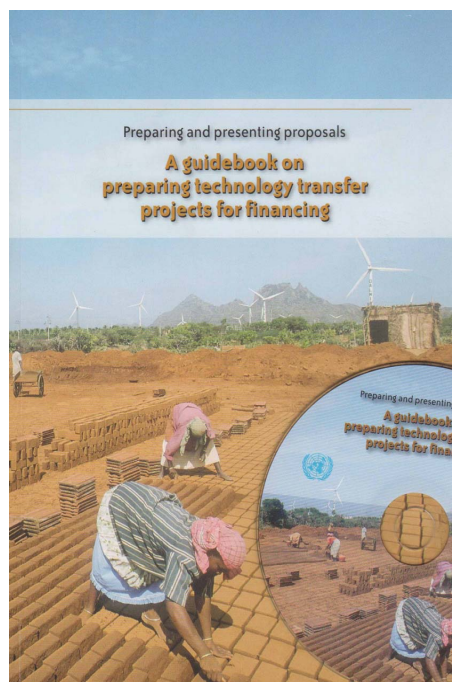


How to Prepare and Present Proposals -Workbook-

Prepared for the UNFCCC Asia & Pacific Regional
Workshop

“Preparing Technology Transfer Projects for Financing”

Pan Pacific Orchard Hotel
10 Claymore Road Singapore 229540
October 26-28, 2010



Philip LaRocco

Contents

WORKSHOP STRUCTURE	3
SESSION ONE - WORKSHOP OVERVIEW.....	5
SESSION TWO - METHOD.....	7
SAMPLE PROPOSAL-GHANA KOALA GAS SUMMARY	9
PROPOSAL CONTENT CHECKLIST.....	12
SESSION THREE- NUMBERS: ACCOUNTING, FINANCE AND SCHEDULING CONCEPTS	14
SESSION FOUR – PROCESS: FACT-FINDING TO BASE CASE	26
SESSION FIVE – WHAT AND WHERE? PRODUCT, SERVICE, TECHNOLOGY	31
SESSION SIX – WHO AND HOW? TEAM AND PLAN.....	34
SESSION SEVEN - WHY? BENEFITS AND IMPACTS	37
SESSION EIGHT - BUILDING AND UNDERSTANDING THE BASE CASE	41
SESSION NINE – WHAT IF? CONDUCTING SENSITIVITY ANALYSIS.....	48
SESSION TEN – TO WHOM? TARGETING AND PRESENTING THE REQUEST	51
SESSION ELEVEN – CUSTOMIZATION AND SUMMARIZING	56
SESSION TWELVE – CRITIQUE & SUGGESTIONS.....	62
TAJKSTAN ECOWOOT>	63
ARMENIA DRIP IRRIGATION	70
BANGLADESH BRICKMAKING	74
VIETNAM BIOMASS ELECTRICTY	77
PHILIPPINES WASTE WATER TREATMENT	82

GHANA KOALA GAS PROPOSAL AND TEMPLATE SAMPLES	86
“Ghana LPG-Proposal-Detailed”	89
Templates with Ghana LPG Sample - KG Proposal Information follow.....	100

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

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

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

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 Guide (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, 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.

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. Tajikistan EcoWoot.
2. Armenian Drip Irrigation
3. Bangladesh Brickmaking
4. Vietnam Biomass Electricity
5. Philippines Waste Water Treatment

<p>What?</p> <ul style="list-style-type: none"> ➤ 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 <p>Where?</p> <ul style="list-style-type: none"> ➤ Physical location and characteristics where the proposal will occur ➤ Social → economic → demographic → cultural → income and wealth characteristics ➤ Regulatory framework and business climate <p>Who?</p> <ul style="list-style-type: none"> ➤ Champion ➤ Owners and sponsors ➤ Governance ➤ Employees and staff ➤ Contractors and suppliers ➤ Approval bodies ➤ Stakeholders ➤ Advisors ➤ Organization structure <p>How?</p> <ul style="list-style-type: none"> ➤ 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 <p>Why?</p> <ul style="list-style-type: none"> ➤ Financial expectations ➤ Social and development impacts ➤ Environmental benefits ➤ Growth potential ➤ Replicability potential ➤ Other benefits 	<p>Base case</p> <ul style="list-style-type: none"> ➤ 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: <ul style="list-style-type: none"> ○ 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 <p>What If?</p> <ul style="list-style-type: none"> ➤ Schedule disruptions ➤ Cost and revenue variances ➤ Output performance changes ➤ Key person changes ➤ Changes in law or regulation ➤ Owner, lender, investor, sponsor changes ➤ Staffing disruptions <p>To Whom?</p> <ul style="list-style-type: none"> ➤ 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, government-sponsored investment companies, specialized programmes and funds, venture capitalists
--	--

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, Tel: xxx; Fax: xxx; E-mail: xxx
- **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	Construction	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 38,918¹ (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.

¹ 2000 population census.

- **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 then 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.

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																	
Drainage	Coordination	■	■	■	■												
	Piping		■	■	■	■	■	■	■	■							
	Manholes		■	■	■	■	■	■	■	■							
	Oil-water								■	■	■	■					
	Site drainage										■	■	■	■	■		
	Closeout															■	■
Structural																	
Structural	Coordination	■	■	■	■												
	Columns			■	■	■	■										
	Walls/roofing				■	■	■	■	■	■							
	Forecourt				■	■	■	■	■	■	■	■	■	■			
	Steel structure					■	■	■	■	■	■	■	■	■	■		
	Punch list													■	■	■	■
	Closeout															■	■

Project milestone	Task	Weeks															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mechanical	Coordination	■	■	■	■												
	Piping		■	■	■	■	■	■	■	■							
	Plumbing			■	■	■	■	■	■	■	■	■	■				
	Fire				■	■	■	■	■	■	■	■	■	■			
	Air							■	■	■	■	■	■	■	■	■	
	Fuel handling							■	■	■	■	■	■	■	■	■	
	Commissionin														■	■	
	Closeout															■	■
	Electrical																
Electrical	Service	■	■	■	■	■	■	■	■								
	Wiring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Stand-by	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Equipment	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Lighting	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Commissionin														■	■	■
	Closeout															■	■
	Control systems																
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		43,650
from lenders	Loans=102,990		102,990
	Capital cost=146,640		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.

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
- 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.

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?

Exercise

This exercise involves the decision by two people to purchase a coffee pot and materials rather than each buying an expensive "Starbucks" cup of coffee. 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?

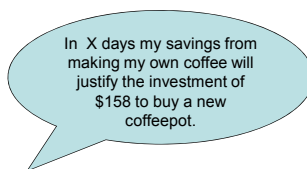
They identify the variables: they would need a 158.00 coffee pot. They would need to calculate how much milk, sugar and coffee they would need, the monthly costs and the possible savings of making versus buying coffee.

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 “Starbucks”.

“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.”



