideas, and ideas are powerful. Unfortunately, most do not get beyond the "idea stage" because rarely can a single person assemble all the resources needed and do all the work required to convert an idea into a reality. Margaret Mead wrote that we should never underestimate the power of a few committed men and women to change the world. What this workshop and its related activities want to do is to increase the chances of success for those men and women and shorten the path between idea and implementation.

The Essence of a Proposal: To obtain resources we must be able to explain our ideas clearly, be convincing that these ideas can be implemented and know what is needed to succeed. That is what a proposal does. **A proposal consists of a plan to do something, combined with a request for resources.**

There are common, logical ingredients that most well-prepared proposals contain. Understanding and demonstrating a mastery of these common ingredients, combined with knowing the audience, will greatly increase the chance of success. Making sure that the finished product is as complete and as balanced as practical is the objective of proposal preparation; getting the resources needed to actually proceed with implementation, however, is the goal. A brilliant proposal that goes nowhere is but an intellectual exercise.

Overview of our Method: Journalists are taught to make sure that their reports answer the questions Who? What? When? Where? Why? A complete proposal should answer a similar set of questions.

- What is being proposed? → **Concept**
- Where will the proposal be implemented? → **Setting**
- Who will champion the proposal and see it to completion, and who else must be involved? → **Team**
- How will the proposal be implemented? → **Plan**
- Why is the proposal important and why should it be supported? → **Expectations**
- What if things do not go as planned? → **Contingencies**
- To Whom is the proposal addressed? → **Audience**

A proposal that addresses these questions will usually meet the **entry requirements** of lenders, investors, donors, grant-makers, carbon professionals and service providers. The challenge is to do a fine job on **each and all** of these points.

A proposal is a bridge between two groups of people: for these discussions and in the Guidebook we call them Champions and Enablers. These designations were chosen to overcome a serious communications and semantic gap among various professional groups.

Champions are the people who convert ideas into action. They take on the chores and responsibility and make the needed commitment. These are the men and women who generally understand best what must be done to succeed and are the ones who realize what resources – expertise, money, and skills – must be obtained. Champions can be individual entrepreneurs in the private sector, or civil society representatives or part of government. The institutional home or title assigned to these men and women does not matter a great deal. It is their commitment that does.

Enablers are the people who have the resources and knowledge Champions need. Enablers can be financial investors or representatives of government programmes; philanthropists or private voluntary organizations; niche professionals engaged in subjects such as carbon mitigation and adaptation; and many others. Enablers are looking for ideas to support. They may do so for financial, social, environmental or other reasons or for a combination of benefits.

III. SESSION TWO METHOD

Session Objectives: to introduce the Seven Question Building Block Approach to preparing proposals

Organizing Principle: **"A well-prepared proposal should answer the following questions in a complete and balanced manner:**

(1) What?
(2) Where?
(3) Who?
(4) How?
(5) Why?
(6) What If?
(7) To Whom?"

Information Content: Introduction to the components of these seven questions ... Overview of a sample of the proposals prepared by participants ... introduction to checklists and sample proposal, "Koala Gas"

Technique Content: Building Block (template or questionnaire-based) Approach to Proposal Preparation

Structure: Lecture, Exercise and Discussion

Exercise: As a team we will review the first few pages of a sample proposal, Ghana Koala Gas, and then use a checklist to determine its completeness.

Workshop Proposals:

(1) Proposal 1
(2) Proposal 2
(3) Proposal 3
(4) Proposal 4
(5) Proposal 5

3.1. CHECKLIST

What?
- Product or service to be offered
- Technology to deliver product or service
- Client group to be provided with the product or service
- Appropriateness of product, service and technology to the client group
- Resources being requested

Where?
- Physical location and characteristics where the proposal will occur
- Social – economic – demographic – cultural – income and wealth characteristics
- Regulatory framework and business climate

Who?
- Champion
- Owners and sponsors
- Governance
- Employees and staff
- Contractors and suppliers
- Approval bodies
- Stakeholders
- Advisors
- Organization structure

How?
- Current status
- Steps and schedule to completion of planning
- Steps from completion of planning to final authorization
- Steps from final authorization to beginning of construction (or roll-out of pre-operation stages)
- Steps from beginning of construction/pre-operations to completion of construction and commencement of operations
- Operations, maintenance, management, accounting and reporting plans
- Monitoring and evaluation plan
- Key contract relationships
- Financial structure

Why?
- Financial expectations
- Social and development impacts
- Environmental benefits
- Growth potential
- Replicability potential
- Other benefits

Base case

- Time, cost, other resources and key events to complete planning, to go from completed planning to beginning of construction or pre-operation phase and to carry out construction or pre-operation phase
- Total cost until start-up and financial structure:
  - Grants
  - In-kind services and property
  - Loans
  - Investment
  - Operating revenues
  - Operating costs
  - Cash flow from operations
  - Other revenues, such as carbon benefits
- Project or proposal rate of return
- Payments of interest to lenders and others
- Depreciation
- Taxes
- Payment of loan principal
- Debt service coverage
- Remaining cash flow
- Return on equity to investors

What If?

- Schedule disruptions
- Cost and revenue variances
- Output performance changes
- Key person changes
- Changes in law or regulation
- Owner, lender, investor, sponsor changes
- Staffing disruptions

To Whom?

- Customers: households, businesses, communities and specialized programmes (such as carbon funds) which wish to buy all or part of the product or service being offered
- Donors: charitable institutions, government-sponsored programmes, multilateral organizations and specialized programmes and organizations
- Lenders: some charitable organizations, government-sponsored development institutions and programmes, specialized programmes, socially responsible funds, commercial banks and other financial institutions
- Investors: partners, suppliers, contractors, overnment-sponsored investment companies, specialized programmes and funds, venture capitalists

3.2. SAMPLE PROPOSAL: GHANA KOALA GAS SUMMARY

Date: November 2009, Amounts in US Dollars

Name of project or enterprise: KOALA GAS Distribution Company Ltd.

Location: Koala Gas is a new LPG (liquid petroleum gas) business in a peri-urban community in the north-western region of Ghana.

Champion's contact information: Mr. Harish Campos, Director

Koala Gas Distribution Company Limited; 160 Avery Road, North-western Region, Ghana

Product or service: LPG cylinder refilling services

Technology: Liquefied Petroleum Gas (LPG) filling plant and filling station

Customers/clients: Koala Gas will deliver LPG to about 12,000 rural and peri-urban households over the next five years and will also serve institutional and commercial customers in the surrounding area. The target market consists of rural and peri-urban customers (75 per cent of total sales), and commercial and industrial customers (25 per cent of total sales).

Current status: The site has been identified, purchased and prepared for construction, the company has been formed and registered as a limited liability company, management systems and business plan have been completed, physical and market planning have been completed, and EIA has been undertaken. Engineering plans are currently being finalized for the site drainage system, the construction firm and needed permits have been identified and obtained. Construction: currently in search of needed financing to commence work.

Project size, expected schedule and cost: The start-up company will operate a 30-tonne LPG stationary filling plant for refilling cylinders ranging between 6 kg and 30 kg in size.

Activity	Schedule	Planning	Con-struction	Pre-operation
Start-up costs	Year -1	3,650		
Capital infrastructure	Years -1 and 0		109,300	4,000
Initial LPG inventory	Year 0			18,390
Working capital	Year 0			11,300
Totals		3,650	109,300	33,690

Current needs and request: A total investment of 146,640 is needed. The sponsor is prepared to contribute 29.8 per cent (43,650) from his own resources and is requesting a loan in the amount of 102,990 with a term of no less than five years. Cash-flow projections estimate that the project can pay an interest rate of up to 7 per cent on an annual basis.

Market conditions: The north-western region is the largest consumer of charcoal and firewood in G. Of a household population of 722,590 in the north-western region, only 38,918[1] (5.3 per cent) of households presently use LPG. There is full national support for the promotion of LPG in rural communities in G. The Government has identified LPG as its solution to deforestation, which is rampant around rural communities. In 2004, the region accounted for only 6.4 per cent of the total LPG supplied nationally. Unreliable supplies have been a key contributor to the present low level of demand for LPG in the region. Koala Gas will serve as a link between the LPG refinery and end users, improving the reliability of fuel delivery. A reliable supply is expected to encourage prospective consumers to invest in accessories and switch to LPG.

Operating conditions: By legislation, retailers such as Koala Gas cannot purchase LPG directly from the refinery. They must do so through oil marketing companies (OMCs) such as S. Unfortunately, not all OMCs have the infrastructure and systems to ensure consistent supplies. Therefore, Koala Gas has selected three reliable OMCs based on recommendations from existing LPG entrepreneurs in G.

Regulatory conditions (including all required approvals): Koala Gas needs to obtain loan approval, a permit from the environmental protection authority, a licence from the energy commission and a building permit before it can begin construction. It is estimated that construction of the facility will be completed over a four-month period. Koala Gas will than need to pass a fire service inspection, obtain insurance coverage and an approval note from the Country Planning Department to begin operations.

Owners and sponsors: Mr. Harish Campos (45) is the sole owner and Managing Director of Koala Gas. Mr. Campos is an experienced engineer and manager. He holds a Bachelor's degree in mechanical engineering, a Master's of Business Administration in corporate finance and a Master's degree in telecommunications management obtained from the Lafayette College and the University of Dallas in the United States of America.

Team: The Company will employ other key personnel such as a plant supervisor, a cashier, four filling attendants/loading boys and a security man.

Governance and management structure (decision-making, authority and responsibility): Mr. Campos will oversee the operations of the business.

Implementation steps and plan: The following is a tentative project implementation schedule.

[1] 2000 population census.

Project milestone	Task	Weeks															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Excavation	Coordination																
	Trenching																
	Tank burial																
	Backfilling																
	Closeout																
Drainage	Coordination																
	Piping																
	Manholes																
	Oil-water																
	Site drainage																
	Closeout																
Structural	Coordination																
	Columns																
	Walls/roofing																
	Forecourt																
	Steel structure																
	Punch list																
	Closeout																
Mechanical	Coordination																
	Piping																
	Plumbing																
	Fire																
	Air																
	Fuel handling																
	Commissionin																
	Closeout																
Electrical	Service																
	Wiring																
	Stand-by																
	Equipment																
	Lighting																
	Commissionin																
	Closeout																
Control systems	Coordination																
	Wiring																
	Equipment																
	Security																
	Commissionin																
	Closeout																

Cash flow and schedule details: The selected base case shows that the project will generate enough cash to sustain its operations. The cash flow and the balance sheet represent a financially sound company, which should position it to secure finance from local sources for expansion.

CAPITAL COST

from donors	Capital grants = 0
from owner-investors	Equity investment = 43,650
from lenders	Loans = 102,990
	Capital cost = 146,640

5 YEAR OPERATIONS

Revenues	3,312,505
Operating grants or subsidies	–
Operating costs	3,101,880
Net revenues from operations (EBITDA)	210,625 For length of loan only
Interest	20,925
Taxes	
Depreciation Net income Add back: Depreciation	
Less: Amortization / principal payments	102,990
Net cash flow to owner-investors	IRR 5.4%
DSCR	1.70 Average

Impacts and returns: This enterprise falls within the LPG distribution chain in G. Financial support for this business is critical to extending LPG access to rural and underserved communities in the northern regions of G. By doing so, Koala Gas will help displace the use of charcoal and kerosene thereby reducing indoor air pollution and contributing to the better health of women and children in the north-western region. It will also create seven new jobs and several microenterprises that utilize LPG as their main source of fuel.

Risks and measures to handle them: The largest risk to this investment is unmet sales targets. This could result in an inability to sustain operations and repay the loan. This risk is assumed to be mitigated because the filling plant will be located in a rural area of an underserved market in a country with 13 per cent annual growth in LPG use. Other risks include fluctuation in foreign currency rates; competition; reliability of LPG supply; deregulation policy; and price increases. A mitigation strategy for all these known risks has been explored and developed in the business plan.

3.3. PROPOSAL CONTENT CHECKLIST

Does the "Sample Proposal" Contain?

- ☐ Date
- ☐ Name of project or enterprise
- ☐ Location
- ☐ Champion's contact information
- ☐ Product or service
- ☐ Technology
- ☐ Customers / clients
- ☐ Current status
- ☐ Project size, expected schedule and cost, divided between planning, construction or pre-operation and operation

3.4. CURRENT NEEDS AND REQUEST

- ☐ Market conditions
- ☐ Operating conditions
- ☐ Regulatory conditions (including all required approvals)
- ☐ Owners and sponsors
- ☐ Team
- ☐ Stakeholders
- ☐ Governance and management structure (decision-making, authority and responsibility)
- ☐ Implementation steps and plan
- ☐ Cash flow and schedule details
- ☐ Impacts and returns
- ☐ Sensitivity (what if?) analysis
- ☐ Risks and measure to handle them

Terminology: Core Concept or Concept ... products, services, technology, customers ...

A proposal consists of a "Champion's" plan to do something combined with a request to an "Enabler" for resources. It is important that the proposal be viewed as the bridge between good ideas and capable people to equally capable people who have resources essential to implementation. Conversely, organizing a brilliant proposal that is presented to the wrong party, or organizing only one part of a good idea – e.g., a description of technology – is a path to frustration. A proposal that addresses the following seven questions in a complete and balanced way has a better chance of being considered seriously than a less complete or out-of-balance proposal.

WHAT? → What is the Core Concept? → What are the products, services and technologies being proposed? These comprise the "what" of a proposal.

WHERE? → Where is this proposal located? → The region, industry and market where the core concept will be implemented define the "where" of the proposal.

WHO? → Who makes up the complete team needed to succeed → The institution, company, community or individual(s) who will have the responsibility for converting what is being proposed into action and results comprise the "who" of the proposal, the parties at risk of failure and responsible for action. This is not just the Champion but all the people and institutions needed along the way.

HOW? → How will this idea be converted first into a plan and then into actual implementation? → The planning, finance, operations, construction, management, monitoring and evaluation elements comprise the "how" of the proposal.

WHY? → Expectations and benefits → The financial, social and environmental implications, the possible impacts and outcomes – both positive and negative – the risks and rewards, the threats and the opportunities being set forth in the proposal; together these constitute the "why" of a proposal.

WHAT IF? → Contingencies → "What If" things do not go as planned?

TO WHOM? → The audience → A well-prepared proposal conforms to the needs and processes of the enabling organization from which resources are needed. It concentrates on its expectations, its needs and its processes.

IV. SESSION THREE
NUMBERS: ACCOUNTING, FINANCE AND SCHEDULING CONCEPTS

Organizing Principle: "If we cannot count it, we cannot measure or control it."

"Whether we like it or not, money is a language that cuts across languages, cultures and disciplines. It is a way of expressing actions and consequences."

Session Objectives: to establish a common basis for gathering and interpreting proposal data that can be quantified.

Information Content: accounting, budgeting, scheduling and finance basics as these apply, first, to proposal preparation and, second, as an introduction to these terms as used in the Guidebook's templates.

Technique Content: scheduling, net present value, internal rate of return ...

Structure: combined lecture and exercise (50 minutes for accounting and scheduling, break ... 50 minutes for finance and 1st exercise, break ... 50 minutes for finance and 2nd exercise and discussion ... tutoring to be organized as needed

Exercises: "Ellen and Niki Buy a Coffeepot" Parts 1, 2 and 3 (see below)

Feedback: it is especially important to discuss the ease or difficulty of transferring these financial concepts, the usefulness of "back and forth" and the type of example to be used. There is a lot to communicate in this session. Is it too much? How else could it be done? How can it be re-enforced?

4.1. EXERCISE

This exercise involves the decision by two people to purchase a coffee pot and materials rather than each buying an expensive cup of coffee at the local coffee shop. It contains three parts:

- Simple Pay-back analysis, which uses a set of variables to determine if a decision makes generally good sense.
- An IRR and NPV (internal rate of return and net present value) calculation to try to specify the more exact dimensions of the benefits and costs of that decision, taking time value into account.
- A debt service calculation to introduce the element of borrowing money to make an investment and the impact of that borrowing on the costs and benefits.

Exercise Part 1: every day two colleagues each spend 1.70 each for a cup of coffee. They average 20 days per month. How much do they spend each month?

One day they ask: what would it cost if we made coffee instead of buying it?

They identify the variables: they would need a 158.00 coffee pot. They would need to calculate how much milk, sugar and coffee they would need, the monthly costs and the possible savings of making versus buying coffee.

They determine that coffee, milk and sugar cost about 12.00 to make 17 cups.

They determine their daily savings and divide that into the cost of the coffee pot to derive a **Simple Payback,** the number of days required to recover the cost of the coffeepot based on the savings per day.

They realize there is a trade-off in their time utilization but they decide to ignore the difference between shopping for and making coffee, as well as cleaning, versus traveling to and waiting at their local coffee shop.

WHAT DOES IT MEAN?

"Simple Pay Back Period is the amount of time required to recover the cost of a new investment on the basis of the new savings or revenue created by the new investment."

In 79 days my savings from making my own coffee will justify the investment of $158 to buy a new coffeepot.

Exercise Part 2: in an attempt to be more precise about the wisdom of their decision the two colleagues prepare **net present value** and **internal rate of return** calculations.

For the first calculation (NPV) they ask the question: how much money will we save this year (because the coffee pot is guaranteed to last at least that long)? And they also ask, how much interest will we lose if we take this money from our bank accounts to buy the coffee pot.

They determine that they would have earned 12% interest each year (1% each month) had they left the 158.00 in their savings account.

From this information they determine the Present Value of their decision to invest 158.00 of their hard-earned savings to reduce their monthly expenditures by a certain amount.

They then ask: what is the equivalent interest rate we are earning on this whole transaction? This is called IRR. Because they have access to a spreadsheet program, that is an easy answer to determine.

	Period	0	1	2 to 12
	Month	Dec 31st	Jan	Feb to Dec
Number of Cups of Coffee			40	40
Cost per Cup of Coffee	$ 0.71		$ 28.40	$ 28.40
Avoided Cost per Cup	$ 0.70		$ 68.00	$ 68.00
Savings per Month			$ 39.60	$ 39.60
Savings for the Year			$ 475.20	
Investment to Realize This Savings			$ 158.00	
Cash Savings for the Year			$ 317.20	

Cash Savings for the Year	**$ 317.20**			
Value of Money per year	12%			
Value of money per month	1%			
		Dec 31st	Jan	Feb to Dec
Initial Investment		$ 158.00		
Monthly Savings			$ 39.60	$ 39.60
Cash Flow by Month		$ (158.00)	$ 39.60	$ 39.60
Net Cash Flow		$ 317.20		
Net Present Value of that Cash Flow		**??????**		

Internal Rate of Return	Investment	$ (158.00)	Mo 1	Mo 2–12
	Monthly Savings		$ 68.00	$ 68.00
	Monthly Cost		$ 28.40	$ 28.40
	Monthly Net Savings		$ 39.60	$ 39.60
	Cash Flow	$ (158.00)	$ 39.60	$ 39.60
	IRR	**??????**		
	Proof	$ (158.00)	$ 39.60	$ 39.60
	Discount Rate			
	NVP	$ 0.00		

Exercise Part 3: But what if they borrow part of the $158.00 from another colleague (say 130.00)? If they promise to repay 26.00 per month how does that change the transaction?

What is the equivalent interest rate they are paying on the 130.00 by paying 26.00 each month for 12 months?

Ellen and Nikiborrow $ 130.00 of the $ 158.00 from Jacob

They promise to pay Jacob $ 26 a month for 12 months

What is the interest rate Jacob is charing?

How does borring impact their savings?

Solve for the IRR (internal rate of return) to figure out the interest rate they are paying.

It ist easier to see the Cash Flow from Jacob's point of view (it gets the positive and negative signs in the right places)

Jacob's cash	Today	Month 1	Month 2	Month 3	Month 4	Month 5
Amounts to E&N	130					
Amounts from E&N		26	26	26	26	26
Jacob's Cash Flow	-130	26	26	26	26	26
Net Cash Flow	182					
		= Annual Rate of Interest Being				
IRR	???	Charged by Jacob				

Group Discussion: How does this three-part exercise illustrate:

- Capital cost
- Operating cost
- Cost versus benefit
- Time value of money
- Simple payback
- Net present value
- Internal rate of return
- Debt service?

Terminology: Capital budget and plan ... operating budget and plan ... Income Statement ... Balance Sheet ... Cash Flow ... Planning Period ... Construction and Pre-operation Period ... Operations or Operating Period ... interest ... interest rate ... discount rate ... Net Present Value ... Internal Rate of Return ... Debt Service ... time value of money ... Triple Bottom Line

This session contains three separate lessons: how to schedule and budget; how to present financial results; and, how to evaluate, present and compare different ideas and proposals using the "time value of money".

When preparing and presenting a proposal, money, time and impacts act as a language that communicates between Champions making proposals and Enablers receiving them. Within that language, "accounting" is the set of conventions that record and report the inflows and outflows of money. "Finance" is the part of the language that describes how something is owned and is to be paid for. "Impacts" refer to the financial, economic, social and environmental results which a proposal is expected to yield, and "scheduling" is the art and science of matching activities and resources over time. Often, lack of clarity in communication between Champions and Enablers can be traced to differing understandings in regard to these four items.

For the Accounting and Scheduling lesson six concepts should be understood:

- Capital budget and plan
- Operating budget and plan
- Income statement
- Balance sheet
- Cash flow
- Variance analysis
- Once understood, the activities and costs should be segregated into three broad blocks of time:
- Planning
- Construction or pre-operations
- Operations

For the Accounting lesson we need to communicate the basics of accounting and the ability to present "triple bottom line results:

- Financial
- Social
- Environmental

For the Financial Analysis lesson the following related concepts are important and sufficient to allow conversations with the most sophisticated "financial expert":

- Interest and return
- Net present value and internal rate of return
- Debt service and debt service coverage

4.2. ACCOUNTING AND SCHEDULING CONCEPTS

Time Periods and Scheduling

At the beginning of proposal-related communications, only three blocks of interconnected time need be examined and presented:

- Planning: From now to the completion of planning and the commencement of construction and pre-operation activities.
- Construction and pre-operation: From the completion of planning to the completion of construction and pre-operation activities.
- Operation: The delivery of products and services.

These three periods of time can overlap, but they must be kept separate at all times in terms of record-keeping and accounting.

Planning includes all the steps that must be completed in order to commence construction or installation of pre-operation facilities. Planning does not end until all contracts are signed and the funds are in place to proceed.

Construction and pre-operation includes putting in place all the "bricks and mortar" needed for a proposal to be formally implemented. Construction can be phased. Thus, operations may commence while construction is still ongoing. It is crucial that the records of planning, construction and operations be clearly separated.

"Construction" is generally considered different to such pre-operational activities as setting up offices and staff (for, say, an information distribution project). From the timing and accounting points of view, these two types of activity are nearly the same.

Taken together, the costs of planning and the costs of construction and pre-operation constitute the **capital cost** of a proposal.

A capital budget and plan is simply the total of all the costs of planning, construction and pre-operation stages. It includes everything that must be spent and done in order to commence the delivery of the proposed product or service. Often these are called "capital costs" (to distinguish them from costs incurred once the proposal's operational phase begins) and any cost added to the capital budget or plan is referred to as being "capitalized".

Operation includes proposal implementation: the sale and distribution of the product and service at the centre of the proposal. Generally, the operating phase of a proposal has both revenues and costs. In preparing a proposal it is important to estimate the revenue components both in units of output (e.g., number of kilowatt-hours, number of bed-nets) and in the value of the units.

Thus, an "operating budget and plan" picks up where the "capital budget and plan" leaves off. It is the budget of both revenue and expenses once the proposal begins to deliver the promised goods or services. The word "budget" has become associated primarily with costs but an operating budget and plan – much like a household budget – must reflect both incoming funds and outgoing costs.

Operating costs also include other elements that require some explanation: depreciation, interest, taxes and amortization (principal payments), which are needed to translate operating results (revenues less costs) into an estimate of the cash flow which the proposal will generate after all costs are considered.

- Interest expense is the estimate of the amount paid on monies borrowed to implement a proposal. If the interest is paid or accrued (recorded in the time period during which it applies but paid at some time in the future) before the operation commences, this is generally called "interest during construction" and is included ("capitalized") in the capital budget and plan. Once operations begin, the interest paid or accrued is treated as a normal expense such as labour or raw materials.
- Depreciation is the only part of the operating budget and the income statement that is not represented by a cash payment during the period or at some time in the future. "Depreciation" is an allowance used for tax purposes – an operating expense – that reflects a share of the capital cost spread out year by year during its useful life. The purpose of depreciation is to reduce your taxable income and match the revenue of a proposal with the wearing out of the assets.
- Taxes come in many forms. Most important to proposal preparation is to estimate the income taxes due as a result of the proposal's implementation. Usually, taxes are calculated as a percentage of revenues minus all operating expenses (including interest and depreciation).

- "Amortization" or "principal payment" is a cousin of depreciation. Depreciation represents an estimate of the loss of value of an asset. It is a "non-cash" item (cheques or wire transfers are not made to "pay depreciation" as it is an accounting convention). Conversely, when money is borrowed to acquire or build a capital cost item, that money must be repaid. This repayment is referred to as amortization or principal payments. Since depreciation accounts for the declining value of all capital assets, it would be double counting to deduct principal payments (which represent payments for a portion of the asset) too, so amortization is not part of the income statement. However, unlike depreciation, this is a cash payment, so accounting makes an adjustment after finishing the income statement. What happens is that depreciation is added back and amortization/ principal payments deducted; the result is the cash flow available to owners – investors. This concept is important to understanding the concepts of rate of return and the financial "bottom line."

Notes. *When principal and interest payments are combined this is called "debt service", another important concept to remember.*

An "income statement" reflects operating revenues and expenses for a specific period of time, usually a year for formal statements and three months (a quarter of a year) for internal management purposes. It includes interest, depreciation and taxes.

If the purpose of an income statement is to reflect what has happened in a specific year or quarter, a "balance sheet" gives a picture of a company at a particular moment. It has three parts (the parts are sometimes given different names, but the ideas behind them are the same):

Assets represents something owned or controlled ... something that has a value.

Liabilities: if assets are "things owned", then liabilities are "things owed". These represent all future obligations, especially loans to be repaid, monies owed to suppliers and pension obligations to employees.

Net assets are an important and somewhat difficult concept. Net assets represent the difference between assets and liabilities (assets = liabilities + net assets) and comprise the amounts provided by owners (these amounts are called "equity") plus the accumulated results of operations (called profit or loss) minus any amounts paid to owners (these are called dividends). When liabilities exceed assets, "net assets" are a negative rather than a positive number (not a good sign).

4.3. FINANCE AND TRIPLE BOTTOM LINE

Although the world of finance is full and complex, mastering just six concepts with a pencil, paper, calculator or computer is sufficient grounding to have the most sophisticated conversations with "experts".

These concepts are: interest rate; debt service; return on investment; net present value; internal rate of return; and debt service coverage ratio.[2]

Interest is the cost or the value of money. It is the expense of borrowing money. Usually quoted as a percentage (and most often quoted as a fixed percentage per year or month), it is the fee paid by a borrower to a lender for the lender making funds available to the borrower. It is important for Champions to understand how interest is calculated and the best way to do this is by doing a simple exercise.

An amount of 1,000[3] borrowed for one year at 12 per cent simple interest requires a repayment of 1,120. The same amount borrowed at one per cent **per month,** compounded monthly (interest charged on interest) requires a payment of 1,127 at the end of a year. If the period is two years rather than one the result is 1,254. Do the exercises of multiplying 1,000 times 1.01, first 12 times (equals 1,127) and then 24 times (equals 1,254). This is the process of "compounding". Interest is compounded without being stated as such (simple interest is the exception rather than the rule).

[2] These terms are abbreviated so often – especially in conversation – that their abbreviations should be learned as if they are words: "i" for interest, "ROI" for return on investment, "NPV" for net present value, "IRR" for internal rate of return, "p+i" for debt service and DSCR for "debt service coverage ratio".
[3] This guidebook does not focus on any particular currency.

A calculation showing 1,000 at 12 per cent interest compounded yearly for five years follows. It serves to demonstrate the algebraic method (see box).

Year 0 (when the money is borrowed) = 1,000
Add 12% for year 1 = 120
Balance at end of year = 1,120.00
Add 12% for year 2 = 134.40
Balance at end of year 2 = 1,254.40
Add 12 % for year 3 = 150.53
Balance at end of year 3 = 1,404.93
Add 12% for year 4 = 168.59
Balance at end of year 4 = 1,573.52
Add 12% for year 5 = 188.82
Balance at end of year 5 = 1,762.34

On a calculator or spreadsheet, getting this answer would be a function of entering the present value (PV) of 1,000, interest rate (i or R) of 12%, the number of periods (n or nper) of 5 and then solve for future value (FV). In an algebraic presentation, this calculation is as follows:

$$FV = P(1 + R)^N$$

Where:
FV = future value
P = principal (initial amount)
R = annual rate of interest (also abbreviated as lower case i)
N = number of years
$FV = 1000(1+.12)^5$
* = "multiplied by"
1.12 * 1.12 * 1.12 * 1.12 * 1.12 = 1.7623
1000 * 1.7623 = 1762.34

4.4. DEBT SERVICE AND PAYMENT PLANS

Once the concept of interest is comfortably understood, the next step is to understand that there are different types of "payment plans". It is possible to pay only the interest on a loan for a period of time and then pay the principal amount in one or more payments. When a single payment of principal is made at the end, this is sometimes called a "bullet" payment.[4]

It is possible to pay the same amount every period (whether monthly, semi-annual, annual or any other equally spaced period). This is called the "mortgage payment" or "equal annual" method.

Another possibility commonly explored makes equal payments of **principal** amounts over a specified period of time. The interest amount paid at each time varies because the balance of the loan is declining.

Repay 1,000 over five years at 12 per cent – three methods.

Payment options	Year 1	Year 2	Year 3	Year 4	Year 5	Total payment
Bullet	120	120	120	120	1,120	1,600
Mortgage	277	277	277	277	277	1,385
Equal principal	320	296	272	248	224	1,360

Each of these schedules employs the same interest rate and time period; what varies is the debt service (schedule of principal and interest (p+i) payments).

"Return" or "return on investment" are closely related concepts. It is the rate of interest earned on an investment over time. It is usually a function of the amount of money invested at the beginning when compared to the amounts of money received back over time. The difference between interest and return is that interest is generally a fixed payment for the use of money, whereas return is the sum of variable payments over time.

Interest represents the rate charged for the use of money. It looks forward in time and is predictable. Return occurs over time and is not as predictable, but both represent what is often called the "cost of money". A proposal can be to a bank (lender) to borrow money at a fixed interest rate. A proposal can also be to an investor, offering a share of future cash flow as a return on their investment (often abbreviated ROI).

[4] Some of the illustrative calculations used here for interest, net present value and internal rate of return appeared in the Toolkit for Energy Entrepreneurs, © 2002, E+Co, UNEP and AREED.

One way of comparing returns and interest rates is called "net present value" (NPV). By taking a certain rate of interest it is possible to compare the value of future flows of monies to the amount to be invested today. When this technique is used, the percentage rate used has a different name. It is called a "discount rate", but this is nothing but an interest rate looking back in time rather than forward in time. The technique is quite simple to perform, either manually with a calculator or with a spreadsheet computer program such as Excel. The purpose served is quite clear: if the net present value is a positive number that is one measure of the profitability of a proposal. If the number is zero or negative that is a good estimate of the additional funding needed (whether by grants, subsidies, cost-cutting or revenue improvements). The most important step is selecting an appropriate discount rate.

To demonstrate this point, the preceding cash flow estimates can be looked at in reverse. What if someone offered three different ways in which they would pay for a particular product (costing 1,000) over five years?

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Case A	120	120	120	120	1,120	1,600
Case B	277	277	277	277	277	1,385
Case C	320	296	272	248	224	1,360

Each payment plan looks different. The way to compare them is to choose an interest rate that represents the fair value of having money in hand or a promise of money in the future. If the rate selected was 12 per cent and it was applied to each of the above proposals, it would be found (mathematically) that each of the proposals equals the others.

Five-year net present value at 12 per cent discount rate

	Year 1	Year 2	Year 3	Year 4	Year 5	Total pay-ment	NPV, 12%, five years
Case A	120	120	120	120	1,120	1,600	1,000
Case B	277	277	277	277	277	1,385	1,000
Case C	320	296	272	248	224	1,360	1,000

Notes. *Ways to check these calculations include using a spreadsheet program or the financial functions on a calculator; using factors from a present/future value table; or using an algebraic formula. Each of these solutions is demonstrated in annex V of the Guidebook, which also illustrates and explains the composition of the present/future value table.*

While all of these calculation methods show that the results of the three payment plans are **mathematically** the same, there are **other reasons to choose among these options.** Inflation may make 12 per cent too low a discount rate, so either choose a higher one or choose the proposal that brings cash earliest. There may be a need for cash at a certain time that also makes one method more appropriate than another. The core problem with NPV analysis is that the choice of discount rates can greatly affect it. Otherwise, it is a wonderful tool for comparing different options.

With the mass introduction of more sophisticated calculators and spreadsheet programs, an alternative methodology has gained currency: this is called "internal rate of return". Internal rate of return (IRR) is the interest rate that a future stream of monies will return on an investment made today. It allows different investments to be compared. When compared to these alternatives (and to the cost of money which an enterprise might incur), the IRR on a proposal can be reliably presented.

Let us examine three cases where 1,000 are invested and three different choices exist for being repaid.

	Year 0 Amt. out	Year 1 Amt. in	Year 2 Amt. in	Year 3 Amt. in	Year 4 Amt. in	Year 5 Amt. in	Total net cash flow*
Case D	-1,000	300	240	240	270	350	+400
Case E	-1,000	350	280	350	280	140	+400
Case F	-1,000	350	350	300	200	200	+400

*Total net cash flow is the total "undiscounted" cash remaining after investment has been fully repaid (difference between total amount in and total amount out).

If we assign a discount rate of 13 per cent, we can determine which has the higher net present value.

	Year 0 Amt. out	Year 1 Amt. in	Year 2 Amt. in	Year 3 Amt. in	Year 4 Amt. in	Year 5 Amt. in	Total net cash flow*	NPV @ 13%
Case D	-1,000	300	240	240	270	350	400	-22
Case E	-1,000	350	280	350	280	140	400	+17
Case F	-1,000	350	350	300	200	200	400	+20

Case F has the highest NPV and is the best of the three cash flows from an NPV perspective. What IRR (internal rate of return) allows us to do is to say mathematically how **much better it is** by calculating the discount rate that would produce a zero NPV result. See annex V for a detailed explanation of how to calculate IRR.

	Year 0 Amt. out	Year 1 Amt. in	Year 2 Amt. in	Year 3 Amt. in	Year 4 Amt. in	Year 5 Amt. in	Total net cash flow*	NPV @ 13%	IRR
Case D	-1,000	300	240	240	270	350	400	-22	12.0%
Case E	-1,000	350	280	350	280	140	400	+17	13.9%
Case F	-1,000	350	350	300	200	200	400	+20	14.1%

As we saw earlier, Debt Service is the amount paid each year to repay a loan. It consists of principal repayments (the amounts borrowed) and interest payments (the cost of money). Debt service equals principal plus interest (p+i). There are many different ways to calculate debt service, and as we have seen there are many different ways to produce the same net present value. The objective in learning about debt service is to try to match the future monies expected to the obligations being accepted. When seeking a loan, annual debt service coverage calculations are important.

Let us go back to the three debt service examples used previously and explore how to calculate debt service coverage ratios (DSCRs).

Debt service options	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Case A	120	120	120	120	1,120	1,600
Case B	277	277	277	277	277	1,385
Case C	320	296	272	248	224	1,360

For each of these years, a certain amount of money will be available to make the expected debt service payment. This amount of money is the excess of revenues over day-to-day costs. It is the amount available to pay debt service, to reinvest in the company or to pay to owners in the form of dividends. Let us make the following assumption regarding funds available to meet debt service.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Funds available	400	420	440	460	480	2,200

A debt service coverage calculation compares the amounts available by year (and for the total period of the loan) to see if there is a match (or mismatch) between the amounts to be paid under the different payment plans and the amounts required to be paid. Say you choose case A as your debt service option: in year 3 the debt service expense totals 120 and your funds available total 440, giving you a debt service coverage ratio (DSCR) of 3.7 (440/120), meaning that in this particular year for every unit of money owed you have 3.7 units available for payment. If you were to choose case B, the DSCR for year 3 is 1.6 (440/277).

Debt service options	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Case A	120	120	120	120	1,120	1,600
Case B	277	277	277	277	277	1,385
Case C	320	296	272	248	224	1,360

Debt service coverage ratio	Year 1	Year 2	Year 3	Year 4	Year 5	Years 5–1
Case A	3.3	3.5	3.7	3.8	0.4	1.4
Case B	1.4	1.5	1.6	1.7	1.7	1.6
Case C	1.3	1.4	1.6	1.9	2.1	1.6

Of importance also is the sum of all the debt service payments when compared to the sum of all the monies available to make those payments. This indicates the "average" DSCR, although differences in time make this, at best, a rough measure.

Compare these results, first as a Champion: which result produces the best cash flow for reinvestment, expansion or dividends to owners?

Now place yourself in the shoes of the person making a loan: which result is the least secure?

Answer: Case A. It is good for the project in that it frees up much cash in the early years to reinvest in the project or reward owners. It is bad for the lender because it produces the lowest overall debt service coverage ratio (1.4) and has a very risky fifth year (what if the Champion has spend all the excess monies from years 1 to 4?).

There is no right or wrong answer. Case A could be structured in a way that reduces the risk to the lender (setting aside a reserve of cash in years 1–4). The purpose of the exercise is to open our minds to the options that exist when the time value of money is incorporated into the analysis.

The most important common ingredient of the six concepts discussed in this section is time. The time value of money and other benefits is an important ingredient of any proposal. Champions and Enablers need to assess carefully what expenditures and revenues must occur over the different blocks of time.

V. SESSION FOUR
PROCESS: FACT-FINDING TO BASE CASE

TO FINISHED PROPOSAL … "MEET THE TEMPLATES"

Session Objectives: to reintroduce the qualitative, building block process (after the quantitative exertions of Session Three) and transition from gathering information to treating the information as input to be assembled and analyzed … to begin team work with a proposal inventory.

Information Content: opening and entering data on templates

Technique Content: transition from learning to learning by doing, transition to teams examining specific proposals

Structure: short lecture plus exercise … review of proposal inventory plus discussion.

Exercise: As a group

(1) open and skim templates;
(2) using both the Ghana LPG Proposal-Summary and Ghana LPG Proposal-Detailed in the back of this workbook, look for the key information;
(3) enter some of this information on a set of What? Where? And then on the Who? templates, sufficient to gather a comfort level;
(4) open and examine the How? Templates, various steps, and enter some information. If time permits use the raw data presented in Session Eight to practice data entry on the HOW template.

Here are **two helpful hints** and shortcuts: at the end of the Ghana LPG Proposal-Detailed will be found some manually entered templates. On the CD will also be found a completed Koala Gas set of templates, which match this proposal.

Suggestion: divide into sub-groups to examine and report back on the content of the Koala Gas Proposal and the layout of the template and then enter some data as subgroups just for practice.

Exercise: Briefly familiarize yourself with your team's proposal. You will be working with this extensively tomorrow.

Workshop Proposals:

- Proposal 1
- Proposal 2
- Proposal 3
- Proposal 4
- Proposal 5

A summary and refresher regarding key terms should begin (and end) this session. It should also be noted that once this session is completed we will have put in place ALL the information and techniques needed to construct and critique proposals, beginning in the next sessions. So we need to make sure all our foundations pieces are solid.

We have learned so far that in preparing a proposal the Champion must wrestle with the first five questions – What, Where, Who, How and Why – as a set of connected pieces, where changes in one can cause many other changes. Rarely are all the pieces crystal clear even as great volumes of information are amassed. As a result, the Champion needs to assemble as much information and as many answers as possible, all the while making reasoned assumptions of what is not known. The purpose is to construct a realistic picture of how all the pieces will come together. This realistic picture is called the base case. It reflects both what is known at the time of its preparation and what is assumed. Much of the base case uses the data gathered and the accounting and finance concepts discussed earlier.

Base case: the collected facts and assumptions about what is proposed, especially in regard to time, money and resources; that is, approvals, schedule, initial costs, revenues, ongoing expenses, people and equipment needed, and sources of funding. Use Sample Proposal Information …

There is no more important part of proposal preparation and presentation that knowing what to ask for: The Request. It is on the basis of a careful assessment of all the steps that must be implemented (How?) combined with most realistic picture possible (base case) that both what is missing and what is needed for success can be shown. It is not enough to simply look for "money" or other resources as many ill-prepared project proponents do.

Among the categories of resources that might be missing may be found items such as:

- Funding or technical assistance to complete planning
- Seed capital to test or roll out part of what is proposed
- Partners to complete the team
- Advisors and experts to assist with critical tasks
- Systems and staff to manage implementation
- Financing for construction in the form of loans and equity investment[5]

Placing the request in its proper time frame is important to narrowing the search for resources that can fill the request. Asking a government-sponsored laboratory for construction financing is a waste of time for both parties involved.

What If? Analysis is also called Sensitivity analysis – What If things do not go as planned? This question tests the planning assumptions and describes outcomes and impacts that may differ from what is expected.

First of all, what can go wrong? After making a list, the probability of each event and its impact on the previously described inventory of benefits must be examined. What is the impact of differences in time: what if things take longer periods of time to be completed or are completed more quickly than planned? What about money differences: what if things cost more (or less) or revenue units are higher or lower than planned? And, what about output: what if the number of units of things produced or consumed is higher or lower than planned?

Then there are combinations of events: what if it takes longer and costs more to get something ready for operations and fewer units are produced than originally planned?

- Time events: if things take more or less time than planned
- Cost and revenue events: if things cost more or less than planned or if revenues are greater or less than planned in the base case
- Performance events: if what is planned does not produce the production originally expected
- Other events: such as the death of the proposal's Champion, or severe weather such as a hurricane or drought

Sensitivity analysis is the foundation of what is called "risk management". We all believe that events will roll out as planned and we all know that such is rarely the case. Not only the Champion but all the other participants want to know "What If" this or that happens.

To Whom is the proposal addressed? This is concerned with the target audience for whom a proposal is prepared. It concentrates on **their** expectations, **their** needs and, **their** processes for considering, approving and disbursing resources requested in a proposal.

The spectrum of enabling organizations – organizations that can provide funding and services – is quite well defined. It ranges from the purely charitable to the purely commercial. At one end of the spectrum one finds charitable foundations and individual donors. At the other one finds high-return venture capital funds and investors. Few if any proposals appeal to all the organizations and individuals along this spectrum. Research on the general and specific needs of each is a crucial investment of time during the proposal preparation process. The following description is simplified but not oversimplified. It represents general principles and experience to guide Champions as searches are conducted.

The colours of money – Financial inputs for proposals fundamentally come in four different "colours": revenues for products and services, including operating subsidies; grants that do not need to be repaid; loans that need to be repaid on defined terms; and equity, which is repaid from the profits, if any, from a proposal.

Revenues are the payments made by end users and others on their behalf (e.g., a government-sponsored subsidy programme is a revenue in the form of an operating subsidy).

Grants come from donors: charitable foundations, government-sponsored programmes (including multilateral development organizations and specialized programmes) and other specialized organizations.

Loans come from lenders: government-sponsored development institutions and banks, some charitable foundations, socially responsible and specialized investment funds and from commercial banks.

[5] Loans are made based on the ability of the proposal to repay what is borrowed under clearly defined terms. Equity investments are made in return for a share of the profits upon the success of what is proposed.

Equity comes from investors: owners of businesses or sponsors of social programmes, government-sponsored investment organizations, socially responsible and specialized investment funds, individuals and financial institutions.

Generally speaking – and there are many exceptions – a technology transfer proposal must explore and consider all four types of funding for a variety of needs.

- Revenues are the most logical funding source, first to cover the cost of the product or services provided and, second, to contribute to the operation of the company or programme providing the product or service. Ideally, there will be funds left over to be applied to any loans that have been made and to make a payment (called a dividend) to the providers of equity. This is sometimes called a "waterfall", where monies received are first applied to the cost of the product or service provided (called "cost of goods sold"), second to other operating expenses (these would include taxes, for example, and any interest on loans); third, to loan payments (such payments are called "principal" or "amortization", while the combination of principal and interest on loans is called "debt service").

- Operating grants are a logical addition to revenues when revenues from customers cannot cover the cost of goods and services and there is a compelling social, environmental or other reason to provide this good or service to this customer or client group. Operating grants can come from government-sponsored programmes and charitable foundations.

- Capital grants are used to reduce the cost of a proposal so that loans and equity can cover the balance. Capital grants often reflect a larger set of issues: to make a product or service affordable to customers by lowering the initial cost or to offset an unfair cost disadvantage in one technology versus another or to defray one-time costs of introducing a technology that has important advantages over time.

- Loans are made to fund the construction of a project or the purchase of goods or the provision of services where the revenues from the goods or services are expected to be more than sufficient to repay the loans as and when promised. Some lenders are flexible in their loans for a variety of reasons. Others are absolutely not.

- Equity is also called risk capital and, in some situations, venture capital. Providers of equity – also called "investors" to differentiate them from "lenders" of loans and "donors" of grants – are repaid only if a proposal is successful and profitable.

Notes. *There are a few other ways to finance projects, goods and services but these, upon examination, are actually revenues or grants, loans or equity. Leasing, build-own-operate and transfer (BOOT) contracts and instalment sales or purchases (hire purchase) are loans dressed up in more complicated clothes. So are financing or credit terms from a supplier. Mezzanine debt, preferred shares, quasi-debt and quasi-equity are combinations of loans and equity. Monetization (converting to cash) and sale of carbon credits or pollution benefits are revenues from different customers for the same basic product or service being offered.*

Champions and Enablers alike must

(1) avoid being dazzled by financial engineering jargon;
(2) understand the different "colours" of money;
(3) master the various returns that customers, donors, lenders and investors are seeking.

This latter point is important. When you calculate the cash incoming and outgoing amounts over a period of time it is possible to determine something called a project or proposal rate of return. This is a very rough but important indicator of two things: the proposal's financial feasibility (a negative rate of return means there is more outgoing cash than incoming and it will run out of money at some point in time without additional resources) and the audience which might be interested. Negative and near zero returns require grants and subsidies. Returns above 0 per cent to between 5 and 7 per cent must be examined from the standpoint of both donors and investors who consider social and environmental returns as well as financial ones. Above 5–7 per cent a proposal becomes more and more attractive to larger segments of the private sector (some would argue that 10 per cent is the cross-over point but a lower threshold does not signify lack of interest, merely that the proposal should be examined as requiring a combination of debt and equity and other funding). To be comfortable categorizing a proposal as private-sector-oriented, a "double digit" return is generally needed.

Customization: Some features of even a well thought out "triple-bottom-line" proposal – one that combines development, environment and financial returns – may require greater emphasis for particular audiences. These customizations will be addressed in more detail in later sessions but are introduced here to begin us thinking about our different audiences and their needs.

Logical frameworks are statements of the larger context into which a proposal may fit. These are often important to charitable and social change organizations, and can be helpful in placing a proposal in the "larger world" that may underpin decisions by such organizations.

Carbon benefits can sometimes be monetized – converted to cash – but this requires understanding special processes. The core concepts to understand can be called "baseline", "incremental benefit" and "value".

Loans require an understanding of the requirements and process of lenders. Metrics such as debt service coverage ratios and clear descriptions of collateral and guarantees[6] advance discussions regarding loans.

Return on equity is a key indicator for certain private sector investors and a clear presentation of this will determine how much attention some commercial investors will give a proposal. This is simply a measure of the cash flow that remains after all other participants in the proposal have been paid as agreed and after all agreed-to amounts have been set aside for future purposes. When financial experts talk about the bottom line this is usually the line they are referring to.

[6] Binding promises to pay or turn over particular property under certain conditions.

VI. SESSION FIVE
WHAT AND WHERE? PRODUCT, SERVICE, TECHNOLOGY

AND CLIENTS … MARKET AND SETTING

Day two. *Sessions Five through Nine are less compartmentalized than the first four sessions. This commences the more interactive and team-oriented phase of the workshop. We have the materials – proposals – and we have the tools – from the first 4 sessions – so now we commence the process of building something (after all, this is a workshop not a classroom). Since we are building something there really is no right or wrong answer. We examine what we have and suggest improvements. This day of the work shop can be very free flowing.*

Organizing Principle: **"There are lots of good ideas and there are many capable people; but for a good idea to work in the hands of capable people it must be the right ideas in the right place at the right time."**

Session Objectives: to identify the key elements that must be identified, understood and described in a well-prepared and presented proposal … to set forth the required data needed to accurately present a picture of the market, business, governing and civil society conditions that will underpin the success or failure of a proposal

Information Content: what comprises a good description of products, etcetera … and the content of our assigned proposals

Structure: Short Lecture plus Hands-on Team Exercise

This session can be well described by a series of questions that you can re-phrase to meet your own management or professional style

- Why is this product the correct one to offer to these customers?
- Why choose this technology?
- What makes us think we can succeed with these customers, this technology, this product offering here?
- What are the laws, regulations and local conditions that must be observed?
- What permits must be obtained and from whom?
- What formal and informal approvals and permissions must be obtained in advance and observed throughout the period of operation?
- What products and services are used now?
- Why would customers switch to the proposed product or service?
- Who else offers products and services that these customers might use?
- Why would they choose the proposed product or service

In this session we begin the intersection of the question method, the templates, either printed or in spreadsheet form, and the sample proposals at the back of this work book (by now these have been assigned to teams that include the Champion, a colleague mentor and other colleagues).

Exercise:

(1) conduct a detailed review of your assigned proposal
(2) identify the key elements (included and missing)
(3) if desired the team can enter inputs to templates
(4) prepare a 5 minute or less report regarding What? Where? and the apparent completeness and balance of the submission
(5) preparing a list of the items the Champion needs to explore.

6.1. ADDITIONAL WHAT AND WHERE CHECKLIST

Product and service description

- Description: Water or cooking fuel and heat or lighting are all products. So is electricity sold to an electrical utility, and so are drought-resistant sweet sorghum varieties. By way of contrast, biogas produced from poultry litter mixed with water in a fixed-drum, below-ground digester, run through an adapted diesel generating set to produce electricity to power a pump to transport water to a tank for gravity-fed on-demand water distribution to a village is not a product or a service. It is a technology.

- The need being satisfied: Clean water at the household satisfies convenience, health and labour needs and avoids a variety of inconveniences, and also unhealthy, time-consuming chores.

- New product, new market or both? Has this been done before? Has it been done in a market like this market?

- Testing of product or service in the proposal's market: **It is expected to be accepted as a new or replacement product or service because ... Fill in the blank!**

Technology description

- Description: How it works in clear, non-technical terms, combined with references for further information. An eight-page technology description in a 12-page proposal is not a good sign.
- Experience of and with the technology: Global, country, immediate market and Champion, installation, operations and maintenance.
- Testing of technology in proposal's market.
- Components.
- Source(s) of inputs and outputs.
- Various sizes, approximate cost and approximate price to customers.
- Alternative sources (plan B).
- Determination that price is transparent and competitive.
- Maintenance requirements.
- Other technologies delivering similar products or services.

Description of client group or customers

- Types of customers and clients targeted
- Approximate number of customers (current and next three years)
- Customers' income and fluctuations in it
- Current product or service being used
- Why customers will use the new product or service
- How customers will be reached

Notes. *If the proposal involves revenue from one large or a few customers (such as a utility or municipality), then the "health" of that customer needs to be examined:*

- *Core business performance of large customer (just because it is big does not mean that it is sustainable and competitive)*
- *Credit rating and track record of paying bills*
- *If the customer fails, what are the options?*

Competitors

- Other companies or programmes targeting these customers
- Similarities between those competitors and this proposal
- Differences between those competitors and this proposal
- Why customers will choose the proposed new product or service

Notes. *Competitors include all activities, whether charitable or for profit, where the activities touch even lightly on the product or service being proposed. For non-profit activities, competitors also include any programmes competing for the same source of funding.*

Description of market setting

- Size
- Population
- Per capita GDP
- Income distribution
- Exchange rate
- Inflation rates (three years)
- Interest rate for deposits
- Interest rates for bank loans

Description of regulatory setting

- Permits needed to start a business
- Non-governmental organization permits needed
- Permits needed to study a project or undertake a feasibility study
- Permits needed to obtain a concession
- Permits needed to use a natural resource
- Permits needed to use roads or cross public lands
- Environmental permits and processes
- Construction permits
- Operating permits
- Applicable taxes and regulations

Description of operating setting

- Obtaining land or premises
- Security and corruption
- Hiring and firing
- Getting loans
- Contractors
- Transport
- Contract enforceability
- Interaction with inspectors and other public officials

VII. SESSION SIX
WHO AND HOW? TEAM AND PLAN

Session Objectives: to set forth what constitutes a reasonably complete and balanced inventory of the skills and human resources required for preparing, presenting and implementing a successful proposal ... to convert the information thus far gathered into a clearly articulated plan of action with time and resource boundaries

Organizing Principle: **"Rarely do things go as planned; people make the course corrections that decides success or failure."**

Information Content: the skill sets and experience needed

Technique Content: how to objectively decide what is needed and available, whether you are a Champion or an Enabler ... different ways to fill gaps.