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	\$ 1.70		\$ 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

		Dec 31st	Jan	Feb to Dec.
Value of Money per year	12%			
Value of money per month	1%			
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	?????		
	NPV	\$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 Niki borrow \$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 charging?

How does borrowing impact their savings?

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

It is 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	2	3	4	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 Charged by Jacob

IRR ?????

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

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.”

Note: 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).

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 1,000³ 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"

$$1.12 * 1.12 * 1.12 * 1.12 * 1.12 = 1.7623$$

$$1000 * 1.7623 = 1762.34$$

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).

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.

“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).

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 payment s	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

NOTE- 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 is 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	2	3	4	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 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 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.

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-

- Tajikistan EcoWoot
- Armenia Drip Irrigation
- Bangladesh Brickmaking
- Vietnam Biomass Electricity
- Philippines Waste Water Treatment

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 than 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 investment⁵

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

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.

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.

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.

NOTE- 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; 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.

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 guarantees⁶ advance discussions regarding loans.

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

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.

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.

Session Five – What and Where? Product, Service, Technology and Clients ... Market and Setting

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.

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
- Note: 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
- Note: 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

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?

Notes & 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.)

Motivation & 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.

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

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.

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

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.

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.

Additional Information: Project Classifications & 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

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.

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.

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

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
P 1	Obtaining all permits	15,000			15,000
P 2	Technical analysis	10,000			10,000
P 3	Negotiating and preparing contracts	5,000			5,000
P 4	Negotiating and preparing contracts		10,000		10,000
P 5	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 -1⁸ 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 /pre-operations 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
C 1	Land acquisition		240,000					240,000
C 2	Final engineering and design		110,000					110,000
C 3	Machinery		2,381					2,381
C 4	Machinery			200,000				200,000
C 5	Machinery			111,000				111,000
C 6	Machinery			22,333				22,333
C 7	Testing				300,000			300,000
C 8	Testing				33,333			33,333
	Subtotal		352,381	333,333	333,333			1,019,047
C 9	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.

	Revenues	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-15
	Units	400	550	650	700	700	700
	Revenue per unit	200	200	200	200	200	200
R 1	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
R 2	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
R 3	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

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.

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	Years 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 "undiscounted cash flow"	Year -2	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Years 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 subsidies										
For planning , construction 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.

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?

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

- 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*

Method 1		Year	1	2	3	4 etc.
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
		<i>Debt service*</i>	51,000	51,000	51,000	117,222
		<i>Loan balance</i>	600,000	600,000	600,000	533,778
		<i>Interest</i>	-51,000	-51,000	-51,000	-51,000

Method 2	Year	1	2	3	4 etc.
-----------------	-------------	----------	----------	----------	---------------

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

Enter this amount in year 1 to the end

Method 3		Year	1	2	3	4 etc.
60,000	Principal	60,000	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.

	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

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.

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			Year -2	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4
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 payments	600,000					40,445	43,882	47,612	51,659
Net cash flow to owner-investors						(60,945)	26,555	44,763	75,252
DSCR	1.68					0.33	1.29	1.50	1.96
IRR	8.4%		(174,648)	(159,366)	(130,366)				

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.

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)					

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.

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% higher	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”

- avoid higher cost Case A – no change unless programme is curtailed to
- pro rata Case B – less local employment and income generation
- 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.

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 findings 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).

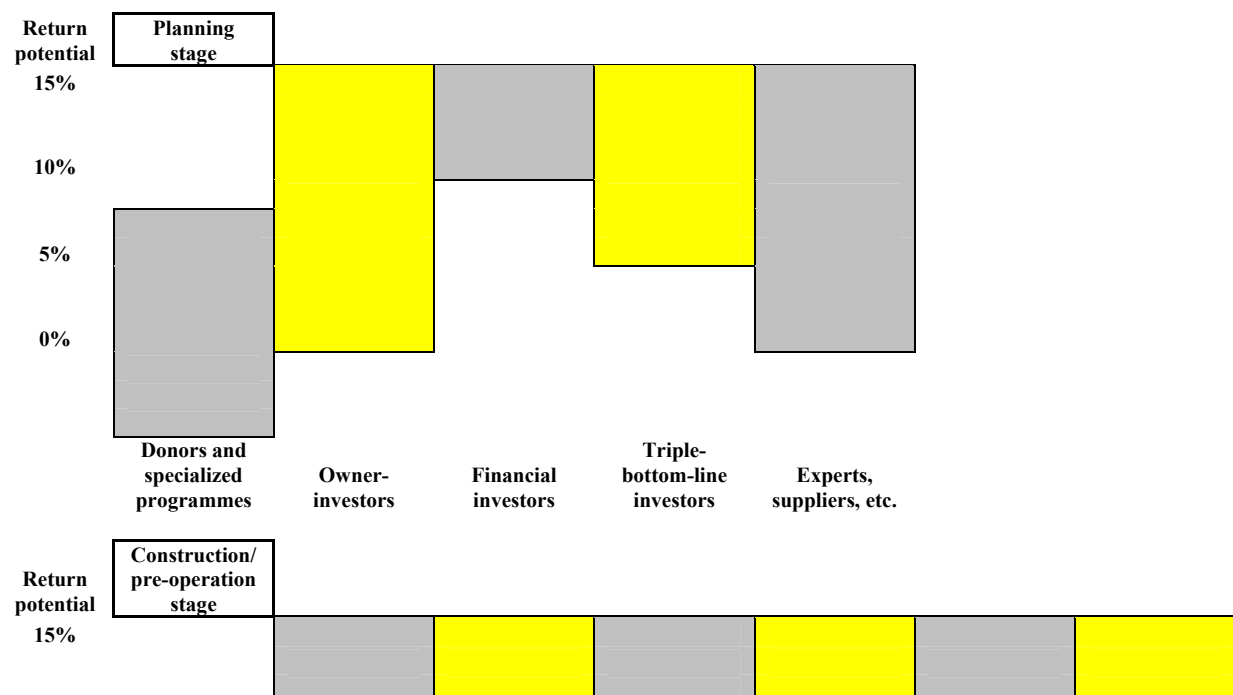
In the illustrative proposal set forth here, the Champion is seeking grants from donors totalling 62,500, investment capital from new owners of 465,000 and a loan of 600,000 (for 10 years at 8.5 per cent annual interest).