Structure: Short Lecture and Team Exercise.

Exercise: using the assigned proposal

(1) discuss the needed skills and possible skill gaps ... recognizing the completeness (or not) of information from the planning, construction/ pre-operation and operating perspectives,
(2) analyze the completeness of the planning, construction, pre-operation and operation plans presented,
(3) summarize the results and suggested improvements needed both within the group and then present this summary to the larger set of groups.

If possible, summarize the financial dimensions of the proposals in Payback, NPV, IRR and/or debt service terms. **Reminder**-Negative IRRs simply indicate the amount of subsidy or cost cutting or revenue enhancement needed to determine a final rate of return.

Introducing the team (answering the question "Who?") – evaluating and presenting the team and the stakeholders; showing who will be involved

- Describe the Champion and evaluate his or her strengths, weaknesses and motivation.
- Describe the owners or sponsors, what they are bringing, the level of their commitments and their motivation.
- Describe the employees, staff and advisors who will be involved and match the assembled skill set of the Champion, owners, employees, staff and advisors against a list of the skills required for the proposal's implementation.
- Show how the plan will be organized at its various stages. This is an important juncture for being clear about the schedule and timing of what is proposed.
- Describe all the formal and informal parties who will be involved, including different levels of civil society and government. Start thinking about all the things that others might do to disrupt what is planned, for personal or political gain.

Questions: What are the shortcomings of the team? What skill sets and experience are missing? How will this be managed? What are the roadblocks that others can put in the way of getting the plan implemented? What will it mean? How can this potential roadblock be avoided?

Explaining the plan (answering the question "How?") – organizing and presenting the steps to implementation: How will the core idea be turned into an operating reality?

- Describe the proposal in terms of blocks of time ("To finish planning" "To reach financial closure" "To build" "To commence operations"). Under each block of time itemize the subtasks that need to be accomplished and the approvals that need to be obtained. Add for each subtask an estimate of the cost and revenues.
- Sketch out how the proposal will be managed (organization chart or organigram).

Questions: Is everything included? Do all critical tasks fit within identifiable blocks of time? What are the critical items that can bring the plan to a halt? Have cost and other resource estimates been prepared for each **and all** of the tasks? Are there details for just the construction or roll-out phase or have the operational tasks been planned for the entire life of the project? Are there different staffing plans for the different phases? How are these reflected in estimates? How will the technology, product, service or facility be built or acquired? What are the sources of equipment, raw materials and labour? Is there a clear division of labour and accountability during each phase?

7.1. NOTES AND COMMENTS ON BUILDING A TEAM

The Importance of Champion and Team Assessment cannot be overstressed. A Champion is willing to invest his or her money, time and reputation to turn a viable core idea into a successful enterprise and a full-time opportunity. Early in the relationship, an enabling organization needs to have a tangible sense as to the money, asset and time commitment of the entrepreneur.

Champions need help, especially easy-to-use guidance that responds to the needs of enabling organizations. Further, Champions need information to access, particularly with respect to sources of funding and other support. Providing active assistance and support entails a three-five-year "marriage" with a Champion that has much against it. Enablers need to choose the right Champion and vice versa.

At the same time, do not let personal preferences cloud judgments. The "right partner" is a good **business** partner, though he or she might not be someone with whom you want to share a social meal. And we need to be careful of Champions who come to business sectors via politically connected entry points and without experience.

There are many good ideas, and for every good idea that is successfully implemented, there are hundreds that never go forward. And while there are many ingredients that need to come together for a good idea to translate to successful implementation, the most important ingredient is the Champion: that individual or small group committed to the idea. However, **more than commitment is needed.** Before beginning the serious work of preparing a proposal, its Champion needs to undertake a rigorous inventory of two things: motivation and capabilities.

Motivation: what are the underlying reasons why the Champion is committing his or her time, money and reputation to this proposal? Is it about an amount of money (income or wealth creation)? About building a track record and experience base? About social or environmental change? Or for a combination of these things or other reasons?

Is the commitment serious, meaning full-time involvement (few Champions engage part-time)? Is there a match (or a mismatch) between the objectives of the Champion and the likely outcome of the proposal's success? (If the Champion wishes to build some wealth in five years, creating even a successful household energy programme in poor rural communities is probably not the way to do so.)

7.2. MOTIVATION AND CAPABILITIES CHECKLIST

The first order of business is for the Champion to take inventory of his or her or the team's motives:

- Regular income
- Wealth creation
- Permanent organization
- Gain experience
- Social improvement
- Environmental improvement
- Other

The second order of business is to determine, honestly and openly, whether these motivations are consistent with the proposal being prepared or if there is a mismatch. Proposals are difficult enough to implement without having a conflict between the Champion's motivation and the work in hand.

Capabilities: having the will and the motivation is not enough (being ready to do something is not the same as being ready and prepared). Enabling organizations will look closely at the skill set and experience base presented in a proposal. The greatest engineering design capability must be balanced with many other skills, and the financial wizard needs to possess and demonstrate planning and implementation skills. Most proposals require a mix of skills, including:

- Day-to-day operations and management
- Financial planning
- Legal and regulatory matters
- Negotiations
- Bank and investor relations
- Design
- Engineering
- Procurement and purchasing
- Construction
- Operations and maintenance
- Sales and marketing
- Reporting, monitoring and evaluation

What the Champion possesses needs to be honestly evaluated. What are weak or missing needs should be balanced by additions to the team or be clearly identified as gaps to be filled (and budgeted for!). These additions can come from other owner-investors, employees or contractors. The finished picture, however, should show the requisite expertise across a number of disciplines:

- Technical
- Operational
- Financial
- Legal
- Sales and service
- Marketing
- Political
- Fund-raising

It is quite easy and natural to overrate what we each bring to a proposal; investors, donors and lenders can be convinced sometimes. However, the reality will be much harsher during implementation. An honest self- and team assessment may result in a more costly proposal. It may even result in a proposal that is not feasible. Nevertheless, having a smaller project or an infeasible proposal is quite a bit easier on the Champion than having an approved, under-resourced proposal that fails in the field.

VIII. SESSION SEVEN
WHY? BENEFITS AND IMPACTS

Organizing Principle: "Assess everything. We cannot know in advance what might be attractive to all donors, lenders and investors. Nor can we anticipate where or when lightning will strike."

Session Objectives: to create an inventory of strengths and weaknesses ... to assess all benefits and negative impacts requiring attention ... to introduce a commonly framework for classifying proposals

Information Content: Type A, B and C definitions and excluded projects

Technique Content: minimal, other than recognizing the differences between classifications and among projects

Structure: Lecture with Examples followed by exercise, followed by discussion: is this an important part of the training? Why?

Exercises: with the close assistance of the Champion

(1) itemize all the benefits and consequences of the proposals
(2) begin to synthesize the benefits with your prior descriptive materials into what should become a compact, brief, positive presentation of the proposal
(3) deal with the negative aspects of the proposal upfront and integrate these into the summary.
(4) discuss various ways to "pitch" the proposal to different audience.
(5) summarize this material and present to the larger set of groups. Get their feedback on possible improvements.

This session is devoted to describing the benefits and impacts (answering the question "Why?") as well as estimating the impacts, outcomes and expectations of the proposal. This involves itemizing benefits, and making an inventory of proposal impacts and mitigation measures.

Benefits: There are just a few parts of the process that require sitting back and thinking outside the confines of the evolving plan. This is one of those. Proposals tend to begin and evolve around a core idea or two, but often there are many other benefits. Not only that, there are potential impacts that need to be understood earlier rather than later.

A proposal to build a hydroelectric facility can begin with a renewable energy focus, but there are construction job, operating jobs, land reclamation, rural development, greenhouse gas, reforestation and market development possibilities.

Champions tend to be driven by their core objectives and that is a very good thing because focus gets things done. It is not suggested that side activities should be added to core ones for the sake of gathering up additional benefits. What is suggested here, however, is to make a careful appraisal of all the impacts, positive and negative that might occur because it is essential to understand them as they may prove important to others.

Donors, lenders and investors are all conscious of these issues, so a complete assessment and an understanding of the language (the language of category A, category B and category C projects) will make a proposal more balanced and complete. Make sure to count all the potential benefits of the proposal and make sure to account for all its potential social and environmental consequences.

Itemize benefits, such as:

- Introduction of new technology, construction and operating skills and jobs
- Income value of new jobs
- Indirect income benefits
- Land area improved – soil, vegetation, water, appearance
- Number of new seedlings and trees
- Improved public areas and infrastructure (linear feet of road or hectares of land)
- Clean water (litres)
- Sustainable fuel (kg of oil equivalent)
- Total funding mobilized
- Public utilities (electricity, water) supplied
- Educational and informational activities

8.1. SPECIAL BENEFITS FOR "STRATEGIC" INVESTOR OR DONOR

What follows is a short but potentially important subtask depending on whether a specific type of investor (strategic investor) has an interest in a proposal. The Champion should identify any special knowledge, infrastructure, experience or reputation benefit that the proposal might offer to a special type of investor: one who wants to learn and gain experience or "test the water" but would rather do so through someone else.

- Will the proposal **create** groundbreaking policy changes that could open the market to others?
- Will the proposal **offer information and experience** at a fraction of the cost of someone new gathering the information directly?
- Will the proposal teach **skills** that will allow others to expand if they had those skills and that experience?

Impacts: Not all projects or proposals are created equal. Some are destined to disturb the environmental and social status quo quite a bit. Some, less so. And some will have significant impacts – both positive and negative.

A classification system of sorts has been adopted by organizations, especially multilateral development and commercial banks, which tries to create broad categories of projects.

8.1.1. CATEGORY A

A proposal is classified as category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse or unprecedented.

Projects that require particular attention include:

- Dams and reservoirs
- Large-scale industrial plants and estates
- Major oil and gas developments, including major pipelines
- Large thermal and hydropower developments
- Domestic and hazardous waste disposal operations
- Pest management (significant use of man-made pesticides/agrochemicals)
- Properties occupied by indigenous peoples or containing cultural heritage sites or critical natural habitats
- Locations requiring the involuntary loss of land, housing or livelihoods by occupants
- Forests (commercial logging operations or logging in primary humid tropical forests)
- International waterways
- Hazardous materials, air pollution, noise or odours
- Use of chlorofluorocarbons (CFCs) or other ozone-depleting substances

8.1.2. CATEGORY B

Projects are classified as category B if their potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – are less adverse than those of category A. Impacts are in this case site-specific; few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects.

8.1.3. CATEGORY C

A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening (documenting), no further action is required for a category C project.

8.2. ADDITIONAL INFORMATION: PROJECT CLASSIFICATIONS AND EXCLUSIONS

Category A → Projects with significant impacts: a proposal is classified as category A if it is likely to have significant adverse environmental impacts that are sensitive[7], diverse or unprecedented. These investments may affect an area broader than the sites or facilities proposed by the Champion. An environmental assessment for a category A investment examines the potential positive and negative impacts, compares them with those of feasible alternatives (including the "without project" scenario), and recommends the measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve performance. A full environmental assessment is required, which is normally called an environmental impact assessment (EIA).

Typical category A projects	
Projects affecting indigenous people	Construction of dams and reservoirs
Projects involving resettlement of communities/families	Pesticides and herbicides: production or commercial use
All projects which pose serious socioeconomic concerns	Major irrigation projects or other projects affecting water supply in a given region
Projects associated with induced development (e.g., inward migration)	Domestic or hazardous waste disposal operations
Projects which impact on cultural property (e.g., religious and archaeological sites)	Hazardous chemicals: manufacture, storage or transportation above a threshold volume.
Projects which pose serious occupational or health risks	Oil and gas developments, including pipeline construction
Impacts on protected natural habitats or areas of high biological diversity, including wetlands, coral reefs and mangroves	Large infrastructure projects, including development of ports and harbours, airports, roads, rail and mass transit systems
Forestry operations (commercial logging operations or logging in primary humid tropical forests)	Metal smelting, refining and foundry operations
Large thermal and hydropower developments	Mining (opencast and pit)
Large-scale industrial plants and estates	International waterways
Use of chlorofluorocarbons (CFCs) or other ozone-depleting substances	Hazardous materials, air pollution, noise or odours

Category B → Projects with impacts: projects are classified as category B if their potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – are **less adverse than those of category A. Impacts are site-specific;** few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for category A projects.

The scope of an **environmental assessment for a category B investment may vary** from project to project, but it is narrower than that of an environmental assessment for category A, but, like a category A environmental assessment, it examines the potential positive and negative impacts and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance.

A wide range of environmental guidelines have been developed by local or country authorities, and also by a number of organizations, including the World Bank Group (e.g., Pollution Prevention and Abatement Handbook, Occupational Health and Safety Guidelines), to clarify the category of a project and its appropriate handling.

[7] A potential impact is considered "sensitive" if it may be irreversible (e.g., lead to loss of a major natural habitat), affect vulnerable groups of ethnic minorities, involve involuntary displacement and resettlement, or affect significant cultural heritage sites.

Typical category B projects	
Specific waste disposal issues	Solar photovoltaic (if batteries used)
Waste handling	Biomass/biogas
Routing, partially storing river flows	Small to medium-sized hydroelectricity projects

Category C → Projects with no or minimal impacts: a proposed investment is classified as category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening (documenting), no further action is required for a category C project.

Typical category C projects	
Pre-feasibility study preparation	Energy efficiency
Consulting firms	Share registries
Service industries	Stock broking
Technical assistance	Retail banking

Exclusions: of course, there are activities with the clear potential to pose unacceptable social and environmental risks that tend to be "unclassified" as A, B or C.

Examples of projects to be avoided include:

- Production or activities involving harmful or exploitative forms of child labour
- Production of or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements
- Production of or trade in weapons and munitions
- Production of or trade in alcoholic beverages (excluding beer and wine)
- Production of or trade in tobacco
- Gambling casinos and equivalent enterprises
- Trade in wildlife or wildlife products regulated under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Production of or trade in radioactive materials
- Production of or trade in or use of unbonded asbestos fibres
- Commercial logging operations in primary humid tropical forest
- Production of or trade in products containing polychlorinated biphenyls (PCBs)
- Production of or trade in pharmaceuticals subject to phase-outs or bans
- Production of or trade in ozone-depleting substances subject to phase-out
- Drift-net fishing in the marine environment using nets in excess of 2 km in length

IX. SESSION EIGHT BUILDING AND UNDERSTANDING THE BASE CASE

Session Objectives: to convert what has been learned and assumed into a clearly articulated, quantitatively bounded presentation

Information Content: base case components

Technique Content: data classification and input

Structure: Short Lecture, which will be just an overview of what will then be done together, followed by the completion of templates or equivalent summaries by groups

Reference Materials: templates

Building the base case: Using a building-block approach begins with putting words and numbers in boxes and then running those numbers through a process that each of us can understand and duplicate.

Champions new to this process should go through each subtask until every one of the numbers is identified. Enablers should inventory this approach and determine how it does or does not fit into their own base case financial analysis. Once this flow is mastered it will seem natural.

- Building the basic assumptions
- Evaluating feasibility
- Adding a financing plan
- Testing

Basic assumptions take two forms: The first is a narrative explanation of what is expected to occur. The second is the conversion of those assumptions into numbers that represent the costs and revenues explained. The following is a typical sample of both. The actual types of tasks vary from project to project but this is just a technicality and an expansion or contraction of the template grid.

Typical project proposal

	Planning costs	Year -2 months 1 – 12	Year -1 months 13 – 24	Year 0 months 25 – 36	Total
P1	Obtaining all permits	15,000			15,000
P2	Technical analysis	10,000			10,000
P3	Negotiating and preparing contracts	5,000			5,000
P4	Negotiating and preparing contracts		10,000		10,000
P5	Technical analysis		5,000		5,000
	Total	30,000	15,000	0	45,000

Narrative description and conversion into numbers and money equivalent

- Planning costs will total 45,000, consisting of P1, P2, P3 and P4 etc., carried out in years -2 and -1[8] of the proposal as follows.

- Construction will occur over three years and total 1,070,000, comprising the following: C1, C2, C3, C4, etc. Prices are based on a lump-sum estimate with a 15 per cent contingency factor for unforeseen events.

	Construction /preoperations costs		**Year -2 months 1 – 12**	**Year -1 months 13 – 24**	**Year 0 months 25 – 36**	**Year 1 months 37 – 48**	**Year 2 months 49 – 60**	**Total**
C1	Land acquisition		240,000					240,000
C2	Final engineering and design		110,000					110,000
C3	Machinery		2,381					2,381
C4	Machinery			200,000				200,000
C5	Machinery			111,000				111,000
C6	Machinery			22,333				22,333
C7	Testing				300,000			300,000
C8	Testing				33,333			33,333
	Subtotal		352,381	333,333	333,333			1,019,047
C9	Annual interest during construction	5%	17,619	16,667	16,667	0	0	50,952
	Total		**370,000**	**350,000**	**350,000**	**0**	**0**	**1,070,000**

- Full-year revenue equals 304,000 and may be reached after six months. For planning purposes it is assumed that full-year revenues will not occur until year 4 and years 1, 2 and 3 have been estimated at 140,000, 241,000 and 261,000 based on lower prices and production in year 1 and lower production in years 2 and 3. Revenues are expected to grow at the rate of inflation but are held constant throughout the proposal so as to be conservative.

[8] -2 and -1 equal "minus two" and "minus one", meaning two years and one year before operations (product or service delivery) commences. This is important information content.

	Revenues	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 – 15
	Units	400	550	650	700	700	700
	Revenue per unit	200	200	200	200	200	200
R1	**Revenue from 1**	80,000	110,000	130,000	140,000	140,000	140,000
	Units	300	520	520	670	670	670
	Revenue per unit	200	200	200	200	200	200
R2	**Revenue from 2**	60,000	104,000	104,000	134,000	134,000	134,000
	Units		180	180	200	200	200
	Revenue per unit		150	150	150	150	150
R3	**Revenue from 3**	0	27,000	27,000	30,000	30,000	30,000
	Revenues	**140,000**	**241,000**	**261,000**	**304,000**	**304,000**	**304,000**

- Operating costs include O1, O2, O3, O4, etc., and total a yearly average of 122,000, of which an average of 110,000 relates to direct costs and 12,000 relates to the cost of general administration. Operating costs are expected to grow at half the rate of inflation. Because revenue growth is not included and because it exceeds expected operating cost growth, operating costs for years 5 – 15 have been held constant.

	Operating costs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 – 15
O1	Labour	5,000	6,000	7,000	8,000	9,000	9,000
O2	Rent	50,000	50,000	50,000	50,000	50,000	50,000
O3	Communications	5,000	5,000	5,000	5,000	5,000	5,000
O4	Materials	50,000	50,000	50,000	50,000	50,000	50,000
	Operating costs subtotal	110,000	111,000	112,000	113,000	114,000	114,000
	General and administrative costs	12,000	12,000	12,000	12,000	12,000	12,000
	Total	**122,000**	**123,000**	**124,000**	**125,000**	**126,000**	**126,000**

- Grants totalling 62,500 will be received from NAME organization to reduce the capital cost and to cushion the first year of operation. **It is important to emphasize here that "business techniques" of analysis apply equally to charitable, philanthropic and social-environmental proposals; in fact these techniques allow grant requirements to be accurately estimated and presented.**

	Grants and subsidies	Year -2	Year -1	Year 0	Year 1	Year 2
1	For planning or construction/pre-operation					
	NEW requests			25,000		
	Existing or other requested grants and subsidies			25,000		
2	For operation					
	For operation – existing or other requested				12,500	
	Total	0	0	50,000	12,500	0

This is a very straightforward, methodical process of placing all the financial inputs and outputs into their proper classification – planning, construction or operation – and placing these estimates into their appropriate time periods.

If done carefully, this detailed but simple exercise serves as the foundation for what can sometimes seem to be complex calculations. In reality, the resulting calculations are nothing but the refinement and manipulation of the basic data prepared in tables such as the ones above.

Feasibility analysis uses the basic assumption information to determine a rough project or proposal rate of return on a before-tax basis. It is simply a matter of posting the capital costs and the operating revenues and costs in their appropriate years. If dealing with a project proposal, then the time limit is set by the proposal. For enterprises or more open-ended proposals, 15 years is a good time frame for estimates. Net present value and internal rate of return techniques give a time value to money. Anything beyond 15 years tends to have very little impact on these.

For Template Practice: Place planning, construction and operating results in their appropriate years (year 1 being the first year of operations, prior years being zero, minus one, minus two, etc.)

- For each year, total the amounts outgoing and incoming. Total capital costs are a minus because these are outflows; grants are a plus because these are inflows; operating cash flow is a combination of ins and outs
- For each year, total the cash flow (out equals minus; in equals positive)
- Calculate the internal rate of return
- Interpret results

Results	Total all years "undis-counted cash flow"	Year -2	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6–15
Planning costs	45,000	30,000	15,000							
Construction/ pre-operations costs	1,070,000	370,000	350,000	350,000						
Capital costs	**1,115,000**	**400,000**	**365,000**	**350,000**						
Grants and subsides For planning, construc-tion or pre-operation	50,000			50,000						
For operations	12,500				12,500					
Grants and subsidies	**62,500**			**50,000**	**12,500**					
Revenues	4,290,000				140,000	241,000	261,000	304,000	304,000	304,000
Operating costs	1,880,000				122,000	123,000	124,000	125,000	126,000	126,000
Net revenue from operations	2,410,000				18,000	118,000	137,000	179,000	178,000	178,000
Operating grant	12,500				12,500					
EBITDA[9]	2,422,500				30,500	118,000	137,000	179,000	178,000	178,000
Simple feasibility test using pre-tax IRR for 15 years	**10%**	**(400,000)**	**(365,000)**	**(300,000)**	**43,000**	**118,000**	**137,000**	**179,000**	**178,000**	**178,000**

How to (roughly) interpret pre-tax IRR:

- If negative, revenues and existing grants cannot cover the capital and the operating costs of the proposal. Without **additional revenues, grants or subsidy,** the proposal is probably not financially viable.
- If positive but below 5–7 per cent, the proposal is financially self-sustaining but may be of limited interest to the private sector. Specialized lenders, investors and donors who value development, environmental and market transformation impact may consider such a proposal.
- If positive and over 5–7 per cent, the proposal's financial details (especially tax implications, debt structure and any additional revenues) need to be developed further and different financing schemes considered; the result may or may not be of interest to the private sector. Specialized lenders, investors and donors who see the blended value potential of investments are likely to be targets.
- If over 10 per cent, the financial details need to be developed with a strong view towards engaging private-sector investors and lenders.

[9] EBITDA = Earnings before interest, taxes, depreciation and amortization.

A financing plan is an approximation of how much of a proposal's cost will be covered with its future revenues, divided between the "big three" sources of funding for launching proposals: grants from donors, loans from lenders and equity from owner-investors.

- Over its life (say 15 years), what will be the excess or deficit of revenues versus day-to-day operating costs?
- How much of the capital cost can reasonably be expected to come from grants?
- Of the balance, how much do the present owners expect to contribute? (**Note.** If the value of "sweat equity" has been included in the capital-cost estimate then that value can be combined with the cash that an owner will bring.)
- Of what remains to be financed, what is a reasonable split between new investors providing equity and loans? The higher the simple feasibility test number the more likely will be the prospect of securing loans. Rarely will banks finance more than 70 per cent of this total regardless of the attractiveness of the project return calculation.
- Estimate the cost of a loan (interest rate). This will probably be a few percentage points higher than is offered to the best companies in a country.
- Test a few different loan methods.
- Determine annual debt service coverage results.
- Repeat, modifying the percentage of debt and method until a reasonable coverage can be shown. "Reasonable" begins somewhere around 1.3 times to about 1.6 times (that is, the amount available to pay debt service is between 130 per cent and 160 per cent of the amount which must be paid).
- Repeat with different combinations of grants, investment and equity.

From the previous steps we now know the following:

Capital costs are	1,115,000	
Amount to be paid with grants	50,000	
Balance	1,065,000	
Owner's equity investment (amount from Champion)	100,000	
Balance to be raised	965,000	
Equity from new owner – investors	365,000	
Balance to be raised from loans	**600,000**	56%

In order to implement this proposal, a 600,000 loan is needed. The next steps are to calculate what terms are affordable, so let us **assume:**

Loan amount	600,000
Assumed interest rate	8.5%
Number of years of loan	10

Optional: Lesson within session – this is often a very difficult concept and should be tested] There are three debt service coverage methods that need to be compared:

(1) Interest only for three years, followed by equal payments every year
(2) Equal payments every year
(3) Interest based on the unpaid balance (principal) with equal principal payments every year

			Year 1	Year 2	Year 3	Year 4 etc.
	Method 1					
Enter this amount in years 1, 2 and 3	51,000		51,000	51,000	51,000	
Enter this amount in year 4 to the end	117,222					117,222
		Debt service*	51,000	51,000	51,000	117,222
		Loan balance	600,000	600,000	600,000	533,778
		Interest	-51,000	-51,000	-51,000	-51,000
	Method 2					
Enter this amount in year 1 to the end	91,445	Debt service*	91,445	91,445	91,445	91,445
		Interest	-51,000	-47,562	-43,832	-39,785
		Loan balance	559,555	515,673	468,061	416,401
	Method 3					
Enter this amount in year 1 to the end	60,000	Principal	60,000	60,000	60,000	60,000
		Interest	51,000	45,900	40,800	35,700
		Debt service*	111,000	105,900	100,800	95,700
		Loan balance	540,000	480,000	420,000	360,000

*Debt service coverage is the combination of principal and interest to be paid on a loan.

One very important measure of whether a loan makes sense is to compare the amount of monies expected in that year from all sources (after paying all the bills) to the debt service payment to be made.

	Year 1	Year 2	Year 3	Year 4
Net revenue available for debt service	30,500	118,000	137,000	179,000
Debt service method 1	51,000	51,000	51,000	117,222
Debt service method 2	91,445	91,445	91,445	91,445
Debt service method 3	111,000	105,900	100,800	95,700

If a debt service payment (p+i) totals 51,000 and the monies available total 118,000 in the same currency, the debt service coverage ratio is 2.3. Such would be the case for a loan for which only interest is paid in the early years. However, if the loan repayment is principal and interest such that an equal amount is paid every year, then the debt service could total 91,000. The resulting debt service coverage ratio (DSCR) is then 1.3 (118,000/91,445). When seeking a loan, annual debt service coverage calculations are important.

In this example, method 2 arrives at and remains at a reliable, conservative coverage ratio.

Keep in mind:

- **That lenders tend to worry about DSCRs that are 1.4 or below.**
- **That lenders may restrict the amount of cash that can be distributed to investors/owners.**
- **That lenders can insist that certain debt service coverage "tests" must be met.**
- **That lenders can insist on reserves being set aside for future debt service before payments to investors/owners (called "dividends") can be made.**

A **base case** is the best available thinking on the combination of grants, loans and investment to finance a proposal and the cash flows that result from operations. Once a financing plan is in place, it is a straightforward process to calculate depreciation and taxes, combine that result with principal and interest information and build a complete picture: cash flow incoming and outgoing items, debt service structure and results, income statement and investor return. A balance sheet can also be built up, but it is really an extra at this point.

	Year 1	Year 2	Year 3	Year 4
Debt service coverage ratio method 1	0.6	2.3	2.7	1.5
DSCR method 2	0.3	1.3	1.5	2.0
DCSR method 3	0.3	1.1	1.4	1.9

Base case – financial, social and environmental

				Year -2	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4
Capital costs										
From donors	Capital grants		50,000			50,000				
From owner-investors	Equity investment		465,000	174,648	159,366	130,986 44% of total value				
From lenders	Loans		600,000	225,352	205,634	169,014 56% of total value				
	Capital costs		**1,115,000**	**400,000**	**365,000**	**350,000**				
Operations										
Revenues	4,290,000						140,000	241,000	261,000	304,000
Operating grants or subsidies	12,500						12,500	0	0	0
Operating costs	1,880,000						122,000	123,000	124,000	125,000
Net revenues from operations (EBITDA)	1,532,500 (For length of loan only)						30,500	118,000	137,000	179,000
Interest	314,446						51,000	47,562	43,832	39,785
Taxes							0	0	792	12,304
Depreciation							90,000	90,000	90,000	90,000
Net income							(110,500)	(19,562)	2,376	36,911
Add back: Depreciation							90,000	90,000	90,000	90,000
Less: amortization/ principal pay ments	600,000						40,445	43,882	47,612	51,659
Net cash flow to ownerinvestors		IRR	**8.4%**	(174,648)	(159,366)	(130,366)	(60,945)	26,555	44,763	75,252
DSCR	1.68						0.33	1.29	1.50	1.96

Most of the above information is simply a build-up of previous work. What is new here are a few simple statements: the return to investors and the debt service coverage results. These metrics, combined with the social and environmental impacts of the proposal, are what is being offered to donors, lenders and investors.

Once mastered, this building-block process can be applied to many proposals and situations and will allow conversations between Champions and Enablers (and even with financial experts). **This is the confidence building exercise to be practiced and discussed.**

Impact	Year -2	Year -1	Year 0	Year 1	Year 2 etc.
Construction jobs (no.)					
Operating jobs (no.)					
Improved income (amt.)					
Clean water (litres)					
Land improvements (hectares)					
Education and information inputs (hours)					
Reduced unsustainable fuel (kg)					
Avoided greenhouse gas (CO_2)					

X. SESSION NINE
WHAT IF? CONDUCTING SENSITIVITY ANALYSIS

Organizing Principle: "Nothing goes as planned!"

Session Objectives: to test the base case and thereby determine its vulnerability to changes in assumptions

Information Content: problems can be grouped together and impact assessed more easily

Technique Content: sensitivity analysis and summarizing impacts

Structure: Lecture and Exercise (classifying different events into groups of events), followed by a What if? Discussion

Exercise:

(1) classify various events into What if? Impact Groups;
(2) prepare a contingency list and begin the discussion of Risks
(3) identify the major risks, possible mitigation measures
(4) incorporate into your groups summary
(5) report to the larger group on both the base case and your What if? Scenarios.

This session deals with lessons that most Champions see (initially) as unnecessary. This comes from their belief that the proposal will roll out as planned. Convincing Champions to undertake and present contingency planning can be an easy or a very difficult chore. Intractable responses by Champions are a good indicator of inflexibility and a cause for worry.

Preparing sensitivity analyses – answering the question "What If? – is basically asking, "Really (really), how reasonable is it to expect these results?

- Itemize the list of things that might not go as planned (timing, cost, revenue, output variations).

- Itemize the list of things outside the plan that might affect its implementation (loss of a key person, macroeconomic factors, instability).

  Sample Questions: What if the primary source of raw materials, products or construction is not available? What if costs are higher or lower? What if units sold or delivered are fewer or more? What if key members of the team are not available?

This process is not as complex as it might seem. It is built on an understanding of the interrelationships among the pieces of a proposal.

Many things can cause costs to be 5 per cent higher. It is not necessary to calculate each one. It suffices to say that a 5 per cent cost increase can be caused by any or all of the following factors X, Y or Z and that such an increase will have the following effect on the proposal's results measured by the financial, social and environmental metrics (in the case of the financial metric, IRR). This statement – that grouping similar types of events into categories reduces the complexity of sensitivity analysis is a good "selling" feature to advertise and is the basis of the exercise in this session.

Impacts on base case – Examine seven "What If" questions (scenarios) and their impact on this typical Base Case (from the previous exercise):

Base case			What If	IRR	Average DSCR
Capital cost	1,115,000	A	5% higher, all equity	7.3%	no change
Year 1 revenue	140,000	B	20% lower	7.9%	1.65
Year 2 revenue	241,000	C	20% lower	7.7%	1.62
Revenue – all	4,290,000	D	10% lower	3.6%	1.37
Revenue – all	4,290,000	E	10% lower	12.6%	1.98
Operating costs – all	1,880,000	F	15% higher	5.3%	1.47
Cost of debt	8.5%	G	9.5%	8.0%	1.60
IRR to investors	8.4%				
Average DSCR	1.68				

Social and environmental impact sensitivity of various "cases"

- Case A: no change unless programme is curtailed to avoid higher cost
- Case B: less local employment and income generation pro rata
- Case C: same as B
- Cases D and E: 10 per cent changes will have minimal impact on social and environmental improvements
- Case F: no impact

Discuss and consider: Which of the preceding cases pose serious threats to the viability of the proposal?

There are other factors that need to be considered, some within the control and estimation of the Champion and some not.

- A currency revaluation can be translated quite easily into increased costs or revenues. But what about civil disorder?

- Global oil prices can be translated into higher transport costs and, perhaps, into greater revenues depending on the pricing arrangement, but what about the death or illness of the Champion?

The point is this: when looking at a reasonable list of "What If" questions, some can be translated into impacts and actions and some cannot. A life insurance policy can repay a lender if a Champion dies suddenly, but a succession plan is needed if the proposal is to continue. This is a paper-and-pencil and thinking exercise, not a calculation. Some of the results can be included in the "risks" section of a proposal; others represent good planning and may come up in donor, lender and investor discussions.

Risks come in a variety of categories and understanding the vocabulary can speed discussions between Champions and Enablers.

- Completion risk involves the risk that something started might not be completed after a lender has made funds available. This can happen when a proposal costs far more than originally expected or the market has changed significantly during construction. Completion risk can be managed through the type of contract entered into to design, build and commission (start operation).

- Technology risk involves something not performing as planned or becoming obsolete far more rapidly than expected. If the technology never performs as agreed to in the installation phase this can be part of completion risk, but generally it is considered to be in a separate category. Technology risk is most often managed through guarantees and warranties from the suppliers of equipment and also through the acceptance testing process. Longer-term performance can be enhanced through operations and maintenance contracts and various types of insurance.

- Supply risk involves raw materials not being available. This can include resources which the project is going to use (e.g., a mine or a plantation forest) or buy (e.g., fuel or supplies). Managing supply risk sometimes requires entering contracts for sufficiently long enough periods of time and with predictable prices to assure an uninterrupted supply of inputs.

- Economic risk exists even after a project is completed, the technology is working and the inputs are available. The result might be inefficient or the estimated market ("demand") evaporates. Confidence in (conservative and realistic) market projections and the Champion's demonstration of market knowledge and awareness are crucial in managing economic risk.

- Financial risk occurs either when variable interest rates are used, refinancing of the project is assumed sometime during its life or additional financing is required in the future. Interest rates change. Large changes can make an enterprise non-competitive or not "liquid" ("liquidity" means having the cash to meet repayment obligation to lenders).

- Currency risk is closely related to financial risk and could be lumped into that category, but the very nature of technology transfer projects warrants it being treated separately. Currency risk involves the difference between the value of the currency that impacts income or expenses and the value of the currency in which the loan repayments must be made.

- Political risk involves the risk that the rules and regulations governing a proposal might change. A good example might be the risk that a government may arbitrarily raise the taxes on a project to render it not economic.

- Environmental risk involves unknown environmental conditions that might disrupt a plan after it is begun.

- Social risk is a category that takes into account all manner of social disturbances or disruptions that can impair a proposal's implementation.

- Force majeure risk is the risk that something catastrophic – a storm, an earthquake, a devastating accident – may cause a project to fail. Insurance programmes directly address force majeure risks.

XI. SESSION TEN
TO WHOM? TARGETING AND PRESENTING THE REQUEST

Organizing Principle: "Avoid presenting your perfect proposal to the wrong person."

Session Objectives: to determine the most likely courses of action to obtain the required resources

Information Content: the matrix relating the results of proposals with the roster of possible Enablers interested in those results

Technique Content: avoiding false trails

Structure: Lecture and Discussion

Exercise:

(1) Groups should examine the below matrix and identify needs and possibilities for their proposal
(2) Prepare a list of options, both as to the need for resources and possible targets.
(3) Prepare a 5 minute summary of the proposal
(4) Prepare a 5 minute presentation of the proposal to your most likely target audience
(3) Summarize these finding to the larger set of groups

Reference Materials: Targeting Matrix

One of the frequently heard laments is that there is no shortage of money but there is a shortage of quality proposals. There are two elements to this lament. The first is that there is a "disconnect" between Champions and Enablers. Up to this point, this workshop and the related guidebook has been devoted to repairing that "disconnect" by creating a framework and common understanding as to the requirements of a well-prepared proposal.

The second element of this lament reflects another "disconnect": **well prepared proposals need to be presented by Champions to the right group of enabling organizations.** A brilliant proposal for financing the construction of a proven wind-biodiesel hybrid energy system on a remote island is of little value if presented to a technology development/technical assistance programme of a European government.

There are thousands of sources of funding and services. Even focused on just clean technology, the list easily reaches hundreds if not thousands. This session places this vast collection into a few simple categories which will allow a more focused search by Champions for compatible Enablers.

It then describes a process for undertaking that search and reaching out to those individuals, organizations and programmes. Sadly, there is no right way to do so – just some guidance to share – and there is no substitute for the difficult chore of knocking on doors.

This part of the Session is short because, if a proposal has been assembled in a clear manner, this next step is **very, very focused.** At this point, the job of the Champion is to get his or her proposal, in the right form, in front of the right person in the right organization that has the appropriate resources and interests.

Targeting the result (answering the question "To Whom?") – knowing the audience and the request – requires three things:

- Itemizing what to ask for; that is, itemizing what is needed.
- Researching the categories of financial support and other resources.
- Narrowing the search: make inquiries. Identify contacts. Network!

Itemizing what to ask for means knowing what to ask for in three different dimensions:

- Type of funding or support (grant, loan, investment, assistance).
- Stage of funding (planning, construction, operations).
- Amount and timing of funding (in advance, pro-rata to others, last in).

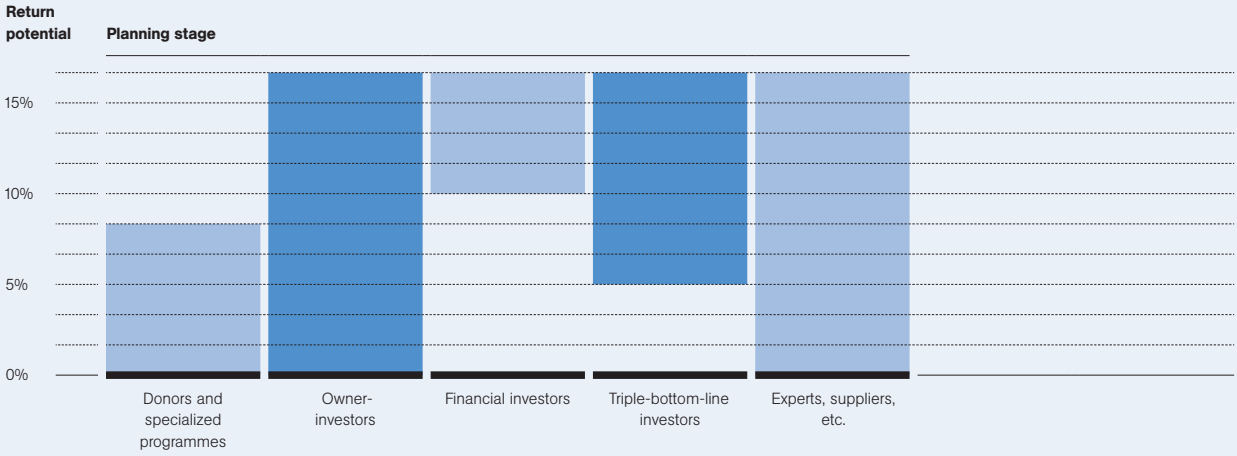
In the illustrative proposal set forth here, the Champion is seeking grants from donors totalling 62,500, investment capital from new owners of 465,000 and a loan of 600,000 (for 10 years at 8.5 per cent annual interest).

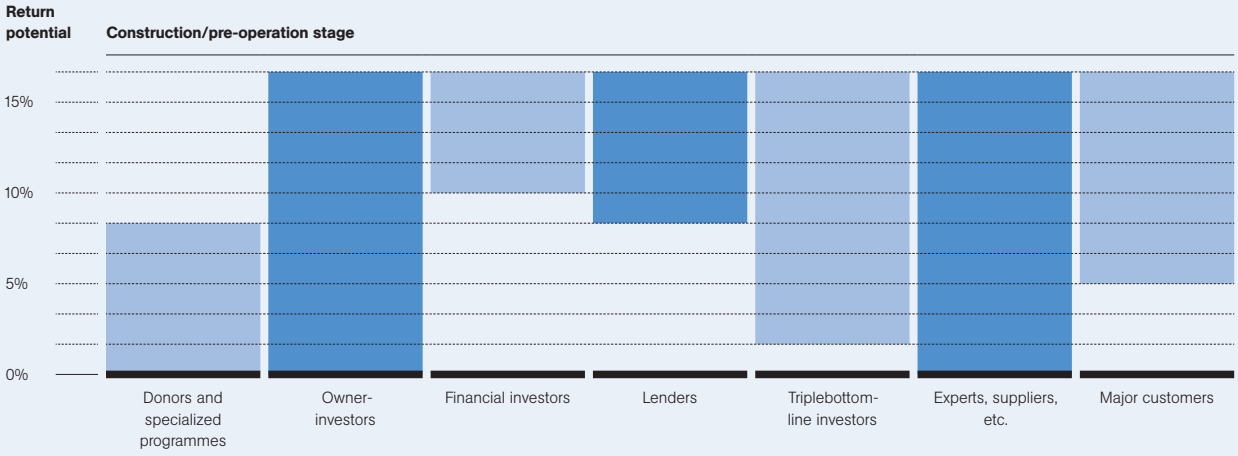
Researching the categories means spending time (quite a bit of time) on the internet, phone and e-mail finding out what programmes and organizations exist, what they offer and what they are looking for. **Too often the search begins with what is available rather than what is needed,** causing disconnected conversations between Champions and Enablers.

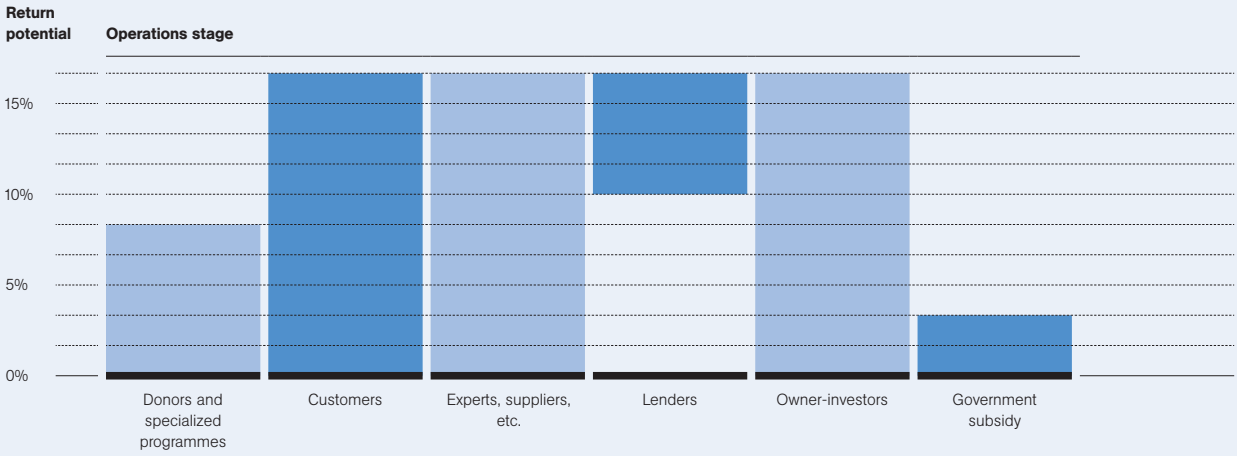
Narrowing the search means being careful and patient; sending a 20-page proposal to someone "cold" rarely works. With e-mail and a few low-key inquiring phone calls, it is pretty easy to figure out how to approach a donor, lender or investor. A simple inquiry that introduces the proposal being formulated (three to five **sentences**) and expresses the need requiring attention will normally get a simple and clear response. Seeking grants, loans and investors is neither simpler nor more complex than the tried and true process of inquiry leading to interest leading to information exchange that is central to our professional lives. This provides all the more reason for the Champion to have a well-developed proposal, with a plan of action and a request for resources.

11.1. TO WHOM? TEMPLATE

FUNDING MATRIX







11.2. DIRECTING YOUR PROPOSAL TO THE APPROPRIATE AUDIENCE

Estimated Pre-Tax Rate of Return

Your Estimate	
Estimated Rate of Return	**Type of funding**
Negative or zero	Grants and subsidies
Zero to between five and seven percent	Donors and investors who consider social and environmental returns as well as financial ones
Over five to seven percent	Specialized lender-investor-donors who see the blended value potential of investments will likely be a target
Above ten percent	Private sector investors and lenders

Types of Donors (D), Lenders (L) and Investors (I)

Type of Enabler		**Type of Money Provided**	**Expectations/Needs**
D	Donors and Specialized Programs	Grants	The donor will expect that the grant will either be used as an addition to revenue to run the business (operating grant) or to reduce the cost of the proposal so that loans and equity will cover the balance (capital grant). Donors need to understand why the plan is an efficient use of scarce resources, where the plan fits in with other programs and priorities, how the proposal meets the donor's stated core objectives and, very importantly, what will happen when the donor funding is used up.
D	Governmentsponsored programs	Grants	
D	Charitable Organizations	Grants	
D	Multilateral development organizations	Grants	
L	Government sponsored subsidy program	Revenue	They expect that revenues will cover the cost of the product or services and contribute to the operation of the business (including repayment of loans). The expectation is that left over revenues are first applied to the providers of equity, then to other operating expenses (these would include taxes, for example, and any interest on loans); and finally, to loan payments (such payments are called principal or amortization, while the combination of principal and interest on loans is called "debt service").
L	Governmentsponsored development institution	Loans	Lenders expect a very specific set of payments over time. Requirements are usually well defined in terms of conditions that must be met in advance and over the course of the loan. Lenders do not want to take risks. Lenders want to be repaid and, if the business cannot make that repayment, they want to know that others will make the payment or that assets of equivalent value are available to reimburse them. Loans are made to fund the construction of a project or the purchase of goods or the provision of services where the revenues from the goods or services are expected to be more than sufficient to repay the loans as and when promised. Some lenders are flexible in their loans for a variety of reasons. Others are absolutely not. The project needs to demonstrate that a very conservative estimation of revenue can more than repay the loan. Lenders need clear procedures in place in case of loan default, termination or repossession.
L	Commercial Banks	Loans	
L, I	Socially responsible and specialized investment funds	Loans, equity	

I	Development Investors	Equity	Investors expect a higher return than lenders and are willing to take more risk, but this should not be confused with being risk-takers. They are equally clear about what they are willing to do or not do. Their interests are in seeing a business succeed and in earning a return on their investment. If they become significant participants in a business, they tend to establish very specific (and stringent) targets to make sure that things are going well. When things are not going well, investors often have the ability to make significant changes in a business, including replacement of the management team. Investors only get repaid if a proposal is successful and profitable. Positive rates of return and market potential needs to be demonstrated, as well as that the assembled team can manage the expected "bumps in the road". They are also interested in the market size, the reasonableness of the base case, potential upside and downside and exit strategies.
I	Strategic Investors	Equity	
I	Triple Bottom Line Investors	Equity	
I	Venture Capitalists	Equity	
I	Owners of businesses	Equity	
I	Sponsors of social programs	Equity	
I	Financial Investors	Equity	

Type of Funding	**Definition**	**Other funding models that fall under this type**
Grants	Grants do not need to be repaid.	Capital and operating grants
Revenue	Revenue for products and services, including operating subsidies.	Sale of carbon credits or pollution benefits
Loans	Loans are made based on the ability of the proposal to repay what is borrowed under clearly defined terms.	Leasing, BOT's (build, operate and transfer), installment sales or purchases (hire-purchase), financing or credit terms from a supplier
Equity	Equity investments are made in return for a share of the profits upon the success of what is proposed.	Mezzanine debt, preferred shares, quasi-debt and quasiequity (combinations of loans and equity).

XII. SESSION ELEVEN CUSTOMIZATION AND SUMMARIZING

Session Objectives: to introduce the requirements of specialized Enablers

Information Content: four different and most common customized presentations briefly introduced

Technique Content: preparing each, understanding the requirements to be met. Preparing short, convincing summaries

Structure: Short Lecture and Exercise, followed by Presentation-Discussion with invited Finance Professionals

Exercise:

(1) Groups determine if their proposal would require some customization for a particular group
(2) More important, each group prepares and rehearses its best "elevator pitch or presentation" (5–7 minutes) directed at an important person whose interest and attention they wish to get and who they hope will invite a follow-up discussion.
(3) This presentation is made to the other sets of groups and if possible other finance professionals, for comment.

Thus far, the common ingredients of a proposal have been described. Often, however, four additional elements may or may not be needed before a proposal can be presented. This Session briefly introduces four such "customizations".

- Proposals to grant-makers and donors may require a logical framework
- Proposals to climate change professionals may require elaboration of carbon benefits
- Proposals to lenders need to address risk and risk management
- Proposals to equity investors need to address their special interests

12.1. LOGICAL FRAMEWORK CUSTOMIZATION

Especially for grant proposals to donors, it is very important to place the proposal in its broader context. This allows donors and other enablers to see how the proposal fits within their planned activities and also to see the connection between the broad goals being pursued (e.g., "improve global climate") and very specific activities (such as "training entrepreneurs to design, build and sell household biogas digesters in rural Bangladesh"). A logical framework analysis and matrix is one way to provide this context. Excellent web-based resources on preparing such presentations are available, but the basic process and presentation can be summarized as follows.

- **Goal:** Within a proposal that employs a logical-framework approach, the goal is the broad (global, national or sector) benefit being pursued (such as improving the global climate). It is what the proposal will contribute towards achieving but will not in itself achieve or be solely accountable for. The goal must be described and indicators established to measure progress in reaching the goal (e.g., carbon dioxide emissions per capita). The indicators need to be verifiable and the proposal must set forth how such verification is going to occur (for example, using biannual estimates of household consumption of non-renewable fuelwood, other biomass and liquid fuels). Finally, the assumptions made concerning this goal-setting must be explained (along lines such as a statement that the biogas programme is being implemented with 30 per cent of the funding coming from climate-related activities or that climate-related monitoring and evaluation will suffice to establish the means of verification).

- **Purpose:** The purpose is what the proposal will achieve. After identifying the goal of the proposal, the various development outcomes being pursued need to be identified, and – as for the goals – the indicators, means of verification and assumptions must be described. For example, the purposes of the proposal might include reducing non-sustainable fuelwood consumption, reducing fossil fuel consumption, improving local soil and sanitary conditions and increasing income from sustainable activities.

- **Objectives** are the significant components which the proposal will achieve. Objectives for each of the purposes must be explained; for example, a 60 per cent reduction in fuelwood consumption, a 90 per cent reduction in kerosene use, replacement of chemical fertilizer with dried organic slurry and an average productive workday/study time increase of an hour per household. As was the case for goals and purposes, the proposal must summarize what indicators will be measured, how those measurements will be updated and verified and – this is important – the assumptions being made by the Champion (which might include, for example, a certain level of funding and flexibility requested in the proposal).

- **Outputs** are the specific results and tangible products which the proposal will produce through a series of tasks and activities. Following the establishment of objectives, the logical-framework approach asks that those objectives be set forth over the time frame of the proposal so that progress can be measured. If a 90 per cent reduction in kerosene usage is expected in each household, will that be immediate? Because the proposal might roll out over many communities over time, is there an aggregate measure for total households that can be monitored? Again, the proposal's assumptions about available resources need to be made abundantly clear. What this technique does is help the Champion understand all the pieces that need to come together to realize success. It can prove a very useful step in answering the "How" question within the seven-question framework.

- **Activities** are the specific tasks which the proposal will undertake to achieve the required outputs. As the final stage, and only after the above context-setting exercise has been carried out, the logical-framework approach requires setting forth the specific activities of the proposal, such as capacity-building of households and entrepreneurs, financing and construction of household biogas units, microfinance collection and performance monitoring, and management reporting and evaluations. By using such a framework, it becomes abundantly clear what activities fit within the goal and purposes set forth and which are questionable.