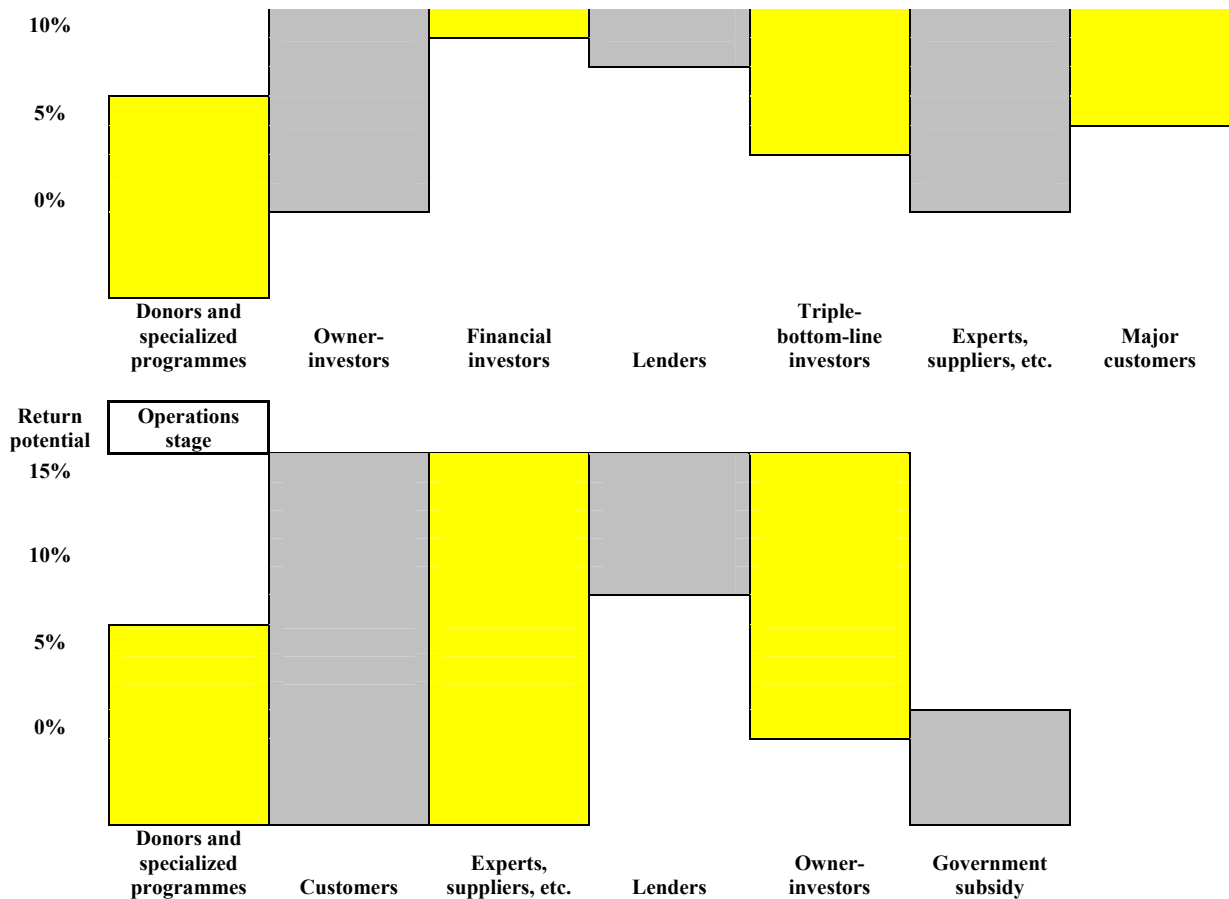
Researching the categories means spending time (quite a bit of time) on the internet, phone and e-mail finding out what programmes and organizations exist, what they offer and what they are looking for. Too often the search begins with what is available rather than what is needed, causing disconnected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

To Whom? Template

Funding matrix





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

D	Government-sponsored programs	Grants	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	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	Government-sponsored 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
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	are also interested in the market size, the reasonableness of the base case, potential upside and downside and exit strategies.
---	---------------------	--------	---

Type of Funding	Defintion	Other funding models that fall under this type
Grants	Grants do not need to be repaid.	Capital and operating grants
Revenue	Revnue 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 quasi-equity (combinations of loans and equity).

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

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.

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 CO₂e, meaning metric tonnes of carbon dioxide equivalent.

The closest thing that exists to a standard process of quantifying CO₂e 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.

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

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.

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.

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.

Session Twelve – Critique & Suggestions for Improvements & 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 networking 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?”

TAJKISTAN ECOWOOT

Title of the project: Transition of boiler plants in Dushanbe from mazut and solid fuel into ecologically clean water-coal fuel (ECWCF or ECOWOOT)

A brief description of the project

Project objective	<ul style="list-style-type: none"> - heat and hot water supply for the population of Dushanbe; - improvement of ecologic situation through CO₂ emission reduction in boiler plants; - ash reduction and its effective use; - enhancement of energy power safety; - set-up of new employees' staff; - woods and plants conservation; - decrease of energy power networks loading during autumn and winter period, consideration and solution of energy power deficiency during autumn and winter period. 										
Project description and measures/activities planned, including technical project description	<p>For the time being, due to deficiency of energy power carrier, mazut in particular, the population use energy power for heating their homes during autumn and winter period.</p> <p>It should be pointed out that energy network system in cities and towns of the Republic are not planned for such a load, therefore, energy power systems become unable, causing economy damage.</p> <p>Approximately 6-8% of boiler plants are working in Dushanbe. Transition of boiler plants in Dushanbe from mazut and solid fuel into ecologically clean water-coal fuel ECOWOOT will solve all problems in regard to energy supply and ecologic situation improvement of the republic, Dushanbe in particular.</p> <p>One of the economically motivated and ecologically effective ways of oil and solid fuel types' substitution at Heat Energy Plants and boiler stations is application of composed water-coal fuel. It is so-called disperse system containing micronized coal, water and reagent-plasticizer.</p> <p>ECOWOOT composition:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Coal</td> <td>(particle size is 50-200 мкм)-59-70%</td> </tr> <tr> <td>Water</td> <td>29-40%</td> </tr> <tr> <td>Reagent-plasticizer</td> <td>1% Ignition</td> </tr> <tr> <td>temperature</td> <td>450-650⁰c</td> </tr> <tr> <td>Combustion temperature</td> <td>950-1050⁰c</td> </tr> </table>	Coal	(particle size is 50-200 мкм)-59-70%	Water	29-40%	Reagent-plasticizer	1% Ignition	temperature	450-650 ⁰ c	Combustion temperature	950-1050 ⁰ c
Coal	(particle size is 50-200 мкм)-59-70%										
Water	29-40%										
Reagent-plasticizer	1% Ignition										
temperature	450-650 ⁰ c										
Combustion temperature	950-1050 ⁰ c										
Technology to be used	Heat energy production is implemented by 7 boiler stations with each 10,8 MWt capacity and 186,2 thous. Gcal total volume of heat energy production. Transition of current boiler stations from liquid/solid fuel into ECOWOOT through their reconstruction. Workshop building for ECOWOOT preparation.										
Additionality	<p><u>ECOWOOT additional features:</u></p> <ul style="list-style-type: none"> - possess by all technological features of liquid fuel; - transported in auto and railway tanks through pipelines and tankers, kept in closed reservoirs; 										

	<p>- explosive and flammable.</p> <p><u>ECOWOOT advantages:</u></p> <p><i>Ecologic:</i></p> <ul style="list-style-type: none"> - ecologically safe at all phases of its production, transportation and use; - able to reduce adverse emissions into atmosphere, including dust, nitrous oxide, sulfur dioxide, etc. by 1.5-3,5 times; - able to use volatile ash as the result of combustion effectively. <p><i>Technologic:</i></p> <ul style="list-style-type: none"> - being similar to liquid fuel when transiting heat generated stations into ECOWOOT combustion, the technology doesn't require significant reconstruction of boilers (aggregates); it's possible to apply fire-box combustion of solid fuel-bed firing, chamber furnace combustion for coal- dust and liquid fuel when boiling bed combustion; - able to mechanize and automatize processes of fuel receipt, appliance, storage and combustion; - new technology of vortical combustion at 950-1050 °C allows to reach effective fuel use by more than 97 % (if fuel-bed coal firing the volume indicated doesn't exceed 60 %); - there are 4 systems of ECOWOOT combustion elaborated: a) with plazmotrone application, b) natural gas, c) liquid fuel, d) solid fuel <p><i>Economic:</i></p> <ul style="list-style-type: none"> - depreciation of 1ton of standard coal by 2-3 times; - reduction of operational expenditures when stored, transported and combusted by на 25-30 %; - reduction of capital expenditures when transited from mazut and other solid fuel types into ECOWOOT of Heat Energy Plants and boiler stations by 3 times; - payback of expenditures when ECOWOOT integration is 1-2.5 years; - there is a tendency of prices' fast growing for oil products in comparison with coal. <p><i>Barriers for the project realization</i></p> <ul style="list-style-type: none"> - lack of funding; - providing of coal supply growing needs in the Republic by means of coal production enhancement and improvement. - republic's needs in coal production may rise up to 600 thou. tons of ECOWOOT per a year by 2015
Mediator	Sobirjon Usmanov, address: 3 Tolstoy Str., Dushanbe, TAJIKISTAN Tel: (992 372)23-01-36. E-mail: cc_center@meteo.tj
A brief description of the project author experience in relevant area	State Unitary Enterprise NGO "Gydrotruboprovod", Moscow, RUSSIA. According to Internet information source – the company is experienced in elaboration of project in regard to water-coal integration. Institute was founded in 1996 on the basis of institute's founders – "Sredneazgidroproekt" that was particularized in 1972 for projecting hydro energy power stations in Central Asia
Address	12 Storozhkaya Str., Solomennaya Ave., 125206 Moscow, RUSSIA

Contact person	A.P.Petrakov
Tel.:	(007 495) 979-93-12
Project sponsors	Power engineering specialists' Association of Tajikistan and Khukumat of Dushanbe
Name of the first project sponsor	Power engineering specialists' Association of Tajikistan and Khukumat of Dushanbe
Organization category	State and public organizations
Address	31 Akademik Rajabov Str., appt. 14, Dushanbe, TAJIKISTAN
Contact person	Rafika G. Musoeva – Chairwoman
Tel./fax	(992 372) 21-43-25.
E-mail	musaevarafika@rambler.ru
Key activity types	1. Elaboration of investment projects for energy power objects. 2. Construction and re-construction of energy power objects
A brief description of fund indicators	Association was founded in 2005 for consideration and solution problems in regard to energy power supply of the republic, normative and legal base improvement for struggle against poverty and achievement of the UN millennium goals achievement in the country.
Project stakeholder	Climate Change Centre of the Agency on hydrometeorology of the State Committee for environmental protection and forestry of the Republic of Tajikistan.
Address	47 Shevchenko Str., 734025 Dushanbe, TAJIKISTAN
Contact person	ILHOM Rajabov
Tel.:	(992 372) 276181
II. Expected sponsors	CDM – Clean Development Mechanism Asian Development Bank (ADB) ODA Programme World Bank Carbon Market prototype Power engineering specialists' Association of Tajikistan Khukumat of Dushanbe Global Environment Facility (GEF)
4.Project type	Type II- energy efficiency projects
Greenhouse Activity type	II.D- fuel transition CO ₂ emission reduction
Aiming at greenhouse gas emission reduction	CO ₂ – formed as the result of coal solid fuel use. 24000 CO ₂
Area of the project implementation	Activities will enable to provide the population and hospitals, child institutions and enterprises of Dushanbe with heat and hot water
Area of the project implementation Region Country City/town	Central Asia Republic of Tajikistan Dushanbe

	Common necessity in heat energy power in Dushanbe is (thousand Gcal./in a year)	39001		
	Actual heat energy power manufacture (thousand Gcal./per year)	312,9		

4

	Proposal heat energy power production (thousand Gcal./per year)	186,2		
	Greenhouse gas emission from heat energy power production (thousand tons)	81,6	96.5	72.5
Economical version analysis				
Concrete advantages for environment in global and local scale	<ol style="list-style-type: none"> 1. The project directed to improve population life and ecological situation in Dushanbe. Next introduction will be in other cities of republic. 2. Keep consuming heat energy power and hot water-supply deficit in Dushanbe. 3. A forestation keeping safe and greenhouse gas emissions reduction. 4. Heat energy power rising through using heating and hot water-supply centralized system 			

Social and economic aspects. What social and economic aspects will accompany project implementation? What results shouldn't be achieved without project realization in analogical situation?	<ol style="list-style-type: none"> 1. Heat energy power and hot water-supply deficit is eliminating in household and industrial sectors, hospitals and schools. 2. Republic coal branch development. 3. Extra work places/employees' involvement set-up. 4. Electro-energy consumption reduction and electrical net keeping in winter and autumn period. 5. Rising of energy-independence.
--	---

C. Funding					
The project investment sum is 1 071 191 US dollars totally.					
		In national currency (000\$)	In hard currency (000\$)	Sum total (000\$)	
	-ADB		0.803	0.803	

Energy carrier's name	1 Gcal. of heat production			186,2 thousand Gcal. of heat production	
	Volume (tons)	Value in USA \$	The sum of US \$	Volume (thousand tons)	The sum of thousand US \$
Black oil	0,13	260	33,8	25,1	848,4
Solid coal	0,36	31,3	11,3	66,5	749
ECOWOOT	0,27	27,8	7,5	50	375,3

5

	-WB, credit to state)		0.182	0.182	
	Incomes from CER selling				
	Incomes refunding	69		69	
	IDF grant (Great Britain)	17		17	
	Sum total	86	0.985	1.071	
Charge project general estimate	General requirement in financing (plus necessity in circulating and means credit payment during construction period) is 1071191 US dollars.				
Enlargement estimate in national currency 1.12.2005. – somoni.					