Why use a logical framework approach? Quite simply, it allows the Champion to demonstrate a mastery of the situation. Further, it facilitates screening and discarding competing ideas for activities in a logical manner. In addition, it sharpens the Champion's thinking and his or her ability to present a successful proposal. The most important benefit, however, of this approach is that it allows the Champion to screen potential support organizations, whether these are donors, lenders, investors or assistance providers. **Their** goals and purposes, **their** areas of activity support become easy to compare with those of the proposal.

12.2. CARBON BENEFIT CUSTOMIZATION

There are many reasons to incorporate basic carbon benefit information in a proposal. Some are current and clear – applying for CDM approval, facilitating the sale of carbon benefits in either the formal (CER) or informal (VER) markets, seeking grants or loans from GEF, demonstrating a significant triple-bottom-line impact to a social investor – while some are still to be determined, such as the value of a metric tonne of carbon dioxide equivalent after 2012 (also referred to as "post-Kyoto").

Whether applying to CDM or GEF or seeking other approval or funding resources or pursuing Voluntary Emission Reductions (VERs), there are specific templates and procedures that must be followed when applying. This section points to basic information that should be understood before pursuing such sources and suggests the information that should be incorporated in any proposal including carbon benefits. Such information might interest investors and lenders for whom carbon benefit is not a primary issue.

Carbon benefits occur when a sustainable resource displaces an unsustainable one or a quantity of carbon is kept in place rather than being released, for example, through such adaptation techniques as "no-till" farming. If cow manure or poultry litter can be used to produce fuel that can be substituted for unsustainably cut fuelwood, every kilogram of firewood not burned results in 1.5 kg of carbon dioxide equivalent avoided. Avoiding this unsustainable burning of fuelwood reduces the amount of carbon dioxide released into the atmosphere. The release of this man-made carbon dioxide equivalent is one factor in a complex chain of factors disrupting global temperatures. A process has been established to quantify such benefits (the so-called certified emission reductions (CERs)), which can be sold to others who may have a need to demonstrate improvements in **their** impact on global climate. For example, an electricity utility in Japan may acquire credits produced by a small hydroelectricity project in Honduras; the benefit may help the utility meet its commitment to reducing carbon dioxide while helping the project in Honduras become financially viable. Carbon benefits are quoted in tonnes of CO_2e, meaning metric tonnes of carbon dioxide equivalent.

The closest thing that exists to a standard process of quantifying CO_2e and obtaining CERs or VERs is the Clean Development Mechanism (CDM) and various voluntary standards (Gold Standard, VCS etcetera). The process (oversimplified here) has five stages:

- Design, which involves either the existence or the creation of an approved methodology for measuring the carbon benefit; establishment of a baseline from which the impact of the proposal can be measured; and preparation of a document for submission to the bodies (domestic and international) which must approve it. It is significantly easier to use an approved methodology than try to trailblaze a new one.
- Validation and registration, which involves an independent review and acceptance of the design and subsequent registration by the main approval body.
- Monitoring, which involves measuring actual as opposed to design performance.
- Verification, which is independent confirmation of the monitored results.
- Actual issuance of the certified emission reductions.

Separate from this process, the Champion, either directly or through intermediaries – the carbon benefit business is growing rapidly – can organize the terms and conditions under which carbon benefits can be sold. There are various markets (one for intra-European activities) and funds and other buyers for whom CERs will have value. In practice, however, the Champion must determine the importance of carbon benefits to the proposal. Landfill gas captured and used for energy production is very valuable because the carbon dioxide equivalent of the captured methane is very high. The carbon benefit value of a well designed and implemented landfill-gas project may exceed the value of the energy produced. A household biogas programme replacing fuel wood may produce a carbon benefit equal to 30–40 per cent of the capital cost, making it affordable to larger numbers of poor households when the carbon benefit is taken into account. A project to substitute sustainably produced alcohol as a cooking fuel instead of kerosene may equalize the cost to the consumer and thus encourage switching from an unsustainable to a sustainable fuel and enhance self-reliance, health and energy security.

12.3. SUMMARY: CUSTOMIZING FOR CARBON PROFESSIONALS

- Exhibit an understanding of the multi-step process
- Exhibit a sense of the current market
- Estimate the carbon impact of the proposal conservatively
- Incorporate carbon benefit in cash-flow estimates as a separate revenue line
- Quantify the impact on project IRR of adding or deleting carbon benefits

12.4. CUSTOMIZING FOR LENDERS

It is a mistake – a common mistake in proposal writing – to lump lenders and investors together. They are related, but so are brothers and sisters. They have common interests, but their motivations and approach are quite different.

Lenders emphasize risk management and look for:

- Predictable cash flow
- Assumption of major uncertainties by others, including insurers
- Guarantees that all funding is available
- Collateral and security interests
- Clear procedures for default, termination, repossession, etc.

Investors look at these things also but their focus is more on opportunity management, placing emphasis:

- On the size of the market
- On the reasonableness of the base case
- On potential upsides and downsides
- On management's abilities and knowledge

In customizing a presentation for lenders, the Champions must frankly try to put themselves into the bankers' shoes. This involves understanding two processes: one is called **"due diligence"**; the other is called **"risk management"**.

What professional lenders call "due diligence" is a process that checks the truth ("veracity") of the proposed loan application and the proposal that underpins it. Due diligence has both quantitative and qualitative dimensions, meaning that all the numbers and calculations are examined, checked and tested, and all the statements are verified. Lenders have quite clear rules and decision-making procedures (credit committees, for example), so knowing the lender's criteria, requirements and processes in advance is the best investment a Champion can make **before** presenting a proposal. A lender's quantitative tests might include a requirement that there is always a reserve fund set aside that equals one year's future loan payment; the proposal's cash flow model can take that into account before a loan application is submitted. A lender's qualitative tests might include that the borrower must have certain credentials, income or wealth. When a Champion says that he or she has 10 years' direct experience supervising this or that technology or has never defaulted on a loan, the Champion must understand that those representations will probably be checked. Knowing requirements in advance can avoid wasted effort, direct a Champion to broaden the owner or management team and avoid situations where credibility becomes an issue.

Due diligence is basically a fact-checking process driven by the lender's criteria. Risk management is a process for which this guidebook's **What If** question has, hopefully, helped prepare the Champion. Lenders go through their own What If exercises with a particular point of view: they are looking for answers that place risk and responsibility on someone else, and they are looking to be convinced that that someone else can deal with the problem if it arises.

The point has already been made that Champions need to place themselves in the lender's position. By being able to deal with lenders' typical questions and issues regarding due diligence and risk management, a Champion will be in a position to anticipate problems and solve them if they arise.

12.5. SUMMARY FOR LENDERS

- Know in advance the lender's requirements with respect to type and length of loans, terms and conditions, indicative interest rates (i.e., today's rates), typical restrictions and reserve requirements, debt-to-equity requirements and debt service tests.
- Know in advance the lender's requirements concerning the credentials and net worth of borrowers.
- Run the base case incorporating the lender's requirements as part of the model.
- Summarize the results in the executive summary, with an emphasis on debt service coverage.
- Prepare as an annex a set of credentials and documents that prove the case for the borrower. Have available the tax submissions, bank statements, deeds, etc. for any of the credentials or assets cited. Obtain the bank's application form well in advance and create a file with supporting documents.
- Prepare a risk-management table that lists the key risks (from the What If question) and how the risks are addressed.

What if the Champion's proposal cannot fulfil the bank's requirements? What if the Champion cannot meet the lender's requirements? Well, there a number of things to be done. This list definitely does not include making fictional adjustments to the cash flow projections or credentials. Things to be done include: exploring different combinations of debt and equity to improve the debt service performance of the cash flow projections; testing different assumptions regarding the terms of loans and the impact on cash flow (mortgage-style versus bullet versus equal principal payments, for example); expanding the owners' group to improve the credentials of the team as well as to expand the supply of equity and guarantees; and, discussing subordinated debt arrangements or other instruments that reduce the lender's risk and improve financial performance.

12.6. CUSTOMIZING FOR INVESTORS

There are many different categories of investors. A few broad categories will suffice to separate their interests:

- Venture capitalists
- Financial investors
- Strategic investors
- Development investors
- Double- and triple-bottom-line investors

Venture capitalists seek opportunities in what are perceived as growing sectors using an ever growing roster of technologies and offering high profit (return) potential. "Clean technology" is an example of a venture capital focus. If a Champion has a proposal to produce a new building product that protects valuable existing surfaces from increasing rain or dryness (an example of an adaptation technology), such a proposal, properly prepared and presented, would engage the preliminary interest of venture capitalists (who gather at meetings known as venture fairs). Venture capitalists want to see growth potential and management skill. They will exercise a great deal of control, especially if things do not go as planned. Their checklists especially emphasize size of potential market, competition, management's track record and how they can exit (a wonderful four-letter word that encompasses the ways that an investor can cash in its investment: listing on the stock market, sale of the company to a competitor or acquirer, buy-back by the original owners, re-financing).

Financial investors target specific returns (called "hurdle rates") and are prepared to accept specific risks in order to achieve those returns, which are higher than a lender, may charge for interest. It is essential to understand the "hurdle rate" and "risk appetite" of such investors early in the discussions. Their due diligence will be similar to a lender's but they are more likely to examine a base case and a better case as well as a worse case scenario. Like venture capitalists, financial investors may want to exercise a lot of control if events roll out more slowly than planned or badly. They too would like to hear a Champion's ideas on "exits".

Strategic investors are interested in something in addition to financial return. They may be interested in a new market and see the proposal as an efficient way to become involved in that market. They may be interested in the knowledge and experience of the team. They may be interested in supplying a product or service. It is crucial (not just important) that all the cards are on the table before exploring such a relationship seriously. What does the strategic investor want to achieve? How is that consistent or in conflict with the proposal? How is that consistent or in conflict with the Champion's motivation and objectives? How will hidden agenda items be determined and controlled? How will the price of products and services be set and warranties enforced? These can be excellent relationships, often glowingly described as "partnerships", but like partnerships and marriage, they are to be entered into with eyes open and clearly defined terms and conditions.

Development investors are looking for the opportunity to create a specific impact, usually in a specific sector. They are investors (not donors) because they expect to be repaid. Their interests might include creating small enterprises, growing microfinance institutions, building the capacity to implement adaptation, renewable energy, organic farming or energy efficiency measures. They tend to be found in national, regional and multilateral development banks and tend to have very specific criteria. There is a great deal of generally available information on their websites and exploratory communication is relatively easy to arrange. The bad news is often embedded in the processes and requirements that come along with the interest. Decision-making can be slow and processing and documentation burdensome. The secret is to understand the requirements of development investors well in advance of making any commitment to this path.

Double- and triple-bottom-line investors are also known by other names, including socially responsible investors (and many other confusing subcategories and overlapping titles). They are individuals and organizations (including major foundations) that will accept a lower financial return with or without increased risk because of the blended value of the social and environmental benefits represented in a proposal. They can be very broad in their interests and motivation (they may be high-net-worth families) and may be persuaded to consider new fields and innovations for very targeted investing.

How best to customize a presentation to an investor?

- For those seeking financial return – venture capitalists and financial investors – keep the introduction simple with an emphasis on return and market potential, the team (experience, skills and track record) and the risks.
- For the rest, it is difficult to know what might be interesting ("you never know where lightning is going to strike") but a triple-bottom-line matrix (financial, social and environmental returns), combined with the team and the risks, will allow a quick screening by enabling organizations.

XIII. SESSION TWELVE
CRITIQUE AND SUGGESTIONS

FOR IMPROVEMENTS AND TRAINING OTHERS

Organizing Principle: **"Technology Transfer" is about all the combinations of products, services and know-how available to fashion the desired result of sustainable development. "Innovative Financing" for technology transfer is more about connecting new combinations of actors and interests and applying tried and true approaches than it is about creating new, never-before-used products, services and tools.**

Session Objectives: to revisit prior eleven sessions and critique methods employed ... to critique case examples used and suggest improvements ... to discuss the importance of net-working and the possibilities of new forms of collaboration ... to reference other tools and techniques ... Basically: "What have we learned? How can we use it? How can it be improved?

XIV. ANNEX I
GHANA KOALA GAS PROPOSAL AND TEMPLATE SAMPLES

Contained in the guidebook on pages 72–74 and pages 163–78.

XV. ANNEX II
PROPOSALS SUBMITTED BY WORKSHOP PARTICIPANTS

(placeholder)

UNFCCC TRAINING PACKAGE ON PREPARING TECHNOLOGY TRANSFER PROJECTS FOR FINANCING

Module IV

SAMPLE PROPOSALS
THAT COULD BE USED IN TRAINING SESSIONS

TABLE OF CONTENTS

Photo: © **Enrimand Esmer Dejeto**
CDM Project 1208: Superior Hog Farms Methane Recovery

I. SAMPLE PROPOSAL A BIOMASS COGENERATION

BIOMASS COGENERATION PROPOSAL WITH DETAILED FUNDAMENTALS AND ANALYSIS MATERIALS. GOOD MATERIAL FOR EXAMINING PROJECT FINANCE

Project Name: Forest Residues for Renewable Energy

1.1. PROJECT GENERAL SCOPE

The biomass electric power generation project ("the Project") consists of the construction of a 10 MW biomass cogeneration plant to be installed in **location**. The Project has an economic benefit in the substitution of electric power from the grid, and environmental benefits due to the reduction of GHG emissions, both from the associated emissions of the grid power displaced and the avoided methane generated by anaerobic decomposition of forestry residues.

1.2. LOCATION

In this location FT is established for over 30 years ago, being a pioneer in the growing and utilization of implanted, FSC certified, eucalyptus wood. The company also grows and processes pine wood, manufactures eucalyptus plywood, as well as lumber.

1.3. PROJECT PRODUCTS/SERVICES

FT currently buys electrical power from the grid and uses a boiler system to supply the steam requirements of its industrial process. The Project foresees an increase of the steam generation capacity in order to be able to supply the steam for the industrial process and, additionally, steam for power cogeneration. The expected emissions reduction is 56.500 tons of CO_2eq per year, which, after certification, presents an interesting flow of certificates for commercialization.

1.4. TECHNOLOGY

The cogeneration plant will utilize biomass residues as fuel. The technology to be used is well known and consists of:

(1) Water boiler
(2) Steam turbine
(3) Power generator
(4) Sub-station to connect to grid

The cogeneration project is synergetic to the industrial processes and gives a new dynamic to the activity of the company and the region. It generates an important reduction of the electrical energy and steam generation costs of the plant. TF Group has experience in handling the resource management.

1.5. CUSTOMERS/CLIENTS

The cogeneration plant will supply the entire electric demand of the V Industrial Complex, property of FT and the surplus electrical power will be sold to the grid. Also the opportunity and ability to market the surplus steam by offering dryings services to nearby tea and wood producers.

1.6. CURRENT STATUS

The place to carry out the project is owned by FT with a total of 6 hectares freely available. We have a specific survey on the quantity and quality of biomass available, and the relative distances between it and the plant. We own all of the existing biomass for the project, and the same is sustainable without buying a third. This is one of its strengths, which lead us to approach this project.

For the commercial aspect has identified potential clients for the sale of electricity, as well as the excess steam. We have identified potential suppliers of engineering, installation and equipment to carry out the project, who have already visited the site. We are currently in the process of selection of the consultant who will carry forward the process of qualifying as a CDM project, as also all on the structuring and marketing of carbon credits.

1.7. CURRENT NEEDS AND REQUEST

A financing of approx USD 15 Million is needed, depending on the level of automation at the facility.

We must work on the financing structure. In this sense, we tend to structure financing through banks, as we do in other projects.

However, we are open to alternative proposals, such as the income of a partner, or a composite structure that can be part equity and part funding. Another alternative under consideration, and we went exploring, is the structuring of debt as collateral flow from carbon credits. We understand that this structure can be complex, but not impossible. The determination of the connection node and the approval thereof by the regulatory authority, is one of the most delicate issues.

Additional needs involve:

- Understanding of the electrical C to C business, new business horizons
- Insertion into the Argentine electricity market
- Training of our technicians for this new activity

1.8. OPERATING CONDITIONS

The 10 MW bioenergy plant will generate 84,000 Mwh/year, which is reduced to 78,120 Mwh/year after subtracting the auxiliary consumptions. The basic installation is comprised of the boiler, the turbine/s, the generator, the transformer and complementary equipment like silos, automatic feeders, conveyors, etc. This project will demand over 120.000 ton/year of wood residues to be burned in a controlled furnace environment, avoiding the production of methane from the anaerobic decomposition of these residues. The biomass used in the plant will have different caloric powers, ranging from 2.655 kcal/Kg to 4.778 kcal/Kg (dry base).

1.9. OWNERS AND SPONSORS

TF Group is dedicated to the Forest Industries. It has consolidated assets along the value chain, from its own clonal plantations to processing the raw material for lines, “Hardwood,” and “Pulp and Paper” and its important “Distribution Network”.

1.10. IMPLEMENTATION STEPS AND PLAN

Depending on the characteristics of the plant, the investment ranges between USD 1.3 MM and USD 1.5 MM per installed Mw. The basic installation is comprised of the boiler, the turbine/s, the generator, the transformer and complementary equipment like silos, automatic feeders, conveyors, etc.

1.11. CASH FLOW AND SCHEDULE DETAILS

Analyzed as a variable rate, and considering a base rate of 55 USD/Mw, for every 5% increase in rate, the cash flow (20 years and 15% discount rate), increases 6.45%. The flow does not include income from carbon credits.

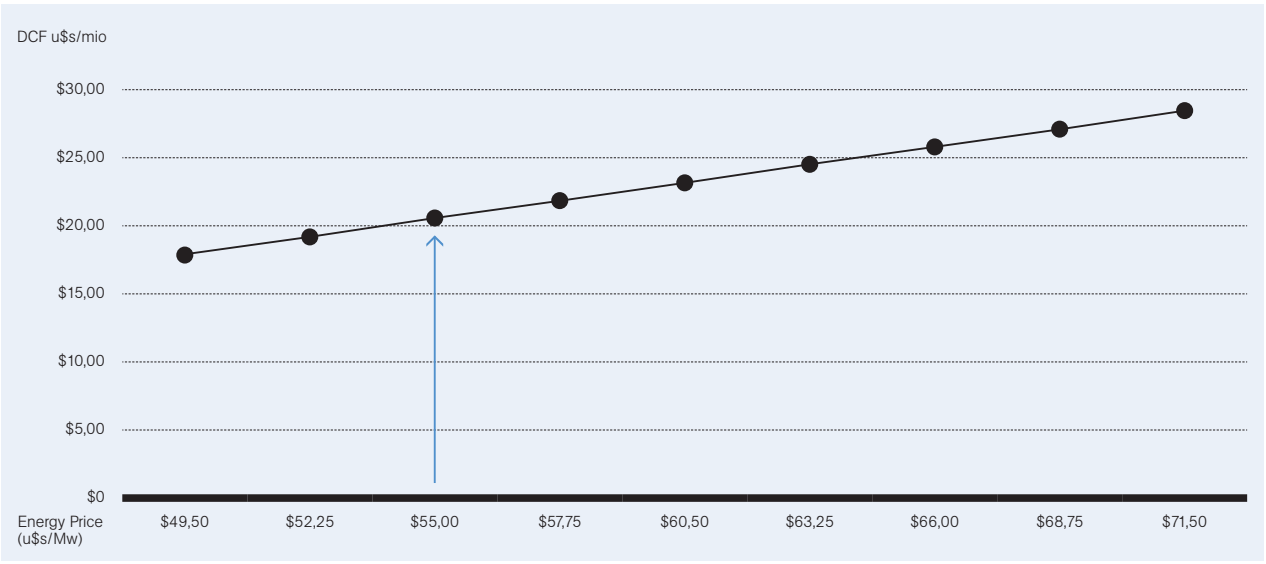
1.12. IMPACTS AND RETURNS

Taking an energy base price of 55 USD/Mw (as starting point) Generation costs of 22.14 USD/MW (considering an average distance of 25 km for biomass) Depreciation (considering 8100 hrs/year, taking a lifespan of 20 year term) Project Yields:

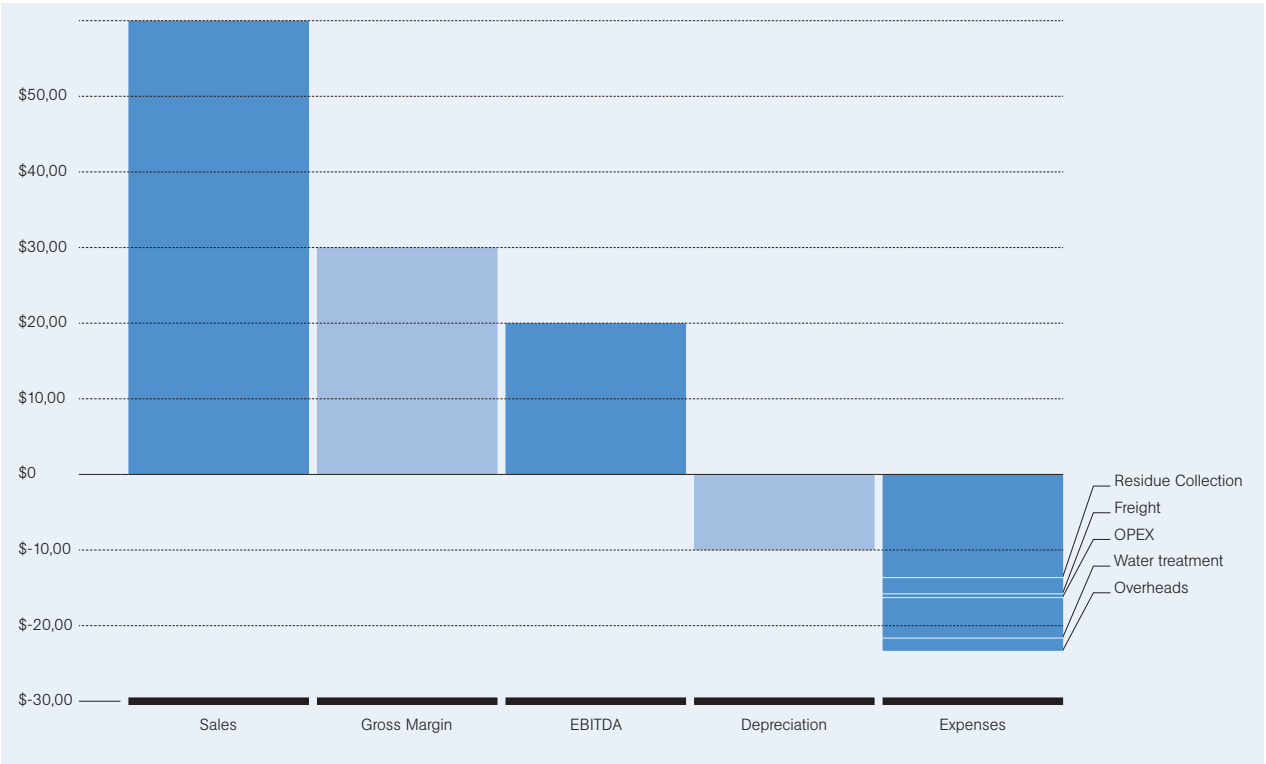
- Gross Margin: u$s 32/Mw (56% on Sales)
- EBITDA: u$s 24/Mw (44% on Sales)

If Biomass, must be purchased by third party suppliers, Project Yields must be reduced. In this case Gross Margin will be 42% on sales, and EBITDA to be a 27% on the same value.

Discounted Cash Flow in function with the Energy Price



Financial performance of the project



1.13. SENSITIVITY ANALYSIS

The two most sensitive variables are:

(1) The average distance between the plant and the biomass due to the impact on freight costs.

(2) The cost at which biomass is available, assuming a 100% is our property.

For the variable distance, for each 5Km increase, the total cost of energy increases by 2.2%. For the variable cost of biomass, for every 5% increase in the cost per ton, the cost of energy increases by 3.1%.

1.14. RISKS AND MEASURE TO HANDLE THEM

Biomass availability and management are the key to project success. The two industrial complexes that TF has in the area are able to supply the required biomass for the project. The complexes are currently working at 70% of their capacity, but we expect to increase this volume in the near the future as follows:

- Total biomass available today: 122.703 ton/year
- Total biomass available in the future: 191.550 ton/year

The residual biomass available at our industrial complexes plus the biomass residue left on the fields are sufficient to guarantee the biomass required to supply a power generation project between 10 and 15 MW.

Within a radius of 20 KM three other mid-sized sawmills are located, making available 60.000 tons of biomass additional in the region.

II. SAMPLE PROPOSAL B
SOLID WASTE PROPOSAL

SOLID WASTE LANDFILL PROPOSAL WITH GAS FLARING, CARBON MONETIZATION AND POSSIBLY ELECTRICITY PRODUCTION. GOOD MATERIAL FOR TECHNICAL AND FINANCIAL LEARNING AND CONSIDERATION OF ISSUES SUCH AS PROJECT PHASING.

2.1. LOCATION

The Regional Sanitary Landfill is a new landfill that will be built to receive solid waste for final disposal from an area that has an estimated population of 166,540 and an estimated weighted per capita municipal solid waste generation rate of 2.05 Kg/capita-day.

2.2. PRODUCT OR SERVICE

Flaring of landfill gases, specifically methane CH_4 at the Regional Sanitary Landfill for the generation and sale of Certified Emission Reductions (CERs) to Annex 1 countries. This flaring will permit the country to reduce its emission of GHG to the atmosphere.

2.3. TECHNOLOGY

Installation of gas wells and piping, blower and flare station, gas control and safety systems for the collection, control and flaring of landfill gases, specifically methane CH_4, generated from the decomposition of biodegradable waste at the Regional Sanitary Landfill.

2.4. CUSTOMERS/CLIENTS

Annex 1 countries

2.5. CURRENT STATUS

The construction of the Regional Sanitary Landfill is Component 2 of the area's Solid Waste Management Project, funded by: the Inter-American Development Bank (IADB) amounting to US$11,150,000; the OPEC Fund for International Development (OFID) amounting to US$3,260,000 and the government amounting to US$379,000. Total project funding amounts to US$14,789,000. **The design of the Landfill does not presently include the construction of a gas collection, control and flaring system,** it is designed to passively vent the landfill gases to the atmosphere and thus increase GHG emissions from this source.