Equipment cost	1420800, 0 c.
Total investment for equipment taking into account assembling, auxiliary materials and unaccounted expends	2131200, 0c.
Civil works cost	1276167, 7 c.
Follow-on (0, 6 %)	20444, 2 c.
Total capital investments	3427811, 5 c.
Circulating and credit percentage during construction.	
Total necessity in funding	
Enlargement estimate investments in US dollars for December 1, 2005	
Equipment cost	444000 \$
Total capital investment for equipment taking into account assembling, auxiliary materials and unaccounted expends	666000 \$
Civil works cost	398802,4 \$
Follow-on (0,6 %)	6388,8 \$
Total capital investments	1071191 \$c.

The project identification note was prepared by Sobirjon Usmanov, phone: +992 372 276181
E-mail: office@meteo.tj

ARMENIA DRIP IRRIGATION

- **Date:** September 2010
- **Name of project or enterprise:** Introduction of Water Saving Technologies in Selected Pilot Regions of Armenia with Focus on Drip Irrigation. UNDP/Armenia
- **Location:** Shirak and Armavir regions (marzes), Republic of Armenia
- **Champion's contact information:** Mr. Aram Gabrielyan, Head of Environmental Protection Department. Ministry of Nature Protection, Government building #3, 5th floor, Republic Square, Yerevan, 0010, Armenia
- **Product or service:** Irrigation services for agricultural production in the selected pilot area through water saving approach

Armenia 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 Armenia's gross domestic product (GDP). The World Bank attributes Armenia's 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 Armenia's 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 m³, 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 in Armenia", the climate projected for 2100 is expected to cause total losses to the agricultural sector in Armenia 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 of Armenia.

- **Technology:** Drip irrigation technology
- **Customers/clients:** The project clients are local small-holder farmers from around 30 communities in the above-mentioned regions of Armenia 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 RA Ministry of Nature Protection, Ministry of Agriculture and UNDP Armenia. 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 – 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 of Armenia.

Activity	Schedule	Planning	Pre-operation	Operation
1. Promotion to development of national policy and	Year 1-2	80,000	200,000	

regulatory framework to promote application of water saving irrigation technologies				
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		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 Armenia. Despite the fact that the Armenian 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 in Armenia 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 in Armenia. The project is a national priority according to the Republic of Armenia Sustainable Development Strategy Program, the above-mentioned Laws and Draft Policy Statements for the Irrigation and Drainage Policy of the Government of Armenia. 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, Armenia 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, Armenia 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, RA Ministry of Nature Protection, RA Ministry of Agriculture; *Sponsors* – GEF, Adaptation Fund, UNDP, bi-lateral aids, Government of Armenia, 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):** Mr. Aram Gabrielyan, from 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 Armenian market.

BANGLADESH BRICKMAKING

1. **Date:** : Commencement: FY 2011-12
Complete: FY 2012-13
2. **Name of the Project:** : Enhancement of Brick Burning Efficiency of Brick Kiln in Bangladesh (BBEP).
3. **Location:** : Around the Dhaka City
4. **Champion's of the Contact Information** :
 - a. Brick Manufacturers;
 - b. Department of Environment of Bangladesh.
5. **Product or Service** :
 - a. Appropriate Technology for Efficient Burning of Bricks;
 - b. Information related to financing needs for adopt of efficient technology;
6. **Technology** :
 - a. Hybrid Hoffman Brick Kiln; and
 - b. Vertical Brick Kiln.
7. **Customers/clients** : Brick Manufacturers of Bangladesh
8. **Current needs and request** :
 - a. The total cost of the project would be around USD 2 million. The major components would be (i) demonstration of proposed technologies (USD .30 million); (ii) Training for the technical personnel of the brick industries (USD .25million); (iii) Consultants of different categories (USD .40 million); (iv) Institutional capacity building through study visit for the GoB officials and brick manufacturers (USD 0.50 million) (v) Other operational expenditures (USD 0.40 million) (vi) Workshop, Seminars (USD 0.20 million). The planned items under the scope of the project would mainly include:
 - Conceptualization and awareness among the manufacturers to popularize the proposed technologies of brick burning;
 - Large scale demonstration on cost sharing basis;
 - Training the technical personnel of the brick industries;
 - Study and familiarization visit for GoB officials and brick industries people for institutional capacity building.
9. **Market Conditions** : Bangladesh is a developing country. Contribution of brick industries to GDP is significant. But the manufacturers in Bangladesh use the Fixed Chimney Kiln (FCK) method for burning the bricks. This age old technology is inefficient and outdated by any standard of green technology. The population size of the Dhaka city

is around 140 million. There are 3000 brick kilns are burning bricks around the Dhaka city. Huge emission of CO_x , NO_x gas and floating particulate matters by the brick industries around the Dhaka city are creating serious threat to the human health. It may be mentioned that some years back the major pollutants of air of Dhaka city were emission from brick industries and transport vehicles. But at present most of vehicles are run on compressed natural gas (CNG). Almost 100% of mechanized vehicles have been converted into CNG run vehicles. As a result the emission level of vehicles has been reduced significantly. So, at present the pollutants from the brick industries pose major threat to the human health of the capital city. In a study it is revealed that citizen of Dhaka city have to incur around USD 500 million per year due to poor air quality in Dhaka city. Taking into consideration of the situation government has recently embarked on enactment of new laws and regulations for brick industries which promote efficient technologies for burning the bricks. Already government has initiated the process of converting the existing FCK technology to more efficient technologies within a short span of time. Considering the socio economic conditions of the country and backstopping of the technologies available in the country the Hybrid Hoffman and Vertical Shaft Brick Kiln would be the best alternatives. So, the country has the market potentials for adopting such efficient technology. Besides, the owners of the brick industries are also eager to adopt the technologies.

10. **Operating Conditions** : With enactment of appropriate laws and regulations and providing financial support government will facilitate the implementation of the project in association with the brick manufacturers' owners association.
11. **Regulatory Conditions** :
 a. Brick Burning Act;
 b. Environment Conservation Act 1995;
 c. Environment Conservation Rules 1997;
 d. Environment Act and Regulations;
12. **Owners and Sponsors** :
 a. Department of Environment;
 b. Ministry of Environment and Forest, Government of the People's Republic of Bangladesh.
13. **Team** : The Government will employ required number of consultants, experts and key project personnel to implement the project.
14. **Stakeholders** : Brick Manufacturers as well as the government of Bangladesh are the primary stakeholders.
15. **Governance and management structure (decision-making, authority and responsibility)** : Ministry of Environment and Forest will constitute a Project Steering Committee (PSC) and a Project Implementation Committee (PIC). The PSC will provide the overall strategic guidance for the achievement of the targets and goals of the project. Where as the PIC will oversee and monitor the execution of the project.

16. **Implementation steps and plan** : The project would start in July 2011 and complete in June 2013. Sequentially the following steps would be taken during the implementation of the project:
- Designate/appoint project personnel complete by the Ministry of Environment and Forest by March 2011;
 - Project approved by the competent authority by July 2011;
 - Hiring four categories of consultants namely: (i) Brick Technology Specialist; (ii) Training Specialist; (iii) Promotion of Technology and (iv) Monitoring and Evaluation Specialist complete during July-September 2011;
 - Preparation of training manual for the technical personnel of the brick industries complete by October 2011;
 - Training of brick industries people during November 2011-June 2013;
 - Organize overseas study tours for GoB officials and Brick Industry Owners during October 2011—April 2012;
 - Organize motivational seminars, workshops during October 2011—February 2013;
 - Project completion report complete by September 2013.
17. **Cash flow and schedule details** : This project is proposed from the in social and economic perspectives. It is not designed to generate cash inflow. But if the project is completed as it is planned the proposed technology would be popularized among the brick industries owners which would reduce the emission of hazardous elements including Green House Gases (GHGs) from the industries. This would certainly reduce burden of diseases and hence the health cost of the country. If this benefit would be monetized the amount would be significant.
18. **Impacts and returns** : With the successful implementation of the project efficient technologies of brick burning would be introduced in the brick industries of the country. This would help reducing the emission level of pollutant gas by the brick industries. Besides, with the present process the brick industries can burn bricks during the dry season. If the proposed technologies become popular through the implementation of the project the brick industries would be able to burn and produce bricks through out the whole year. As a result in the long run the unit production cost of bricks would be reduced. So, the project has the potentials of multi pronged impacts and returns.
19. **Sensitivity Analysis** : Not done.
20. **Risks and Measure to handle them** : Not applicable.

VIETNAM BIOMASS ELECTRICITY

Proposal for technology transfer of Lap Vo Rice Husk Biomass Power Plant

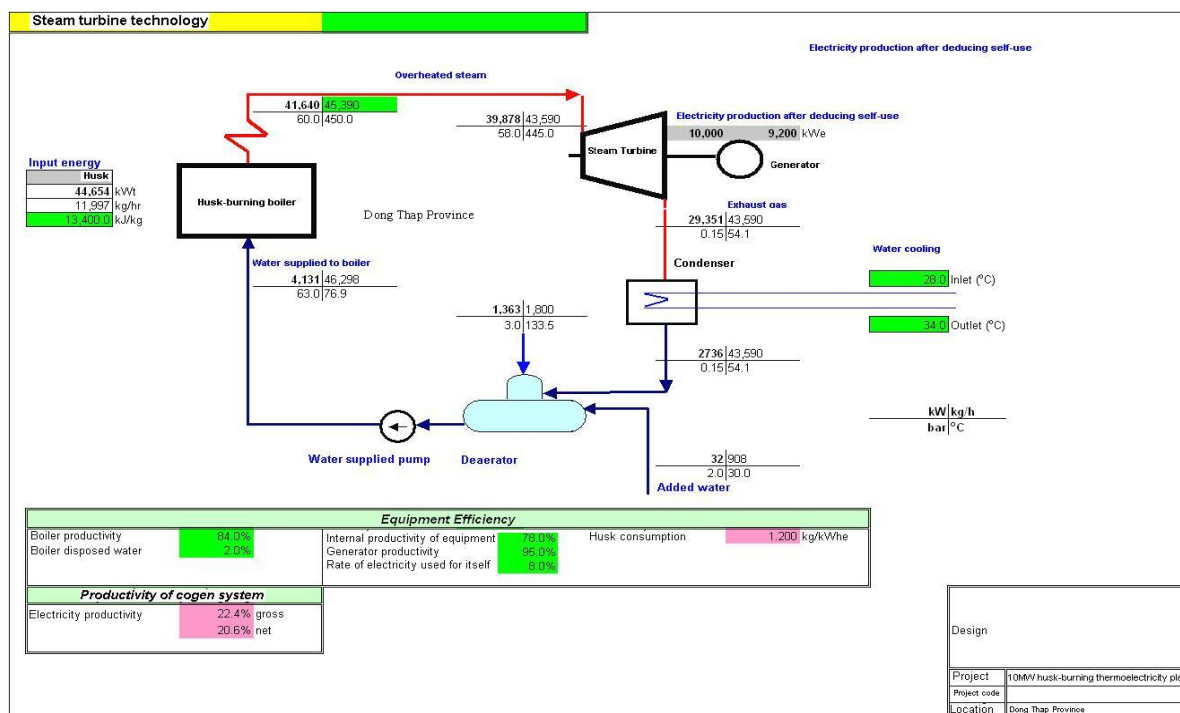
- **Date:** 11/09/2010
- Name of project or enterprise: **Duy Phat Electric Joint Stock Company (Duy Phat)**
- **Location:** The Lap Vo Rice Husk Biomass Power Plant would be located in Binh Thanh Trung village, Lap Vo District, Dong Thap province, Vietnam
- **Champion's contact information:**
 Mr. Nguyen Duy Phuong
 Director of Duy Phat Electric Joint Stock Company.
 Address: No. 34, 17 Road, Binh Phu Residence, Ward 10, District 6, Ho Chi Minh City, Viet Nam.
 Telephone: + 84 8 22421789
 Fax: + 84 8 38763692
 Email: duyphatcorp@hotmail.com

- **Product or service:** **Duy Phat is a special purpose vehicle to invest and operate a 10 MW** husk rice power plant in Dong Thap Province, Viet Nam. The project will sell the electricity to the Vietnam Power Grid about 72,000 MWh annually.

- **Technology**

Steam turbine technology is chosen for this plant. Main equipments include rice husk fired boiler, turbine and generator.

Plan of technology and heat balance of the 10-MW rice husk power plant



- **Customers/clients:**

The project will sell the power generation of 72,000 MWh per year to the national utility (Electricity of Vietnam- EVN) under a Power Purchase Agreement.

- **Current status**

The Duy Phat was approved to invest the project by the Local authority through getting the Investment License, the project involves the land area of 240,000 m² which has been secured

through the permanent land used right, all necessary approval includes EIA Report, construction permit have been obtained. The project is seeking for a bank loan financing and the equipment supplier and constructor are not yet appointed

- **Project size, expected schedule and cost, divided between planning, construction or pre-operation and operation.**

The total project investment cost is 421,302,856,000 VND (21,6 Million USD) or 42,130,286 VND per kW (2160 USD) installed power capacity.

The estimated investment cost comprises the following:

No.	Cost items	Value (1000 VND)	Percentage
1.	Consultant cost	15,037,868	4%
2.	Equipment cost	210,227,009	50%
3.	Construction cost	101,296,164	24%
4.	Management cost	4,506,115	1%
5.	Other costs	6,074,349	1%
6.	Compensation cost	20,682,000	5%
7.	Contingency cost	35,782,350	8%
8.	Interest during construction period	27,697,000	7%
Total investment cost (after tax)		421,302,856	

Other costs include renting/buying surface of the plant; the cost for connecting to power net (outside the plant); costs for importing equipments; for insuring the project during building period; for verifying, assessing and approving the project...