2.6. PROJECT SIZE, EXPECTED SCHEDULE AND COST, DIVIDED BETWEEN PLANNING, CONSTRUCTION OR PRE-OPERATION AND OPERATION

The Regional Sanitary Landfill has an area of approximately 135 Ha. In its initial years of operation the Annual Disposal Rate is expected to be around 50,000 to 60,000 tonnes of solid waste. Construction of the Regional Sanitary Landfill is expected to commence at the end of Quarter 1, 2011, the landfill will become operational in Quarter 4, 2011. Therefore at the end of 2012, it is expected that landfill gas generation is expected to commence, although in small amounts. Based on data from the LMOP Central America Biogas Model v.2, July 2007, three projected landfill gas recovery estimates were made: High collection system efficiency (85% first 30 years and 100% subsequent 8 years); Medium collection system efficiency (75% first 30 years and 85% subsequent 8 years); Low collection system efficiency (40% first 30 years and 60% subsequent 8 years). The cost estimates presented in the following table are based on the Medium collection system efficiency of 75%.

Major milestones are as follows: CDM registration would commence in 2011; landfill construction in 2011 and landfill operation in last quarter 2011/early 2012; Landfill gas flaring would start at the end of 2012.

2.6. CURRENT NEEDS AND REQUEST

A total investment of US$1,066,287 is needed. Approximately US$250,000 is needed for the CDM registration process, of which US$125,000 would be required in 2011 and US$125,000 in 2012. Capital cost for the LFG Collection System/Enclosed Flare will require US$855,715 (to handle 1,260 m^3/hr of LFG recovered) and 10% or US$85,572 of this is estimated for Engineering. Revenues from the sale of CERs at US$8.00 per tonne have been estimated as well as the annual O&M and upgrades cost for the life of the Project. It is expected that LFG production will peak in 2042, to 3,609 m^3/hr, at which time the landfill will no longer be receiving solid waste however it will still be producing LFG, though at a diminishing rate. In 2019 it is expected that the capacity of the LFG collection and flare system will be increased to 1,951 m^3/hr, however the cash flow generated from the sale of the CERs would allow for this investment without the need to seek grant funding.

2.7. MARKET CONDITIONS

It is expected that the selling price of CERs will increase in the near future, as Annex 1 countries have pledged to commit funds to climate change efforts.

2.8. OPERATING CONDITIONS

The sale of CERs is expected to take place through the CDM. The Landfill will be constructed under a DBO Scheme. Based on the projected annual disposal rate, and Medium collection system efficiency, it is expected that the Landfill will generate a peak flow of 3,609 m^3/hr of landfill gas. This is equivalent to emission reductions of 237,656 tonnes of CO_2eq. Over the life of the project the estimated total emission reductions are approximately 4,698,143 tonnes of CO_2eq.

2.9. REGULATORY CONDITIONS (INCLUDING ALL REQUIRED APPROVALS)

The executing agency for the Mile Regional Sanitary Landfill had submitted an EIA to the Department of the Environment (DOE), which was approved by the National Environmental Appraisal Committee (NEAC) in November of 2009. An Environmental Compliance Plan (ECP) has been forwarded to the Solid Waste Management Authority (SWaMA) for review and comments. After which the SWaMA, as executing agency for the Solid Waste Management Project will sign off on the ECP. A permit will also be required from the DOE for the operation of the Landfill.

2.10. OWNERS AND SPONSORS

The sponsor of the project is the government through the Solid Waste Management Authority.

2.11. TEAM

The operation of the landfill is contemplated in the Design Build Operate contract. In the event that funding is found for the gas collection and flaring system, the design, construction and operation of this system would be incorporated into the DBO Scheme. The Solid Waste Management Authority would supervise the operations and hire additional experts as required for validation and verification purposes.

2.12. STAKEHOLDERS

The key stakeholders are the communities of the Western Corridor in general and the communities in the vicinity of Landfill site; the Department of the Environment; municipalities of the Western Corridor.

2.13. GOVERNANCE AND MANAGEMENT STRUCTURE (DECISION-MAKING, AUTHORITY AND RESPONSIBILITY)

The decision making body will be the Board of Directors of the Solid Waste Management Authority. The Authority was established in 1999 under the Solid Waste Management Authority Act, Chapter 224 of the Laws of Belize. The Board consists of seven (5) members from civil society and two (2) ex officio members, one each from the Ministry of Health and from the Department of the Environment. The Board has a Chairman and a Vice Chairman. The Authority is managed by a Director and has the following personnel: one Senior Solid Waste Technician, one Junior Solid Waste Officer and an Admin Assistant.

2.14. IMPLEMENTATION STEPS AND PLAN

The Solid Waste Management Project is already in its implementation phase, as illustrated in the following table.

Fold out for Tables. 3

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Tonnes of MSW in place	61,810	144,286	295,617	451,034	610,648	774,570	942,919	1115,813	1293,376	1475,732
LFG Recovery Rate (m^3/hr): 75% Collection Efficiency	0	116	250	488	689	860	1,009	1,140	1,257	1,362
Methane Emission Reduction (tonnes/yr)	0	365	783	1,529	2,160	2,698	3,165	3,575	3,941	4,272
CERs from Methane Reductions (tonnes CO_2e/yr)	0	7,670	16,445	32,115	45,350	56,663	66,463	75,074	82,754	89,710
CERs Sales Rate (US$/tonne CO_2eq)	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00	$8.00
CERs Revenue from Methane Reductions (US$/yr)	$0	$61,359	$131,564	$256,918	$362,799	$453,307	$531,705	$600,590	$662,031	$717,678
Grand Total Revenue (US$)	**$0**	**$61,359**	**$131,564**	**$256,918**	**$362,799**	**$453,307**	**$531,705**	**$600,590**	**$662,031**	**$717,678**
CDM Registration	$125,000	$125,000								
Capital Cost, LFG Collection System/Enclosed Flare (US$)	$855,715								$599,318	
Engineering (10%) US$	$85,572								$59,932	
Total Capital Costs (US$)	**$1066,287**								**$659,250**	
Annual GCCS O&M and Upgrade Cost (US$/kWh)		$0.007	$0.007	$0.007	$0.007	$0.008	$0.008	$0.008	$0.008	$0.008
Annual GCCS O&M and Upgrade Cost (US$)		$10,565	$21,763	$4,483	$57,721	$59,453	$61,236	$63,073	$129,931	$133,829
Annual Registration, Monitoring and Verification (US$)		$40,000	$40,000	$40,000	$40,000	$41,200	$42,436	$43,709	$45,020	$46,371
Contingencies (10%) US$		$1,056	$2,176	$448	$5,772	$5,945	$6,124	$6,307	$12,993	$13,383
Total Annual Costs (US$)	**$0**	**$176,621**	**$63,939**	**$44,931**	**$103,493**	**$106,598**	**$109,796**	**$113,090**	**$847,194**	**$193,583**
Net Cash Flow (US$)	**($1066,287)**	**($115,262)**	**$67,624**	**$211,986**	**$259,306**	**$346,709**	**$421,909**	**$487,500**	**($185,162)**	**$524,095**
NPV (formula) US$	$2664,809									
Internal Rate Of Return	**22%**									
NPV (manual calculation) US$	**$2664,809**	($104,783)	$55,888	$159,269	$177,109	$215,279	$238,157	$250,165	($86,380)	$222,267

ASSUMPTIONS	
SELLING PRICE OF CERS/TONE OF CO_2eq	US$ 8.00
GCCS O&M/UPGRADES COSTS (US$/kWh)	US$ 0.0067
GCCS O&M/UPGRADES ESCALATION	3.00%
CAPITAL COST OF COLLECTION SYSTEM (US$/1000 cfm LFG recovered)	US$ 681,000
CAPITAL COST OF COLLECTION SYSTEM ESCALATION RATE	3.00%
INTEREST RATE	10%
PROJECT LIFE (years)	37 years

Project Milestone	Task	2010				2011				2012			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Institutional Strengthening	Structuring and Conducting the Design Build Operate (DBO) Scheme												
	DBO Contractor hired												
Infrastructure	Landfill construction												
Works	Landfill becomes operational												
LFG	LFG collection, control system and flaring construction												
collection, control system and flares	LFG collection, control system and flaring operational												
CDM	CDM Registration and validation process												
	CERs monitoring and Verification commences												

2.15. CASH FLOW AND SCHEDULE DETAILS

The cash flow projections for the 37 years life of the Project indicate an IRR of 22% and a NPV of US$2,664,809. First year's cash flow will not be sufficient to fund expenses and as such cash flow is negative. Thereafter cash flows become positive as the sale of CERs more than offset the annual O&M of the gas collection and flaring system. In 2019 it will be required to increase the capacity of the gas collection and flaring system, though cash flows should be able to cover this investment.

2.16. IMPACTS AND RETURNS

Over the life of the Project, the most important impact of the Project is in regards to the total GHG (methane) emission reductions that are expected to be achieved, and these are in the order of 223,721 metric tonnes of CH_4 or 4,698 Gg of CO_2e. There will also be a net reduction of the emission of Volatile Organic Compound (VOCs) and Hazardous Air Pollutants (HAPs) from the landfill, although None Methane Organic Compounds (NMOCs), VOCs and HAPs not fully destroyed during flaring are also emitted, though in lesser quantities. Uncontrolled LFG emissions can have adverse effects on human health, the environment and safety as landfill gas can be: explosive, corrosive, odorous, toxic and asphyxiating. Gases found in landfills include ammonia, CO_2, CO, hydrogen, H_2S, CH_4, nitrogen and others. Additionally, various organic compounds may be present in the gas depending on the types of wastes placed in the landfill. Uncontrolled emissions of landfill gas:

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SAMPLE PROPOSALS
SOLID WASTE PROPOSAL

- Can asphyxiate a person in an enclosed area or confined space, such as trenches, vaults, underground storage tanks or building foundations and can migrate into confined spaces where it can be ignited causing serious property and human health damage;
- Can kill surrounding vegetation as the gas displaces the O_2 from the root zone and thus chokes off the plant;
- Generate odors which can have adverse public health impacts besides being unpleasant for nearby residents, and odors can attract insects and other vermin;
- Is explosive between 5 and 15% concentration in air;
- Released into subsurface strata can pose a substantial risk of underground fires as well as explosions.

The sale of CERs from the flaring of landfill gases has the potential to generate a positive cash flow over the life of the landfill, making the Project self sustainable as it relates to the gas collection and control flaring/system. Funds from the positive cash flow may also contribute to the cost recovery of the operations of the landfill per se (cross subsidy) and thus lessen the user fee that vulnerable and poverty line households may be required to pay for the final disposal of solid waste in the Western Corridor. It is expected that through this project there will be specialized capacity building activities for the staff of the SWaMA and local consultants. It is also anticipated that some specialized jobs will be generated in supporting the work of external specialist in monitoring, verification and reporting/accounting of the GHG emission reductions at the landfill. The Project may also serve as a first in the country from which lessons can be learned and used in other sectors.

2.17. SENSITIVITY (WHAT IF?) ANALYSIS

If the **price** of CERs falls to US$6.50 per tonne of CO_2eq, IRR falls to 18% and NPV to US$1,473,439.

If the **price** of CERs increases to US$9.60 per tonne of CO_2eq, IRR goes to 26% and NPV to US$3,935,603.

If the **collection system efficiency decreases** to 40%/60% (Low collection system efficiency scenario), the IRR falls to 18% and NPV to US$656,303 at CERs selling price of US$6.50 per tonne of CO_2eq.

If the **collection system efficiency decreases** to 40%/60% (Low collection system efficiency scenario), the IRR goes to 23% and NPV to US$1,306,777 at CERs selling price of US$8.00 per tonne of CO_2eq.

2.18. RISKS AND MEASURE TO HANDLE THEM

There are two major risks to the Project, the first is the fluctuation in the price of the CERs, specifically if the price of CERs drops below US$4.00, the NPV of the project will become negative (-US$512,176) and IRR would drop to below 5% this would threaten the sustainability of the Project and external funds would be required to upgrade the capacity of the flaring system. With the Copenhagen Accords and the renewed interest in Climate Change, as demonstrated by the funds pledged by Annex 1 countries it is not expected that the selling of price of CERs will drop drastically, as this would defeat the purpose of the entire scheme of transferring funds and technology to developing countries. The other major threat to the Project is that LFG collection efficiency may not be 75% as assumed but falls to about 40%. Regarding the 40% collection efficiency, it has been estimated that if this were the case, at a CERs selling price of US$6.50 per tonne, the IRR would be around 18% and if the price were higher this would further improve the IRR. Therefore even under this worst case scenario the Project would still be self sustainable in the long run. There are also minor risks associated to the landfill not being operated properly and thus comprising the efficiency of the system. This could be address through the DBO contract clauses on minimum performance standards and performance bonds.

III. SAMPLE PROPOSAL C BEACH PROTECTION PROPOSAL

BEACH EROSION PROTECTION PROPOSAL THAT SERVES AS GOOD MATERIAL FOR EXAMINING PROPOSAL CLARITY, COMPLETENESS AND BALANCE.

Date: March 2010

Name of project: Introduction of Wave Energy Converter Technology for Beach Erosion Control and Storm Waves Mitigation.

3.1. LOCATION

B Province in the southwest of **Country**.

3.2. PRODUCT OR SERVICE

Wave energy absorption and generation electric power based on ocean renewable resources.

3.3. TECHNOLOGY

A device that uses the wave energy conversion (WEC) technology for wave energy absorption to contribute to beach erosion control in the coastal community, to the coastal infrastructure protection and that generates electric power based on ocean renewable resources.

3.4. CUSTOMERS/CLIENTS

This project will benefit the coastal communities and infrastructure as well.

3.5. CURRENT STATUS

Due investigation and according to specifications, the site has been identified. It will be held in the Municipality of P in the B Province of **Country**. It has gained financial aid from locals and internationals institutions such as The World Bank, National Commission of Agricultural and Forest Research of Dominican Republic (CONIAF in Spanish), the University Pedro Henrique Ureña (UNPHU) and Nova Oceanic Energy Systems, whom will provide the technology. The National Council for the Climate Change and the Clean Development Mechanism (CNCCCDM) supports and promotes this initiative. The project is in stage of planning, organization and funding for its realization. As we talk about a pilot project, the scheduled duration will be of 12 months.

3.6. CURRENT NEEDS AND REQUEST

The investment for the execution of the pilot project is US$ 299,215.

3.7. MARKET CONDITIONS

Two important effects of climate change are the rising of sea levels and the generation of extreme events such as storms and hurricanes. Island countries in the Caribbean and other tropical regions have many small communities and key infrastructure such as road, bridges and ports very close to or on the water front that are very exposed to storm surges and high waves. Additionally, the increasing power of waves due to global warming is eroding beaches faster, contributing even more to expose such communities to risks. Utilizing wave energy conversion (WEC) technology for wave energy absorption will lower the energy of incoming waves therefore contributing to beach erosion control in the coastal community beach and coastal infrastructure protection. Additionally, since WEC operation would require prediction of wave heights through real time modeling, the community will know two to three days in advance what types of waves are coming, allowing then to prepare. The energy absorbed by the convertor can be converted to electric power for distributed electric power generation in coastal communities.

Project size, expected schedule and cost

Activities	DM Grant FundedUnit Cost in USD	DM Grant Funded Number of Units	DM Grant Funded Total Amount	Non-DM Sources Unit Cost in USD	Non-DM Sources Number of Units
A. Works					
Construction/modification of installations receiving energy generated (6)	$1,871	6	$11,226	$0	$0
Contractors for the installation and start up of wave energy converter in site	$0	$0	$16,119	1	$16,119
Sub-total of Works	**$11,226**			**$16,119**	
B. Goods (Materials and Equipment)					
Nova Wave Energy Converter 50 kW	$150,000	1	$150,000	$0	$0
Adquisition of laptops and softwares	$1,000	2	$2,000	$0	$0
Adquisition of equipment and material for conection of instalations to wave energy converter	$800	1	$800	$0	$0
Adquisition of equipment for energy consumption, generation evaluation	$6,039	1	$6,039	$0	$0
Sub-total of Goods (Materials and Equipment)	**$158,839**			**$0**	
C. Project Staff (Salaries & Travel):					
(1) Personnel Costs					
Project Management and Coordination by UNPHU	$0	$0	$150	100	$15,000
Nova Oceanic Energy Inc. Senior Wave Energy Expert	$0	$0	$235	52	$12,220
Local junior assistants by UNPHU	$0	$0	$35	245	$8,575
(2) Personnel Travel					
Nova Personnel Air Int. travel to Dominican Republic and Site	$0	$0	$600	10	$6,000
Project Personnel local travel expenses to site (6 people) (per day)	$50	263	$13,150	$0	$0
Sub-total of Travel & Salaries for Project Staff	**$13,150**			**$41,795**	
D. Consultants					
(1) Consultant Fees					
Development of Audio Visual Documentary (lump sum)	$0	$0	$17,286	1	$17,286
Local Environmental Consultant (per day)	$0	$0	$150	76	$11,400
Local MDL Consultant (per day)	$0	$0	$150	56	$8,400
Sustainable Architecture consultant (per day)	$0	$0	$200	20	$4,000
Oceanographer (per day)	$0	$0	$200	10	$2,000
Sub-total of Consultant Services (Including Travel)	**$0**			**$43,086**	
F. Other (please specify)					
Community Consultation Workshops (per workshop) (3 workshops)	$1,000	3	$3,000	$0	$0
Community Renewable Marine Energy Training Workshops (2)	$1,000	2	$2,000	$0	$0
Transport and Import Fees of Wave Energy Converter to Dominican Republic	$10,000	1	$10,000	$0	$0
Sub-total of Other	**$15,000**			**$0**	
Total Uses of Project Funds	**$198,215**			**$101,000**	

3.8. IMPLEMENTATION STEPS AND PLAN

The activities to implement the project are:

(1) Project management and coordination;
(2) Basic information gathering and analysis;
(3) Identification of eligible communities and sites and selection of the pilot community/site;
(4) Baseline studies of the social and economic aspects of the community, including energy needs;
(5) Baseline studies of the physical and environmental aspects of the community and its surrounding, including wave regime, bathymetry, currents, and history of weather events;
(6) Community training in wave energy and community consultation;
(7) Sitting studies to locate the wave energy conversion technology;
(8) Environmental Impact Assessment of the project;
(9) Acquisition, construction, transport, assembly of wave energy conversion technology;
(10) Connection of wave energy converter to the community;
(11) Evaluation and monitoring of the WEC efficiency and operation;
(12) Development of a feasibility study to build a full scale mobile breakwater with modular WEC in order to contribute to beach nurturing and electric power generation in a larger scale;
(13) Development of audio-visual documentary.

3.9. REGULATORY CONDITIONS

Environmental Assessment review; locals permits at institutions like the City Hall, Corporation of State Electrical. Support of the Consejo Nacional para el Cambio Climatico.

3.10. IMPACTS AND RETURNS

This new technology that we are introducing for Climate Adaptation and Disaster Risk Management pursues to expand the project and make it into an alternative form of energy and protection of our natural resources. The innovative wave energy converter (WEC) technology will be a great source of energy for those coastal communities, reducing carbon emissions and protecting the infrastructure in risk of being hit by waves during storms in order to determine its effectiveness in lowering the power of waves reaching the coast.

3.11. SENSITIVITY (WHAT IF?) ANALYSIS

It is expected that, based on the results of the project, rural development programs and financial resources from climate adaptation funds will financed growth and replications in **Country**. Since the "adaptation technology" would also generates electric power at an expected cost of electricity lower than that of the interconnected systems, sales of excess electricity to the interconnected system would generate revenues. Feed-in tariffs for the wave energy sector, similar to the ones used for the promotion of photovoltaic energy, will contribute to the sustainability of this sector. It is expected that the project and future scalabilities and replications in the geographical area would be a CDM project (probably a programmatic one). Funds from post Kyoto cap and trade arrangements, expected to be significant from scaled projects, can also contribute the sustainability. Since the technology is not site specific, it is expected that replication will occur rapidly.

Risks and measure to handle them: Potential Challenges and Risks	**Actions to Mitigate and Manage**
How land ownership and/or land access will be negotiated once site is selected for the mobile breakwater.	Project would be located in public lands in the coastal strip within 200 meters from land. Access or permission to place the project is responsibility of the municipality. The Municipality of P supports the project and the project will comply with national and local environmental and social policies.
The benefits to local communities, local ownership and relevance to adaptation are unclear. Leaves an impression that the most tangible benefit would finally be the related electricity production.	There are several concerns of the communities in the area of influence of the project: a) Erosion due to waves in the primary road leading to the south of the country passing by the P Municipality; b) little beach tourism is attracted to the area due to the high energy of waves; and c) electric power fail daily during normal conditions and almost permanently during storms and hurricanes. The technology will contribute to solve these problems in that order.
It hard to imagine the converters could really have a meaningful impact in beach erosion prevention	The converter are basically metal floats of the size of small ships (10 meters long x 2 meters wide x 2 meters deep) and two underwater fins that sit parallel to wave crests, absorbing between 30 to 50 % of wave energy. This allows more sand to deposit in the beaches behind the converters and lowers the energy of waves reaching the coast.
An EIA needs to be carried out to aid in siting	An EIA will be carried out for the project. Specific sites have being identified, especially a couple of sites where the road is collapsing.
Sustainability in terms of maintenance and technical support is questionable.	The technology is simpler in maintenance than a fishing boat with internal combustion engine. The machine room of the converter includes chains, large pinions, fly wheels, generators and deep cycle batteries.
There is a question about technology – how contain hurricane speed winds?.	The technology is design to withstand waves of 4 meters under normal operation (i.e., parallel to wave crests). When higher waves are expected, the technology goes into a survival position placing the longitudinal axis of the float perpendicular to wave crest, withstanding waves of up to 7 meters in this modality. Winds usually would be less powerful than the waves developed by them.
The scale of the project is not defined – how big is this?	This is a pilot project. The converter would not be larger than a fishing boat, occupies and area of roughly 12 x 12 meters, and be placed very close to shore (100 to 200 meters. There are not permanent foundations

IV. SAMPLE PROPOSAL D SOLAR PV GRINDING

SOLAR PV POWERED GRINDING PROPOSAL TO ELIMINATE DRUDGERY THAT IS A USEFUL EXAMPLE OF A SMALL BUT VERY DETAILED SOCIAL ENTERPRISE.

Date: August, 2008

Investment Name: AF

Country/Region: West Africa

Technology: Solar PV

Investment Amount: 40,833 (US$63,333)

Investment Type and Terms: Five-year loan remunerated at 10.5% annually; 06 months grace period on principal only

Rationale for Interest Rate: Interest rate fixed 2% above the weighted lending rate of the past six months, which is 8.5%. This is to compensate for the longer term and the lack of collaterals.

Collateral, include dollar value: Company's assets ~US$49,048 (Inventory of Solar PV mills).

4.1. INVESTMENT SUMMARY

(1) Established since 1996, AF is a non-profit organization whose mission is to foster women literacy and empowerment in rural areas in the region of K, South of Country. In November 2007, following several successful and innovative programs and projects; AF registered a for-profit subsidiary, DP, to further through income generating activities, the social integration of individuals it had provided with basic literacy.

(2) This investment opportunity is concerned with the first phase of a program to roll out solar mills in 20 villages in the district of P to relieve about 6,299 women from the never-ending drudgery of pounding grain into flour. The roll out of solar is the first project or activity undertaken by the subsidiary DP.

(3) The majority of food consumed in rural villages is cereal-based and often needs to be processed before it can become edible. Lack of equipment means that much of the food processing has to be done manually. Consequently, a great majority of rural women still wake up early around 4 am to pound or grind grain into flour both in preparing foods as well as for markets. Grinding grain into flour is an energy intensive activity, where women spend considerable time and labor that involves exhaustive physical exercise. It takes half an hour to grind a kilogram of flour by hand, but only about one minute when using a motor-driven mill. This energy and time consuming activity takes up a large chunk of rural women's time and often prevents girls from pursuing their education.

(4) The business model for this investment program is based on establishing small-scale rural milling enterprises, built on well-trained managerial and operational staff, functioning profitably to service the loan, maintain service provision, and generate surplus for the women. The management of the solar mill in each village will be entrusted to the local women association (trained by AF, through a leasing agreement with DP. About 9.6% (US$ amount) of the financial revenues obtained from the service offered will be redistributed to women managers of the mill in the form of weekly salaries, 13% (US$ amount) will be used to cover DP's overhead, a portion representing 37.9% (US$284 per month over 60 months) will be retained for loan servicing, and the surplus or profit (~US$296.5), will be shared between DP and each women association on 50/50 basis.

(5) The share to women association will be placed in savings and credit funds to enable women to intervene in the development of the villages. Ownership of the mill will be transferred to each women association once financial obligations towards Dental are fully met.

(6) A central component of the business model entails assessing existing managerial resources and choosing the best available, and also creating the needed capacities. Twenty villages are targeted by Dental in three phases. The first phase will represent five villages, 50 women will be trained (ten per village); and from these, three will be selected per village to manage the mill. The training will include very basic accounting, functional reading and writing in their local language, and filling out the management and monitoring tools.

(7) The roll out in the 20 targeted villages was broken down into three phases:

(a) The pilot and first phase will target five villages. The total investment cost for this phase amounts to about US$63,333. This phase is expected to serve as learning experience both for DP and women associations. It will help develop a database related to methodological, technical, financial, and social on the mill performance in order to facilitate replicability of the business model and efficient monitoring. This investment proposal is concerned with this phase.

(b) Though, the supplier of the solar grinding mill, Company, has generic data on the technical and operational characteristics of the mill; the actual operation somehow differs according to different social settings.

(c) Phase two is expected to begin twelve months after phase1. Following an evaluation of phase1, phase2 will target seven villages and is expected to cost about US$88,666. Phase2 is expected to refine and standardize management and control procedures; thus providing a framework to DP to manage a larger number of (leased) mills.

(d) Phase three is expected to cost about US$101,332 and will target eight villages. Requests for financing of phase2 and 3 will be submitted to E+Co as the program evolves.

(8) DP is requesting funding of EUR 40,833 (US$63,333) for the implementation of the pilot phase that will target approximately 2,346 women in the villages of K1, K2, S, M P1, P2, and SC. The financing is expected to be in the form of a five-year loan remunerated at 10.5% with quarterly repayment and six months grace period on principal only.

(9) The salient risks features of this investment proposal include the following: Market Risk:

Mitigation:
Sustainability risk: this refers to the capacity of each milling station to survive. In other words, will the mills be able to generate sufficient revenues to cover their expenses – salaries, debt servicing, and maintenance. A steady stream of clients and a resulting steady source of revenues are a prerequisite for the sustainability of milling operations. A steady flow of revenues can also be influenced by seasonal variations in the number of clients, technical and human resources challenges, etc. Mitigation: each village is actually a cluster of several smaller villages; and as such adds up to an important potential volume of clients. The villages were carefully selected due to their demographics, and geographical dispersion to ensure sufficient volume and avoid competition. Human capacity risk: the viability and sustainability of milling operations greatly rely on the availability of adequately trained women. The training is made more difficult as there are different starting points and different learning curves given the prevalent illiteracy. There is also the potential of loss of trained women to other occupations or jobs. Mitigation: AF experience with women literacy campaigns in the targeted communities is a solid foundation from which to design and implement tailored training programs. Malso has a wealth of experience in setting up milling operations in rural communities.