Investment capital resource: 30% from equity and 70% from loans of banks and credit organizations inside and outside the country.

This estimate included all costs up to the date project operations commence, including interest capitalized during the construction period. The estimate is the result of an independent assessment prepared for the feasibility analysis by the contacted consultant company. Construction can commence immediately after all contracts have been signed and all needed permits have been obtained. Expected operation date of the project can be on 01/01/2011.

- **Current needs and request**

At the present time, the project owner has 30% in equity financing for the project and they are seeking 70% of the total investment from the banks. The local bank has agreed for financing to the project for local construction cost, however, the project is in a need for import equipment and technology transfer for equipment cost in USD 10,5 Million, the financing will be in the form of a loan with a repayment period of 10 years.

- **Market conditions**

Access to electricity has increased rapidly from little over 50% in 1996 to over 87% of current households, and this is expected to increase further with the World Bank's support for the Rural Energy II project due to start in 2005 (EIA, 2005). Nevertheless, much of Vietnam's population still relies heavily on non-commercial energy in the form of biomass resources such as wood, animal dung and rice husks.

However, the rural population that is connected to the grid receives only a low quality of service, including low voltage and poor reliability. Vietnam's per capita electricity consumption is amongst the lowest in Asia; consequently, typical electrical systems, often developed by local people to provide rudimentary initial power connections, are increasingly unable to meet current and projected load requirements (World Bank, 2004).

Rapid commercial sector growth, population migration to major cities and elevated living standards have all contributed to a growing demand for electricity, which is straining current

generation capacity. Vietnam had a total electric generating capacity of 8.3 GW in 2002 and generated 35 billion kWh of electricity. Of this, 60% was from hydroelectric power installations.

Electricity demand in Vietnam is forecast to grow 17% per year until 2020. Vietnam currently purchases power from China to prevent shortages in the North (100 million kWh of electricity in 2005) and plans to begin purchasing power from Laos in 2008. To meet this increase in demand domestically, construction or expansion of 32 power stations is planned before 2010, which will cover 7500 MW of new capacity. Electricity of Vietnam (EVN), the state power company, plans to commission 16 hydropower plants by 2010 and increase capacity at the Uong Bi coal-fired plant to 400 MW, while Vinacoal will construct eight additional coal-fired power plants.

The project activity will supply 72,000 MWh per year to the EVN, which is equivalent 10% of total power generation in Dong Thap province. So that the power generation of the project will meet a part of electricity demand in local.

- **Operating conditions**

The project will be constructed under EPC contract. Preliminary estimates have been received from two credit-worthy and experienced firms which have each agreed to provide appropriate performance bond and insurance policy coverage. The project will provide 10 MW of installed capacity and an annual power generation of 80,000 MWh based on the calculation of husk consumption of the plant. Due to 10% of total power generation using for auxiliary consumption and transmission loss, the net power output of 72,000 MWh will be supplied to the EVN.

- **Regulatory conditions (including all required approvals)**

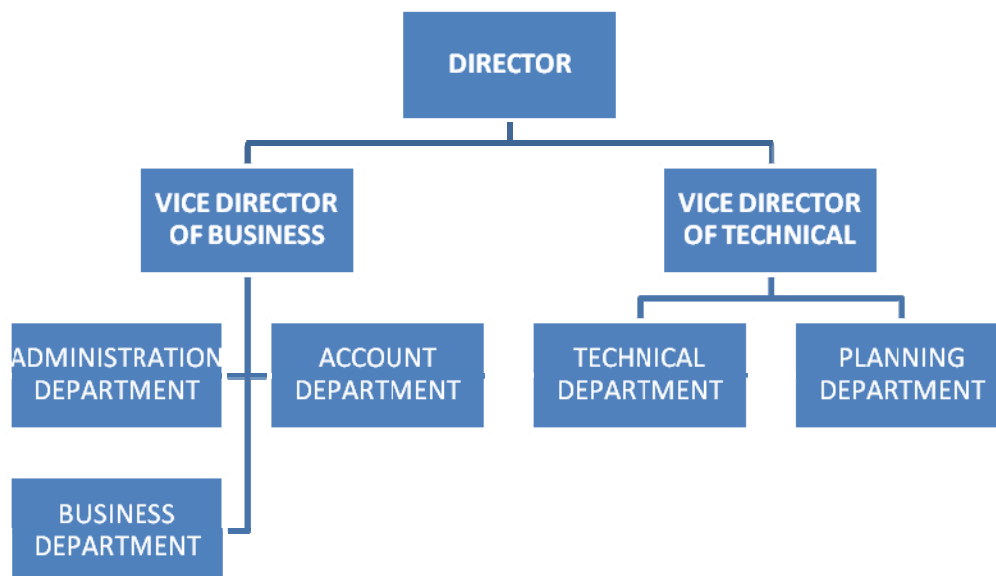
Duy Phat needs to get the Loan Approval from the banks; the Environment Commitment from the Department of Natural Resources and Environment of Dong Thap Province; the Investment License from the People’s Committee of Dong Thap province; and the Construction Permit from the Department of Construction of Dong Thap province before it can begin construction

The project will be performed in steps regulated under the Decision No 30/2006/QD-BCN on 31/08/2006 of the Industry Ministry about “Manage investment and building independent electricity plant” and other related legal documents.

- **Owners and sponsors**

Duy Phat Electric Joint Stock Company is a private equity company, issued the Business Registration Certificate No 410 300 6223 on 15/03/2007 by Planning and Investment Department of Dong Thap Province.

The below diagram is the organization chart of Duy Phat Electric Joint Stock Company



The current staffs working for the company is 16 people, in which the key personnel of the company as follow:

1. Mr. Nguyen Duy Phuong- Director

2. Mr. Trinh Van Dung – Vice Director of Technical
3. Mr. Hoang Anh Tu – Vice Director of Business

- **Stakeholders**

Duy Phat has been set up by three main share holders as follows:

1. Mr. Nguyen Duy Phuong, the legal representative of the company and have a share of 50% of the company
2. Ms. Nguyen Thi Anh Dao with 30% shares.
3. Mr Nguyen Van Tron with 20% shares.

- **Governance and management structure (decision-making, authority and responsibility)**

A team of technical, legal and financial advisors has been formed by the project owner and are in charge of all implementation activities.

- **Implementation steps and plan**

The project will require maximum 18 months to complete from the issuance of a notice to proceed to the designed engineering, procurement and construction (EPC) contractor by the Owner.

1. Issue a tender for selection of supplying equipments and construction: 03 months
2. Installing and commissioning: 15 months.

- **Cash flow and schedule details**

Analyzing financial-economic results of the project is based on theory data said above and using COGEN financial-economic analyzing model (cooperative program between Europe Community and countries of Asian Southeast about technology emitting electricity and heat).