Organizational risk: this refers to the capacity of women associations to establish and implement clear guidelines for the responsibilities of all involved. In addition, while the management committee (miller, cashier, treasurer, and controller) of a given women association may be representative of the association at large, this does not guarantee members that act for the benefit of the association at large. At times, committee members could be too busy with other responsibilities and not available to play their role. **Mitigation:** a consultative committee including DP team and representatives of women associations will supervise the activities and performance in each village. This committee will reiterate established rules and enforce as necessary including renewing non performing management teams to ensure that those who are not able to be fully engaged are replaced.
Technical risk: this refers to the capacity of Dental to address technical issues related to system repair and maintenance in a timely manner. **Mitigation:** the solar grinding mills produced by M have an impressive track record of reliability. There are existing systems that have been running for over five years without any complaints or break down. Basic maintenance training will be provided to three technicians residing in the village. Procedures for reporting system failures, repair requirements will be established. Does **Foreign exchange risk:** this is the risk related to the depreciation of the FCFA as a result of an increase depreciation of the US$ against the Euro. **Mitigation:** the loan will be in Euro (EUR). How practical is this given the location and sophistication of the businesses both Dental and the mill organisation

4.2. RATIONALE FOR SUPPORT

Working with women groups in the targeted villages on implementing the solar mill business model, DP will seek to promote a sustainable approach to reducing rural poverty. Rural women who are the intended beneficiaries of the mill will experience a significant reduction in the burden associated with typical household tasks as well as savings in the time devoted to these activities, which will allow them to engage in income generating opportunities and improve their overall socio-economic position. In addition to these direct impacts on women, the solar mills will lead to improvements in school attendance by girls, social integration, and mobilization of the potential productivity of women, all of which contribute to reducing poverty in rural areas. The introduction of the mills will make radical short and long-term changes possible. It will give women access and ownership to technology while maintaining their social role and responsibility for the food security and nutritional well being of their families. Access to milling services frees up both time and energy, reducing daily time spent on chores by 2 to 3 hours on average.

It is estimated that for the first phase of this program, potentially 1,082,880 hours of hand grinding could be saved by 2,346 in 564 households. These hours could be used for resting, enhancing the quality of family welfare, educating children, generating additional income, and obtaining training.

The successful implementation and sustainability of this investment program requires an in depth knowledge of the local social structure and customs. The management team has a profound experience and impressive track record of successfully implementing development initiatives in the targeted and working with the women associations that it helped setting up. The rationale for support is inconsistent with the sustainability risk presented above?

4.3. STRATEGIC IMPORTANCE:

If successful, this investment presents the potential of replication in other villages and therefore additional investment opportunities with significant social return.

No fuel requirements: It does away with the often expensive and erratic supply of fuels. A diesel mill in a village consumes on average 4,500 liters of fuel per year. A solar mill has no fuel requirements. Individual PV modules of a solar array can be readjusted in size to meet individual or group demands. The table below provides an indication of fuel consumption by a diesel mill.

Sample diesel fuel use by a grain mill in rural areas

Settlement	Energy use liter per year	Energy intensity liter per 100kg
Rural town	5,700	2.0
Rural village	4,500	1.7

Source: UNDP, 2002

It is highly reliable as compared to a diesel-powered mill; operation and maintenance are very low, simple and easy. PV modules have to be cleaned periodically; and the batteries can last between five and seven years.

Comparison of diesel and solar costs ($) for 100kg/day or 30 tons per year of grain milled

Costs items in US$	Diesel	Solar
Initial investment	3,673	7,000
Annual fuel costs	4,950	0
Operation & maintenance costs	290	35

The diesel mill here only has the milling option; while the multifunctional platform with a much powerful engine and additional modules (oil press, huller, and generator) costs about $13,580.

Fuel price = US$ 1.10 per liter. The annual savings on the fuel and maintenance cost pay back for the mill within two years.

Creation of a **new service** or **income generation activity** – the milling of cereals. The direct beneficiaries of this activity are women and girls who are traditionally responsible for milling by the use of a pestle and mortar, or the grinding stone. The time saved thanks to the use of the solar mill is one of the most patent benefits; the aggregate time saved per woman over a week in the processing of cereals (millet, sorghum and maize) amounts to eight hour. The time saved can be interpreted in two ways: less time per task and/or less arduous tasks enabling other activities to be done.

The value of the solar mill as a viable alternative to the conventional diesel powered mills lies within the nature of the technology as it is unlikely, in the short run, to have a cheaper product using the sun as source of energy. There is no cheaper solar alternative currently available to provide milling services to remote and non-electrified areas. DPs offering is the right competitive product due to its low operating and maintenance costs; and therefore its ability to provide a cheaper milling service to the end-users. Practically the solar mills will not replace diesel mills right?

Instead of looking for individuals and entities within the targeted villages that can afford to pay for the solar mill, the strategic thrust is to increase affordability of the mill by leasing the mills to small-scale rural milling enterprises, built on well-trained managerial and operational staff, functioning profitably to service the loan, maintain service provision, and generate surplus for the women. Management of the solar mill in each village will be entrusted to the local women association, through a leasing agreement with DP; each women association will have full ownership of the mill once their financial obligations are fully met. It will be the responsibility of each women association to ensure that a percentage of the financial revenues obtained from the milling services will be redistributed to women operators/managers of the mill in the form of weekly salaries, a portion will be retained for loan servicing and to pay for DP's overheads, and the surplus or profit equally shared with Dental. The share of the surplus of women associations will be placed in savings and credit funds to enable women to intervene in the development of the villages. What if the leased mills don't generate enough income? What happens to the mills and Dental?

The designation of each village for the establishment of the milling enterprise occurred through a participatory pre-feasibility and feasibility assessment by DP. This assessment was undertaken in two phases. First, a relatively short assessment was undertaken to determine whether the basic conditions (demographics, social organization) for a milling business were present. Once the first assessment confirmed the potential for a self-sustaining milling business in the village, a full participatory assessment was conducted to confirm social and economic viability. This assessment covered mainly two issues: economic profile of the community, and women's economic and social organization. This enabled DP to make informed choices, and clearly identify the scope of capacity building required. The mills will be installed in small buildings, built or provided by the communities, at a central location in each village, typically adjunct to an existing primary business, such as a tuck shop. It is DP's belief that community mills can and should be economically viable entities. This principle reflects the evolving economic conditions in the development field, which increasingly support the finding that the provision of energy services in rural and low income areas can be self-sustaining, as well as reinforcing broader development and economic objectives. Each milling enterprise will be expected to generate enough income from its day-to-day operations to fund its operating costs, provide a reasonable enough salary for the millers, and also service the loan. The bulk of the revenue will come from direct customer payments for the service. Prices of the service will be set to ensure the financial sustainability of the milling enterprise as well as maximum affordability for local end-users. This means that milling services will be priced in direct relation to the charges paid by women associations to DP, plus some mark-up to cover labor and overhead costs. Prices for milling will be FCFA35 (US$0.083) per unit, the unit being a tomato tin of 01 kg or similar container.

The villages have a total population of 12,113; with approximately 6,299 women. The socioeconomic profile of the area is characterized by an annual gross per capita income of approximately US$370 against US$530 at the national level. Dominant economic activities are maize, rice, cattle breeding, millet, groundnut, cotton production, and vegetable garden crops. Typical poor households with average annual revenue of US$800–900 households derive their revenue from farming and income generating activities including gardening, poultry farming, tie-dye for clothes, shops, and animal fattening. The table below presents the demographics of the five villages involved in the first phase of the investment program.

Demographics of the first phase

Village	Population	Satellite villages		Total targeted Population
		Number	Population	
K1	255	05	566	821
K2	177	3	305	482
M	489	5	477	966
P	1,503	2	313	1,816
SC	110	2	318	428
Total	2,534	17	1,979	4,513

(1) The mills will be located in the main villages but will also cater to the needs of the satellite villages. These are villages situated within an average range of two to three kilometers.

(2) With an estimate of eight people per household, it is estimated that the first investment phase will provide service to about 564 households, and approximately 2,346 women.

There are numerous uncertainties surrounding the factors that will influence demand, and there is very little or no practical experience with this type of technology and business model in the targeted communities. Nevertheless, postulates were made in developing a basic framework for analyzing a range of demand and revenue scenarios for each milling enterprise in the targeted villages. This foundation helped to establishing the parameters for both individual business plans as well as the broader rollout forecast.

Data from the feasibility analysis suggest that use of the milling service, as well as the amount spent will vary by season. The number of clients' visits is expected to be lower during the dry season and higher during the rainy season while potential expenditure per visit is expected to show an opposite pattern.[1] The table below presents estimates of visits and expenditures per village involved in the first phase of the roll out.

[1] To simplify the analysis, the financial model shows conservative estimates throughout the year.

Demographics of the first phase

Village	Dry season		Rainy season	
	Visits	Expenditures ($)	Visits	Expenditures ($)
K1	1,231	821	1,648	588
K2	723	482	964	344
M	1,449	966	1,932	690
P	2,724	1,816	3,631	1,296
SC	642	428	856	306
Average	1,354	0.66	1,806	0.36

It is estimated that a minimum of 90% of women will use the mill; this represents an average of 1,354 visits per month per village (3 visits per week per household) during the dry season and an average of 1,806 visits during the rainy season (4 visits per week per household). While expenditure per client visit is expected to average FCFA232 (US$0.55) per visit, clients are expected to spend on average FCFA150 (US$0.36) per visit during the rainy season and about FCFA280 (US$0.66) per visit during the dry season. Milling needs are much higher during the harvest season, when women's time is scarce, and energy needs are higher.

With a better understanding of the community socio-economic environment, potential market size, milling operation and financial plans were developed based on realistic expectations and therefore more likely to result in successful business cases. The table below page provides an illustrative sample of an economic forecast for a standard milling business.

Standard monthly economic features

Quantity of grains processed	9,000 kg
Revenue from milling	$750
Operator's remuneration	$72
Overheads of Dental	$97.5
Loan payment	284
Total expenses	453.5
Net income or surplus	296.5

The actual number of operating hours is flexible as needs may vary according to time of the day, and season. Overall, it is expected that the mills will operate from 8 to 11 o'clock in the morning and from 3 to 6 in the evening. The average daily income per mill is based on the assumption of 300 kg of grains processed per day at a price of FCFA35 per kg (˜US$0.083).

The mill requires for its operation and management, a new type of know how and work organization which necessitates prior strengthening of operational capacities of women. Members of women's associations will be trained in managerial and entrepreneurial skills to ensure the technical and economic viability of the mill. This is a critical component in ensuring that each milling business is led by and works for the women. The approach adopted by Dental consists in training ten women per village, designated by women associations among whom the future mill managers will be chosen (cashiers, millers, treasures, and controllers). This is to ensure flexibility in the selection of operators according to criteria of competence as well as social criteria appropriate for each village. This number will also allow a rotational system, which will enable women to reconcile the necessity of a permanent presence at the milling station with the requirements of their daily schedule. Young women who have received adult literacy training or semi schooled will constitute the core of the management system because of their instruction and the training which is indispensable for the management of the mill operations. They will assist women who do not receive the adult literacy training in the accomplishment of their functions – cashiers, treasurers.

The responsibility of key stakeholders involved in the scheme will be as follows:

(1) DP will secure financing and purchase the mills; strengthen the capacity of women associations in the provision of the service such that they will be able to survive economically. Dental have developed tools to monitor the economic performance of the milling operations in the villages. Transparent collection of data will make it possible to pinpoint both deficiencies and successes.

(2) Women associations: mobilization of village labor and funding for the construction of the shelter to host the mills, operation of the mills, management of resources generated by the milling enterprise. The women's association establishes management mechanisms to ensure smooth implementation. The association elects management committee members who will oversee milling operations, schedule the work, distribute benefits arising out of the mill operation, and develop a mechanism to address any potential confrontations that may arise.

(3) M: supply and install the mills, provide training to women to operate and manage the mills, train staff members from Dental responsible for preventive maintenance, ensure maintenance.

Management and Sponsors-detailed descriptions follow ... Implementation Strategy

(1) The existing women associations established in each village since 2003 will be the cornerstone of this program. The women associations will provide the social collateral to ensure that the leasing obligations are met by each village. Each women association will sign a formal leasing agreement with DP. The associations will sensitize their respective members, mobilize the village labor and funding for the construction of the shelter to host the mills, operate the mills, and manage the resources generated by the mills.

(2) Based on pre-agreed criteria with DP, each association will appoint a management committee of five members.

(3) DP will provide training to the members of the management committees to ensure that they are equipped to properly manage the milling operations.

(4) Once a week, a program supervisor from DP will visit each milling enterprise to monitor activities and performance, and address potential problems.

(5) Sales revenues from milling operations will be deposited in accounts opened with micro-credit institutions. At the end of each week, reconciliation of each account will be made by Dental and proceeds shared as stipulated in the agreement with women associations.

(6) M will provide technical training, and maintenance.

4.4. FINANCIAL CONTROLS

Financial procedures in place are simple and mostly focus on recording expenses in order to report to funders or donors. The organization does not employ a qualified accountant, and does not generate financial statements. Recommendation was made that the organization hires the service of an accountant on a part-time basis, working at least two days per week.

4.5. TECHNOLOGY

The solar panels are connected to a bank of batteries using a solar charge controller. The motor of the mill is then connected bank of batteries by means of a switch that that is used to turn the motor on and off. Power is delivered to the motor and used for grinding when the switch is turned on. The quality and reliability of the mill is the result of twelve years of technical development and more than five years of field testing in three villages. The rural motorization for cooling, freezing, ventilation, milling, peeling etc. requires a rugged, simple and locally sustainable design. This means no power electronics. These criteria led to the choice of a dust-proof brush motor design. The engine – the M 1,500 Motor – is supplied with standard 18-teeth pulley which can be easily dismantled for bearing replacement; the mill hammers and the pump impeller can be directly adapted to this pulley; this reduces stockholding and tooling problems. An opening in the brush area allows for collector cleaning in motion with an abrasive rubber stick. The main characteristics/data of the system can be summarized as follows:

Main Data

Nominal voltage	24 V @ 4,500 rpm
Full load current	80 A 3.33 Nm
△T on frame at full power	60° C
Approx, efficiency at full power	78%
Ventilation	Rear shaft fan
Mounting	Flange or foot
Weight (with pulley)	17.5 kg
Max current	100 A
Max voltage	60 V
PV modules	120Wp
Charge controller	6.0–6.6
Batteries	24 V

The solar mill is operated by one woman or miller.
The starting of the engine requires no physical exercise.
The mill has an average capacity of 160 kg per day.
When used properly, the engine has an estimated lifespan of 15 years.

4.6. FINANCE

Finance required

Description	E+Co	Sponsor	Ret. Earnings	Other	Total
Pre-operational expenses	6,190	1,952			8,143
Initial inventory/raw material	–				–
Land & buildings	–	9,524			9,524
Plant & equipment	47,619	–			47,619
Office furniture	2,381				2,381
Legal Fees	2,381				2,381
Working capital and contigencies	4,762	–			4,762
Total	$ 63,333	$ 11,476	$ –	$ –	$ 74,810
	84.7%	15.3%	0.0%	0.0%	100.00%

Financial Summary

	Projections				
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Assets	78,712	78,927	77,392	75,509	73,226
Liabilities	64,362	50,899	35,966	19,402	1,029
Equity	14,350	28,028	41,427	56,108	72,197
#Units	540,000	540,000	540,000	540,000	540,000
Price Per Unit	0	0	0	0	0
Total Revenue	45,000	45,000	45,000	45,000	45,000
Cost of Sales	10,286	10,286	10,286	10,286	10,286
gross Profit	34,714	34,714	34,714	34,714	34,714
gross Profit %	0.0771429	0.771429	0.771429	0.771429	0.771429
operating Expenses	4,429	4,429	6,179	6,527	6,927
EBITDA	30,286	30,286	28,536	28,188	27,787
Interest	6,650	6,131	4,661	3,030	1,221
Depreciation	10,476	10,476	10,476	10,476	10,476
Taxes					
Net Income	13,160	13,678	13,398	14,681	16,090
Net Cash Flow	3,081	6,275	3,641	2,233	561
IRR to E+Co	10.48%				

Investment Terms

Loans Terms	
Currency	Euro (EUR)
Loan Amount	EUR 40,833 (US$63,333)
Loan amount to be disbursed	EUR 40,833 minus legal fee
Annual Interest Rate	10.5% per annum
Interest rate per installment	2.625%
Penalty interest rate	5%
Payment frequency	Quarterly
Installment	~US$4,899
Grace period	Six months on principal only
#principal payments	16
Guarantees/collateral	Personal suretyship of shareholders; Company's assets
Date commitment expires	October28, 2008

4.7. IMPACTS

Social Impact

- Rural women are tired, overworked, and undernourished. What would women do with the time and energy saved if they reduced the time and effort dedicated to pounding grains? Most women would spend more time enhancing their family welfare; engage in income generating activities; spend more time with the children and rest. These are all activities which women in rural areas do not have sufficient time for. An increase in available time may indirectly contribute to a rise in productivity in the fields as well.

- It is estimated that Phase1 of the roll out will make 1,082,880 of working hours available to women over five years.

- Rural women are economically and socially deprived. The first phase of the project will see the creation of 15 part-time jobs created by Women associations; this number is expected to grow to 60 by the third phase of the investment program.

- 2 part-time jobs will be created within DP – bookkeeper and maintenance officer.

- Increased in education levels – schooling of young girls who are released from time-intensive activities, training and literacy classes for women.

Environmental Impact

The dissemination of the solar mill provides national economic benefits as it reduces reliance on costly imported fossil fuels. The mill is carbon dioxide free therefore displaces the emissions of harmful gases by generated by diesel powered mills. The waste from the grinding process is minimal. Used batteries are often sold to craftsmen who melt the metal and reuse it. The government also plans to establish a recycling program.

V. SAMPLE PROPOSAL E SMALL AGRO-PROCESSING PROPOSAL

SMALL-SCALE AGRO-PROCESSING PROPOSAL THAT IS USEFUL FOR EXPLORING BOTH THE SOCIAL DIMENSIONS OF DEVELOPMENT AND THE COMPLETENESS AND CLARITY REQUIREMENTS OF A PROPOSAL.

Date: March, 2010

Name of project or enterprise: ENVIRONMENTALLY IMPROVED, SMALL SCALE, LOOPHA GOURD PROCESSING

Product or service: Improved processing technique for Loopha gourds, involving modified peeling technique and improved gourd peeling, washing and drying facilities, resulting in significant mitigation of water and airborne contaminants, reduced processing time, enhanced product quality and nutrient recuperation.

Technology: Adequate gourd harvesting and processing time; improved gourd peeling, washing and drying facilities; solid waste recovery and compost production; water recycling for Loopha plantation irrigation and nutrient recovery; carbon conversion and GHG emissions reduction; waterborne contamination reduction and improvement in natural water quality.

Customers/clients: The 'EV' Loopha gourd producer's cooperative (30 members, small and mid scale Loopha producers)

5.1. CURRENT STATUS

- Needs assessment, based on quantitative assay of the quality of natural waters in the project area for environmental impact assessment, gourd processing techniques analysis, and basic socio-institutional analysis, based on participatory appraisal techniques completed.
- Alternative processing techniques ('soft' and 'hard' elements) designed and developed; technical feasibility analysis and pilot phase trials completed, validating the applicability of an alternative peeling and washing technique developed for Loopha gourds, significantly decreasing the production of organic contaminants in water and air, and avoiding digestion related CH_4 emissions, whilst cutting down on processing times and labour input.
- Technology replication strategy, introducing small scale improved processing facilities agreed with project clients/beneficiaries. Project fully dimensioned and specified.

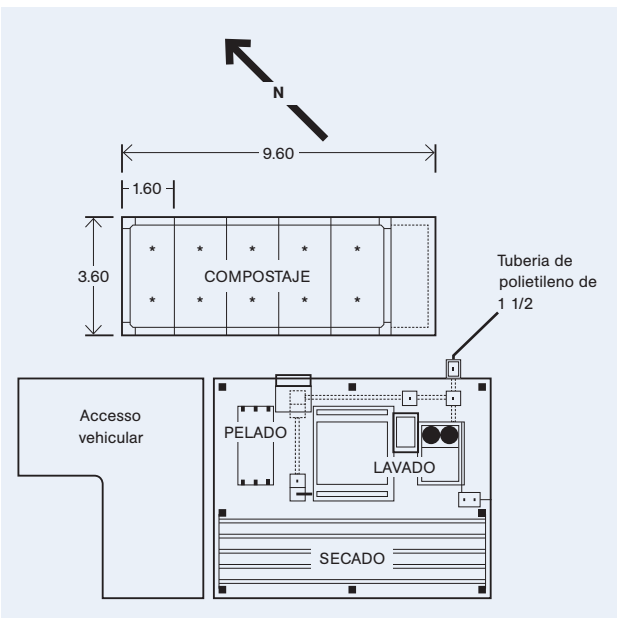
5.2. PROJECT SIZE, EXPECTED SCHEDULE AND COST, DIVIDED BETWEEN PLANNING, CONSTRUCTION OR PREOPERATION AND OPERATION

Project consists of the construction of four demonstrative and operational improved processing facilities (hard elements) distributed amongst the gourd producers in the EV and sister settlement areas

5.2.1. HARD ELEMENTS

Physical installations for the improved processing of loopha gourds are illustrated in the diagram. Each consists of:

- **Improved peeling facilities:** Gourd storage table (cap 200 gourds), peeling table, peel slider and deposits, for 4 gourd/min-person peeling capacity.
- **Improved washing facilities:** Washing tank (cap 600 gourds) consisting of a continuous flow, double walled deposit of 4,9 m^3 volume enabling the washing of 600 gourds in 2 hours at a minimum operational (clean) water flowrate of 26 l/min and ancillary rinsing and washed gourd handling facilities.



- **Improved drying facilities:** Sheltered, stacked, protected and vented facilities for overnight drying of 600 gourds. Overall roofed area for peeling, washing and drying facilities: 57.4 m^2.
- **Composting facilities:** 34,6 m^2 composting facilities for the production of 6 to 8 m. tons of compost per batch.
- **Irrigation facilities:** Water transport and distribution equipment and infrastructure consisting of 100 m x 40 mm polyethylene tubing, earthen main irrigation ditches and 10 mm x 2 m irrigation stubs for the plantation.

5.2.1. SOFT ELEMENTS

- Institutional diagnosis and feasibility of re-engineering appraisal of the El Victoriano cooperative;
- training and support provision in institutional transformation and capacity building;
- project execution support and follow-up;
- survey of the local population's attitudes towards environmental risk and change, including climate change;
- participatory analysis of technical change, particularly amongst gourd producers, so as to support the design and execution of a
- analytical, 'concientizational' and communicational campaign in support of technical, environmental, organizational and social improvement.

Indicative project costs are as follows:

Cost element	Indicative cost (US $)
Process infrastructure	68,000
Technical assistance	52,000
Training and communication	48,000
Supervision	8,600
Total	176,600

5.3. CURRENT NEEDS AND REQUEST

- Current processing methods, through the so called 'rotting waters' technique, discharge untreated effluents to natural watercourses exceed national discharge standards which entail natural baseline water quality alterations leading to eutrophisation, oxygen depletion, sediment formation and surface frothing in streams and rivers in the processing zones.

- The rotting technique employed for Loopha gourd processing (peeling) produces noxious odours altering ambient air quality in surroundings usually close to people's homes and processing facilities. It is greenhouse gas emission source, releasing CH_4 and CO_2 to the atmosphere.

- The adoption of an already developed, improved processing technique for dry peeling and low organic load washing of the gourds creates the opportunity to significantly diminish water and air contamination and GHG emissions, whilst utilizing residual nutrients in irrigation and fertilization. The employment of the improved technique would also reduce production effort and costs, as well as the overall amount of water utilized in gourd processing, and its alteration.

- Given the 'cultural inertia', and familiarity with, and adherence to, the traditional processing techniques, the employment of the improved technology by peasant Loopha gourd producers requires its consolidation and validation at a small scale, local level, before attempting to introduce it at a regional and national level. This requires not only to construct and sustainably operate additional trial and demonstration facilities, but also to analyze producer's and population's attitudes and expectations towards environmental and climate change, as well as producer's attitude towards technical change, identify potential resistances to it, and to react appropriately through communication and concientization actions aiming at emphasizing and illustration the environmental, technical and economic advantages of the new technique.

- Technical change in gourd processing will not be sustainable if the producers organizational matrix is not also consolidated. The successful accomplishment of the proposed project requires producers coordination and concerted action, and the EV producers' cooperative, with adequate conduction, could play a fundamental role in catalyzing and coordinating such. However, the cooperative itself is currently very weak and has not delivered any significant proof to its members of, nor has it been capable of catalyzing, the advantages of cooperative action. If the cooperative potentials are to be materialized, and its probably instrumental role in project development supported, it will require significant organizational re-engineering.

5.4. MARKET CONDITIONS

- Given cooperative failure, the EV gourd producers have been marketing their produce on an individual basis to local, regional and national buyers that come to purchase to the community, as happens in the general case of Loopha gourd and sponge production in Honduras. The gourd is sold whole, or else, cut and processed as ready made Loopha bath sponges. It is in the latter form that the sales are more profitable for the producers, as this incorporates more labour, although the said processing signifies that not all the gourd is used up, as waste is generated, and it entails the use of exogenous raw materials, as towel cloth and others.

- Overall local, regional, national and international market structure and behaviour needs to be studied in depth to establish potential and eventual project development conditions that could favour further benefit enhancement from the adoption of the improved technology.

- The producers oriented towards local, national and regional markets (exclusive current market orientation) where the product is consumed (mainly at the low income spectrum of the market) would benefit from the technique, in as much as it would signify the reduction in production costs, favouring their product's competitive stand.

- The fourth market niche, oriented to (mainly) high income consumers in the developed world through specialized body care shops, could present an interesting sales potential, to be further explored, but which would demand high and consistent quality standards. The benefits of the technique would also be evident in such a scenario, as it could help assure processing consistency.

5.5. OPERATING CONDITIONS

Required by project:

- Gourd production
- Improved facilities in place and operational
- Gourd producers willing to modify cropping practices, cutting gourd at a later maturity stage
- Gourd producers willing to use improved processing facilities entailing modified peeling and washing practices
- Social coordination in place such that various facility users have access to their respective, local improved processing facility
- Gourd producers willing to coordinate in upkeeping composting and irrigation practices

5.6. REGULATORY CONDITIONS (INCLUDING ALL REQUIRED APPROVALS)

Given its small scale, this project is classed as Category 1 in the environmental project category classification of the Ministry of Natural Resources and Environment, meaning it can be licensed through an environmental registry and the licensing provisions of the local municipalities. An environmental impact statement may be required for this project.

5.7. OWNERS AND SPONSORS

Owners: EV Loopha Producer's Cooperative, or else cooperative members, organized as community based technology users.

Sponsors: Still to be found

5.8. TEAM

- Cooperative coordination team
- Community based coordination team
- Technical support team

5.9. STAKEHOLDERS

Actor	Prime interest	Prime stake
Gourd producers	Reduce processing costs and inconveniences Transfer capital to their community	Crop 'risked' trying out new technology
Financial sponsors	Diminish overall GHG emissions by investing in cleaner technology	Investment failure due to project malfunction or unsustainability
Technology developers/ project promoters	Develop and transfer appropriate and sustainable technology	Time and resources invested in project development, if it fails or proves unsustainable

5.10. GOVERNANCE AND MANAGEMENT STRUCTURE (DECISION-MAKING, AUTHORITY AND RESPONSIBILITY):

Project conductance should happen under a joint governance and management structure composed of qualified representatives of the identified stakeholders.

Decisions should abide by the spirit of a general agreement, to be reached between the parts after the cooperative's institutional analysis is completed.

5.11. IMPLEMENTATION STEPS AND PLAN

- Do not implement infrastructural investments if minimum organizational platform is not in place, thus conduct cooperative's institutional analysis first.
- Since cooperative has not been prominent in fostering collective action, normal or fallback strategy of producers is action centered upon the family and immediate community, to which they relate as a resources base and support source.
- Implement on a per-community base if implementation with participation of the cooperative as a key element in project coordination is not warranted.

5.12. CASH FLOW AND SCHEDULE DETAILS

To be defined.

5.13. IMPACTS AND RETURNS:

Impacts:

- Diminishment of waterborne and airborne contamination, including GHG emissions
- Diminishment of water usage for gourd processing
- Diminishment of current gourd processing time from 7 days (max) to 1 day (max)
- Diminishment of labour requirements to transport and process gourds
- Enhancement of nutrient availability for plantation fertilization

Returns:

- Lower production costs and more competitive market edge
- Cleaner living environment
- Potential for benefits thorough CDM

5.14. SENSITIVITY (WHAT IF?) ANALYSIS

To be conducted once the cooperative's institutional analysis is completed, as potential scenarios ought to be clearer then.

5.15. RISKS AND MEASURE TO HANDLE THEM

(1) 'Coop' failure: Succesful project implementation will require coordination amongst gourd producers in the construction and operation phases. In the former, labour will be necessary for the erection of the processing facilities and since the outlook is to provide one single facility for various producers centred in the various communities, agreements as to where the facilities will be sited, and land use permits for so doing will be required. In the operation phase, a calendar determining which producer can use the facilities on what dates will be necessary to program facility use. Normally, the said decisions and required coordination could be brought about by the cooperative. However, the interplay of interests and organizational responses could well not favour joint, concerted action through the cooperative. In this case, the 'logics' of project implementation should be based on communal orientation and interests.

(2) 'Politization' of processes and decisions: Much of the dilemmas phased by the cooperative are related to the interference of (national) party politics and the alliances these entail, which could well not represent the real interests of the producers. It is thus very important, in this connection, that a proper institutional analysis of the cooperative be made and that the required actions for it to perform as a properly organized and dynamic cooperative be brought about. Transparency and stakeholder participation in the decision making process needs to be guaranteed to ensure extra cooperative interests do not end up defining the agendas for project execution.

VI. SAMPLE PROPOSAL F LARGE AGRO-INDUSTRIAL PROPOSAL

LARGE-SCALE AGRO-INDUSTRIAL PROPOSAL WITH GOOD ANALYTICAL, TECHNICAL AND TECHNOLOGY TRANSFER DIMENSIONS.

Date: October 2008

Duration: 2 years project

Name of Project: Using of Agricultural Waste for Production of Electricity by Using of Biogas Technology

Location: E

6.1. PRODUCT OR SERVICE

The project aims at producing biogas which could be a source for production of electricity. This will be done through establishment a pilot integrated biogas unit for generation of 1 MW electric power through the digestion of biomass. This would be through using the total amount of biomass of approximately 30000 tonnes/year which are manly combination of rice straw waste, green leaves, cow manure and chicken manure.

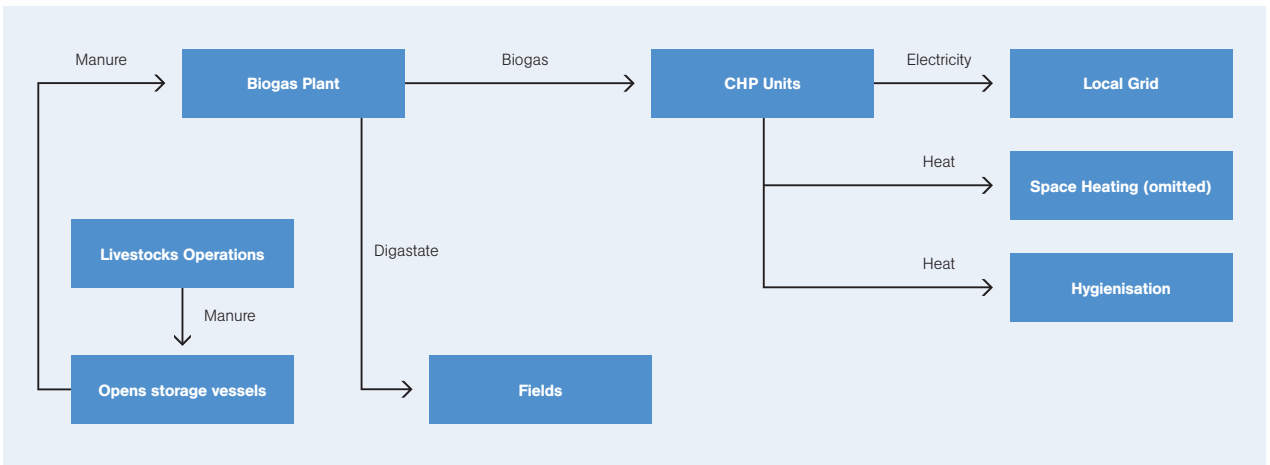
The integrated biogas unit would enable the anaerobic treatment of the biomass in a closed digester system. The anaerobic digester system converts organic matter to methane-rich biogas. The generated biogas and the biomass are combusted in a boiler to produce energy. This energy substitutes the consumption of fossil fuel used for generation of electricity.

6.2. TECHNOLOGY

Biogas typically refers to a gas produced by the biological breakdown of organic matter in the absence of oxygen. Biogas is comprised primarily of methane and carbon dioxide. Biogas originates from biogenic material and is a type of bio-fuel. Biogas is a product of the anaerobic digestion or fermentation of biodegradable materials such as manure or sewage, municipal waste, and energy crops. The methane in biogas gives it the ability to be used as a fuel. The combustion of which releases energy. It can also be utilized in modern waste management facilities where it can be used in gas engines to generate electricity. Biogas is a renewable fuel and electricity produced from it can be used to attract renewable energy subsidies in some parts of the world. Biogas is comprised of about 60% methane, 40% carbon dioxide and between 0.2% to 0.4% hydrogen sulfide.

Biogas has been effectively used as a fuel in industrial high compression spark ignition engines. To generate electricity an induction generator can be used and is the simplest to interface to electrical grid (the figure below shows the biogas technology used for production energy).

The biogas technology used for production energy



6.3. TYPES OF ANAEROBIC DIGESTER

(1) **Covered Anaerobic Lagoon**
It consists of plastic impermeable flexible cover with manifolds designed to collect the gas produced.

(2) **Complete Mix**
Complete mix digester is an engineered tank either above or below ground typically constructed of either steel or concrete that is heated, complex mix digesters are appropriate for all climate conditions.

(3) **Plug Flow**
Plug flow is an engineered, heated, rectangular tank with a fixable cover for biogas collection, they are best suited for operate in any climate condition because they are internally heated, plug flow digesters can operate.

Customer and Clients
The main customers for the project are the industrial enterprises which generates huge amount of agricultural waste which could be used as a source for renewable energy by converting them to biogas (e.g. farms, agro-food industries and produced of pharmaceutical and medical herbs).

Current Status
Beside the marketable part of the agriculture products which could be used for food, feed, oil, fibre, medicine and other industrial products, there are almost 15–20 million metric tones of low cost residues available annually with very high energy content. The distribution pattern of the different crops makes it appear there is a good chance to use the crops residues as a tool for local rural development by introducing biogas technology by using rice strew as source for electricity by using bio-gas techniques.

Project Size, expected schedule, cost, divided between planning, construction or pre-operation and operation

The present project is consider as small size project and expected to take two years of implementation and monitoring. The planning of the project will take 4 months and construction 1 year and preparation four months and full operation will take four months.

Current needs and request
The current needs and request to implement the project could be summarized as follows:

(1) Technical Support (technical experts, technology selection, technology installation, training etc.)

The integrated biogas unit should include the following equipment:

(a) Digester, with its utilities as follows:
- Secondary treatment.
- Reverse osmosis.
- Storage system.

(b) Gas holder.
(c) Boiler.
(d) Turbine.
(e) Generator (power generations synchronized with grid).

(2) Financial Support (funding for starting project and project implementation)

Market conditions
There is high demand for the electricity with the new pricing system for Energy which raised dramatically the prices of energy used in industrial and domestic uses. So the present project would provide a renewable and sustainable alternative for energy which could be absorbed and diffused in the market.

Regulatory conditions (including all required approvals)
According to the Environmental Law (Law 4 for 1994) all the new projects must conduct an intensive environmental Impact Assessment Study for their activities and must get approval from the Environmental Affairs Agency (EAA) otherwise the projects will be rejected. The current project has got approval on its EIA study which presented to EAA. This would be used as the background for all the required legal approvals required for the project.

Owners and sponsors
The project will be managed by the Cleaner Production Centre in close cooperation with a company produces an extensive variety of consumer products in the fields of natural pharmaceuticals, organic food and textiles, information technology and ecological services. The products are made from ingredients from biodynamic farming. This method undertakes to restore and maintain the vitality of the soil and food as well as biodiversity.

Team
The team of the project will include of the following agencies:

- National Cleaner Production Centre as the main Executing Agency
- United Nations Industrial Development Agency (UNIDO) as supporting international agency
- Ministry of Agriculture – Agricultural Research Institute
- Company

The project management will hire national and international technical experts to support the implementation of the project.

Stakeholders

- Ministry of Trade and Industry
- Ministry of Agriculture – Agricultural Research Institute
- Ministry of Environment – Egyptian Environmental Affairs Agency
- United Nations Industrial Development Organization
- Industrial Modernization Centre (IMC)
- The Center for Energy Studies
- Private Sectors

Governance and Management structure (decision-making, authority and responsibility)
Under the supervision of UNIDO (United Nations Industrial Development Organization), the project is managed and implemented by the Ministry of Trade and Industry and its National Cleaner Production Center in close cooperation with the local and international partners

Implementation steps and plan
The implementation plan of the project will contain main following steps:

- Identify the current situation for rice strew management Identify the potential application and use of the rice strew as source for biogas
- Cost Benefit Analysis for the project
- Identify the required Technology(Biogas Plant)
- Implementation of a pilot Biogas plant
- Operation and Monitoring of implementation
- Final evaluation and documentation of project
- Awareness raising and information dissemination for the stakeholders

Cash Flow and Schedule details

Required investment

Equipment	Required investment	
	U.S. $	Local Equivalent*
Production unit	1.200.000	6.360.000
Installation coast estimated	180.000	954.000
Total	1.380.000	7.341.000

6.4. OPERATING COSTS

Table (2.2) presents the operating cost required to produce one Kw/hr of electricity after implementing the electric generation unit.

It is seen from the table that the production cost is about 1,681.58 Ton.

Production cost per KW/hr electricity

Input	Unit(Kg)	Local Cost
Rice straw	50.0	0.10
Fuel	0.01	0.01
Electric Power	0.02kWh	0.01
Depreciation	15 years	0.08
Other Industrial Costs		0.02
Administrative Costs		0.01
Total, EGP/Ton		0.23

- The cost of Rice straw = 2 Local per Ton
- The price of KWh = 0.334 Local/KW/hr

Estimation of Profit

The sales cost of KW/hr is about 0.334 Local. This means that the total profit per KW/hr will amount to about 562.84 Local/KW/hr.

The production will be 6.480.000 KW/hr/y corresponding to a yearly profit of Local 6.480.000 0.104 = 673.920 Local/year

Payback Period

It is clear from the above investment and operating cost that the payback period would be

$$\frac{7.341.000}{673920} = 10.89 \text{ years}$$

Impacts and Returns

The integrated biogas unit requested by the company should enable the anaerobic treatment of the biomass products, which include rice straw, green leaves, cow manure, and chicken manure. The anaerobic digester system converts organic matter to methane-rich biogas, which will be captured and combusted in a boiler for renewable power, thus converting its methane content into carbon dioxide and thereby reducing its greenhouse gas effect. Biomass will be used as input to the boiler for electricity generation. This supplementary fuel will enable the unit to continuously generate energy even at times of failure of the anaerobic digester or non-availability of methane-rich biogas. The integrated biogas unit requested should be fully developed.

Sensitivity (what if?) analysis

The sensitivity of the project could be the following:

- Shortage in the feedstock of rice strew
- Maintenance or Spare Parts problem with the biogas unit.
- Cost of Production of biogas is high comparing to other sources of energy
- Sustainability

Risks and measure to handle them

(1) Shortage in the feedstock of rice strew
This could be avoid by establishment a long term agreement with the farmers for the delivery of their rice strew in close cooperation with the Ministry of Agricultural

(2) High cost of maintenance or spare parts problem with the biogas unit.
This could be handling through a long-term contract with the technology supplier to ensure availability of full support for maintenance and providing of spare parts. In addition a high technical training for the unit management on maintenance measures should be provided

(3) Cost of Production of biogas is high comparing to other sources of energy
This could be handed by providing economic incentive to keep ruining the unit (tax free etc.).

(4) Sustainability
It is very crucial to ensure the sustainability of the project. This could be done by introducing the project as a Clean Development Mechanism (CDM) Project which will provide significant environmental and economical benefits.

VI. SAMPLE PROPOSAL G
WATER SAVING PROPOSAL

WATER SAVING PROPOSAL TO INCREASE ECONOMIC DEVELOPMENT VIA MULTIPLE PARTNERS AND ACTORS

Date: September 2010

Name of project or enterprise: Introduction of Water Saving Technologies in Selected Pilot Regions with Focus on Drip Irrigation

Location: S and A, Republic of Country

Product or service: Irrigation services for agricultural production in the selected pilot area through water saving approach

Country is a lower middle income country with 3.2 million of population. Local food production is particularly important economic and human security issue. Agriculture generates 18 percent of gross domestic product (GDP). The World Bank attributes rural poverty to low farm productivity caused by a lack of irrigation, long distances to market, and few employment alternatives. Agriculture is both important to GDP and important to the livelihoods of its most vulnerable citizens, the rural poor. Agriculture is also the main water users sector. Total water abstraction is about 3,012 million m^3, and from the abstracted amount 88% is used for irrigation purposes. Water is mainly delivered through the irrigation network mostly constructed before 1990s.

According to the UNDP/SEI report "Socio-economic impacts of climate change", the climate projected for 2100 is expected to cause total losses to the agricultural sector of USD 190 to 420 million (with an average impact of US$300 million); or annual loss of 2 to 5 percent of GDP, due to a number of reasons, including less water available for irrigation.

Thus, introduction of water saving technologies, promotion to minimization of water losses from irrigation system and increasing agricultural production is a priority socio-economic issue for the Government.

Technology: Drip irrigation technology

Customers/clients: The project clients are local small-holder farmers from around 30 communities in the above-mentioned regions who will benefit from the project through increasing their crop production, income, and household food security.

Current status: The project idea is approved by the Ministry of Nature Protection, Ministry of Agriculture and UNDP. However, the sources of core financing have yet to be defined and full financing needs to be leveraged for commencing of the project.

Project size, expected schedule and cost, divided between planning, construction or pre-operation and operation: The total project cost is estimated at USD 1,950,000 comprising of 1,330,000 to be requested from the GEF or Adaptation Fund, and 620,000 – to be attracted from co-financers. The grant support will be delivered in the form of technical assistance which is considered the most suitable modality for grant delivery given the nature of barriers to be addressed and proposed intervention (evaluation of market opportunities, cost-benefit analysis, capacity development, training, awareness raising and demonstration of introduction of water saving technology). The co-financing is envisaged from the bi-lateral technical assistance aids, private sector and the Government.

Activity		Schedule	Planning	Pre-operation	Operation
(1)	Promotion to development of national policy and regulatory framework to promote application of water saving irrigation technologies	Year 1–2	80,000	200,000	
(2)	Technical and institutional capacity building; Market survey for introduction of drip irrigation technologies	Year 1–2	150,000	120,000	80,000
(3)	Demonstration of drip irrigation system on pilot farms and nurseries.	Year 3–5	140,000	120,000	700,000
(4)	Monitoring and evaluation of project implementation	Year 1–5		120,000	80,000
(5)	Project management	Year 1–5	30,000	30,000	100,000
Total					1,950,000

Current needs and request: A total investment of USD 1,950,000 is needed. The core financing of the project needs to be ensured to be eligible for receiving financing from the GEF or Adaptation Fund. The planned breakdown of co-financing includes the following:

Sources of Co-financing	Type of Co-financing	Project
Project Government Contribution	In-kind	200,000
Project Government Contribution	Cash	60,000
UNDP	Grant	100,000
Private Sector Contribution	Cash	260,000
Bi-lateral Aids	Cash	0
Total Co-financing	Cash	620,000

Market conditions: There is insufficient information on the market opportunities, application areas and economic feasibility, as well as possible support schemes for introduction of drip irrigation technology in **Country**. Despite the fact that the Government plans to expand irrigated areas and reduce water losses, there is still insufficient information on the market opportunities for introduction of drip irrigation, cost-effectiveness analysis, as well as knowledge and technical skills for selection, application, operation and maintenance of state of art technologies in that field.

Regulatory conditions (including all required approvals). Currently, irrigation sector is regulated by the National Water Code, National Water Policy, and National Water Program, Law on Water Users' Association and several regulatory acts and by-laws.

The improvement of water management and enhancement of the water saving policies and measures are among the top priority adaptation needs. The project is a national priority according to the Sustainable Development Strategy Program, the above-mentioned Laws and Draft Policy Statements for the Irrigation and Drainage Policy of the Government. All of the afore-mentioned documents clearly indicate the need to better manage water resources, significantly reduce water loss, promote introduction of water saving technologies, which will allow improvement of irrigated agriculture and expansion of irrigated area. One of the key proposed adaptation measures in the Second National Communication to UNFCCC refers to application of new irrigation technologies in dry regions, and particularly drip irrigation technology for fruits and grapes.

Despite the clear need for development of the Law on Irrigation, as mentioned in the Water Code and the National Water Program, Country has neither the Law on Irrigation, nor the National Irrigation and Drainage Policy which would establish incentives for implementation of measures aimed at enhancement of water use efficiency. However, currently efforts are being made towards development of the above-mentioned legal documents to be finalized by 2012.

Thus, Country currently lacks adequate policies and regulations that can facilitate investments in water saving technologies, as well as penetration of water saving technologies into the market.

Through the proposed project, the following is expected to be achieved:

(1) Promotion to development of national policy and regional framework for introduction of water saving irrigation technologies.

(2) Building technical and institutional capacity to identify and capture market opportunities for introduction of drip irrigation technologies, building partnership with the private sector in promoting penetration of drip irrigation technologies into the market.

(3) Introduction of drip irrigation system on pilot farms and nurseries and demonstration of the benefits of the system.

Owners and sponsors: Owners – UN Development Program, Ministry of Nature Protection, Ministry of Agriculture; Sponsors – GEF, Adaptation Fund, UNDP, bi-lateral aids, private sector

Team: The UNDP will hire key personnel, such as a Project Manager, support staff, national experts, including agronomists, hydrologists, climatologists and an economist, as well as hydraulic engineers and technicians, who will be engaged in technical assessments and practical implementation of the demo projects.

Stakeholders: Ministry of Nature Protection, Ministry of Agriculture, local farming communities, private entrepreneurs, importers, local manufacturers. Governance and management structure (decision-making, authority and responsibility): the Ministry of Nature Protection, as a National Coordinator of the Project, will oversee the implementation of the project.

Implementation steps and plan: The project requires 5 years of implementation.

The steps envisaged include the following:

- Establish a Project team,
- Develop Project detailed work plan and time table;
- Identify/select project beneficiaries and target groups; identify farmers that are interested and have the capacity to introduce drip irrigation system, as well as are able to disseminate the knowledge on the benefits of the drip irrigation system to other farmers in the community;
- Conduct pre-feasibility study of selected areas and farming communities; including cost-benefit analysis specific to the geographic zoning and crop typology,
- Conduct study on best available drip irrigation technology, take into account lessons learned from the countries of similar climatic zones,
- Conduct detailed market survey and presentation of the technology through exhibitions and catalogues;
- Design and introduce drip irrigation system in at least two farms of total area of 100ha;
- Monitor the results of the drip irrigation system;
- Demonstrate and report water saving potential, as well as climate change adaptation benefits;
- Develop training modules; organize workshops for farmers and wider stakeholders on the benefits of the water saving technology.
- Elucidate the benefits of the system through mass media, including radio and TV broadcasts.
- Provide support to national policy development through drafting provisions that support introduction and application of water saving technologies, provision of soft-loans, state concessions and other economic incentives to private investors, as well as development of special taxing policies and privileges for importing water saving equipment.

Cash flow and schedule details: The detailed schedule and breakdown of the cash flow can be done after detailed market study.

Impacts and returns: The main purpose of the project is to address adverse impacts of climate change on water resources and subsequently agricultural productivity by introducing innovative, water efficient irrigation technologies, such as drip irrigation. Compared to traditional irrigation, 1.5-2 times less water is used in case of drip irrigation and the yields are higher and less vulnerable to climate fluctuations. The perceived risks in investing in agriculture will be reduced and will promote investments in that sector. The irrigation system efficiency increase will help farmers to stretch their scarce supply of water and to expand their cultivated area, increase yields, diversify crop production, and generate more income under the changing climatic conditions.

Risks and measures to handle them: Farmers' interest and support to introduce drip irrigation systems are low, given economic difficulties related to low income level and high incidence of poverty among them. Besides the lack of interest, the farmers might lack capacities for successful and sustainable introduction of the system. A mitigation strategy for these risks has been explored and measures to handle them are identified, including promotion to development of incentive measures for introduction of drip irrigation systems for farmers. Economic justification of the advantages of drip irrigation system versus traditional irrigation system will be provided as well. In the frames of the project intensive trainings will be provided to farmers and other stakeholders, as well as awareness raising workshops and public events will be organized. The project will design and introduce drip irrigation systems in at least two pilot farms to demonstrate the advantages and build capacities among interested farmers. It will also promote the private sector through reducing the barriers for penetration of drip irrigation technology into the market.

To simplify the analysis, the financial model shows conservative estimates throughout the year.

For further information contact

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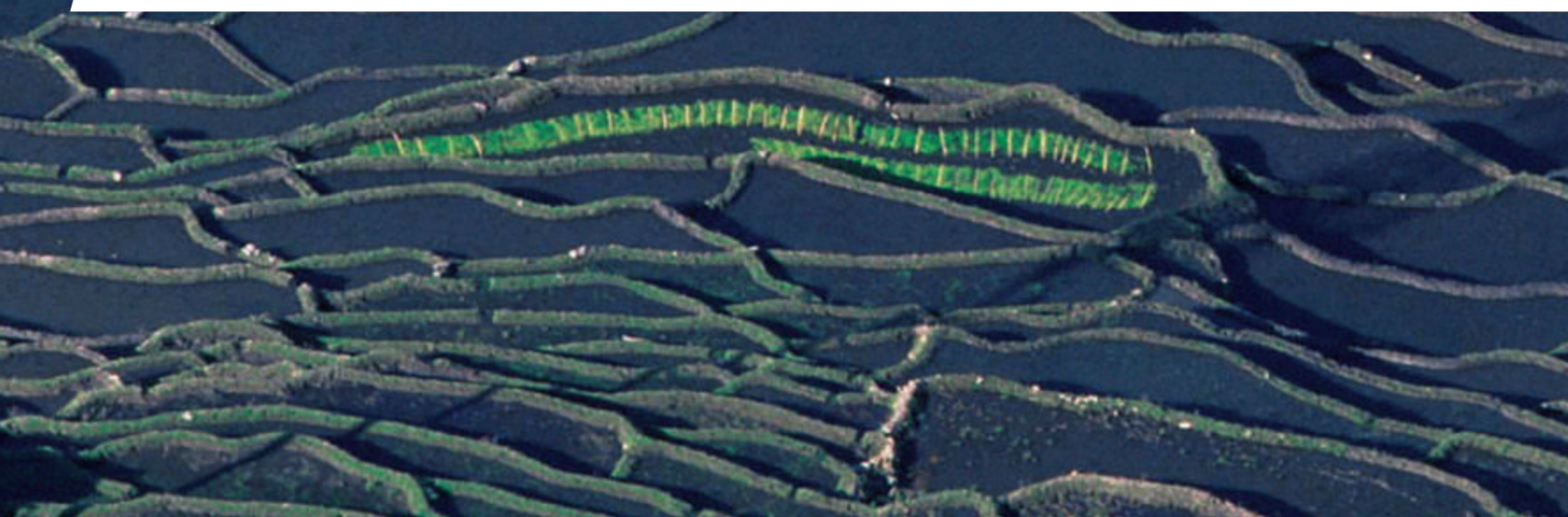

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TRAINING PACKAGE

ON PREPARING TECHNOLOGY TRANSFER PROJECTS FOR FINANCING