Analyzed results are collected and presented in below table:

Table 1: Cash flow (unit in 1,000,000 VND)

Project year	Year 0	Year 1	Year 2	Year 3	Year 4
1. Cost	371,794	138,249	78,621	79,385	79,919
Investment cost	371,794	0	0	0	0
O&M Cost	4,343	4,343	4,343	4,343	4,343
Repayment	27,964	27,964	27,964	27,964	27,964
Interest	38,591	34,732	35,496	32,848	29,651
Fuel	9,844	11,582	11,582	11,582	11,582
Income tax	0	0	0	3,182	3,502
2. Revenues	88,278	108,557	108,557	108,557	108,557
Net cash flow	-155,584	29,936	29,171	28,638	31,514

- **Impacts and returns**

Table 2: Main financial-economic norms of the project (basis project)

Parameters	Value (before tax)
Internal Return Rate (IRR), %	12.27
Net Present value (NPV), million VND	36,791.9
Payback period (year)	9.37

The social and environmental benefits of this project include the following. The project replaces the need for additional fossil- fuel capacity additions to the national electricity grid. The site and

the construction of the project meet the national and international standards. No displacement of people would occur as a result of the project. The project will employ no fewer than 35 local workers during the construction period. The project will permanently improve access to the area and reduce the green house gases emitted to the air through utilizing the rice husk instead of using fossil fuel to generate the electricity.

- **Sensitivity (what if?) analysis**

A profitability and cash-flow sensitivity analysis was carried out based on the following key financial variables

Variation Factor	Sensitivity ranges
Electricity Generation	-10% ÷ 10%
Investment cost	-10% ÷ 10%
O&M cost	-10% ÷ 10%
Tariff price	-10% ÷ 10%

Results of sensitivity analysis: Even when all the variables were set to their most conservative levels, Duy Phat remained, overall, slightly profitable and with sufficient cash to service the required debt.

- **Risks and measure to handle them**

The project can face to some following risks during the construction and operation period:

1. The project capacity is depend so much on the rice husk quantity which replies on the crop output as well as on weather condition. But the risks from changing weather patterns, especially increases in violent storms and hurricanes, cannot be quantified;
2. Construction: Adopting a turnkey EPC contract approach with a qualified and insured contractor reduces the risk that construction will not be completed or that substantial cost overruns will occur;
3. Operation: This is first of its kind project applying the rice husk- combusted technology to generate electricity. So the experience for operation of rice husk power technology is a potential risk however, the risk can be solved by the operation training from technology provider. They will be trained and learnt to operate and manage a rice husk biomass power plant from the experienced and well-known technical company.
4. Other risks include currency fluctuations; expropriation of assets; and changes in regulatory policy and tax incentives.

PHILIPPINES WASTE WATER TREATMENT

Eliseo M. Baltazar

Ecosystems Research and Development Bureau, College Laguna

Asia Pacific Regional Workshop on Preparing Technology Transfer Projects for Financing, Singapore, 26-28 October 2010

2nd Draft of Project Proposal

Date: September 29, 2010

Name of project or enterprise: Application of wastewater collection and treatment technology at the municipal level: public market, slaughterhouse and central business area

Location

Los Banos (in Laguna province) is a town located at the southwestern slopes of Mt. Makiling, whose rivers and tributaries pass through the town's residential and commercial areas and drain to the Laguna Lake. Currently classified as urban municipality, it is located 65 kilometers south of Metro Manila and steadily growing in terms of population and business and commercial establishments. It is host to various international institutions, national and government agencies in the development of agriculture and conservation of natural resources, including the University of the Philippines Los Banos (UPLB), and several tertiary, secondary and elementary schools. It is one of the towns of the province of Laguna at the periphery of the Laguna Lake.

Champion's contact information

Marcial C. Amaro, Jr., Director, Ecosystems Research and Development Bureau College, Laguna Tel +06349 536 2229; +06349 536 2229; Fax +06349 536 2850; email erdb@denr.gov.ph website erdb.denr.gov.ph

Product or service

Waste water collection and treatment system for a municipality.

Application of wastewater collection and treatment technology at the municipal level specifically to cover municipal slaughter house and old and new public markets and central business area.

Technology

Waste water collection system and treatment technology

Through engineering and innovation, wastewater collection and treatment technology has evolved and have found application in the Philippines for individual industrial companies or industrial parks (for a group of industries located in one place). Wastewater treatment has also found application in food and beverage companies. At the household level, wastewater treatment is limited to some subdivisions or plush residential areas.

For many municipalities (towns) in the Philippines, there are no wastewater collection and treatment facilities.

This project proposal looks into the possibility of establishing a feasible a wastewater collection and treatment facility for the target municipality.

The waste sources are the slaughterhouse area, the public markets and central business area.

Customers/clients

The wastewater collection and treatment system will service the slaughterhouse and old and new public markets and central business area.

Current status

There are no waste water collection and treatment facilities in Los Banos for household wastes, or for any of its public facilities (slaughterhouse and public markets), and the central business area.

The first concern is the collection system or sewerage and collection system for wastewater, considering that the slaughterhouse, the two public markets and the central business district are located in separate places. Thus, the option could be to provide appropriate waste water collection and treatment facility for each.

It is necessary to invite environmental engineering companies to design a waste water treatment collection and treatment system that is appropriate, feasible and affordable for the municipality.

Project size, expected schedule and cost (planning, pre-construction, construction, and operation)

The estimates are intended for four (4) separate wastewater collection and treatment facilities for: the slaughterhouse (1), public markets (2) and main commercial are (1). Year -2 and -1 are pre construction years and Year 0 is the time of construction. Year 1 and Year 2 are the post construction estimates.

Planning costs	Year -2	Year -1	Year 0	Total
Memo of Agreements (MOA), i.e., ERDB and Municipal gov't, & others	1,000			
Initial Technical planning	1,000			
Negotiating and preparing contracts				
Obtaining all permits	5,000			
Contract between ERDB and Environmental engineering firm	100,000			
Planning with environ. Firm	1,000			
Total	108,000			108,000

Pre-construction costs	Year -2	Year -1	Year 0	Total
Land acquisition	100,000			
Final engineering plan and design	7,500			
Machinery, facilities, and systems design	7,500			
Total	115,000			115,000

Construction costs	Year -2	Year -1	Year 0	Total
Excavation		40,000		
Structural		150,000		
Mechanical		150,000		
Electrical		50,000		
Control and security system		50,000		
Total		440,000		440,000

Operation costs	Year 0	Year 1	Year 2	Total
Testing of system & facilities	5,000			
Commissioning	2,000			
Maintenance and operation		20,000	20,000	
Total	7,000	20,000	20,000	47,000

Current needs and request

Commitment, participation and counterpart resources of the Municipality of Los Banos
 Total estimated cost for putting up the waste water collection and treatment facilities is \$710,000.
 A partner is needed, an environmental engineering institution, to plan and design appropriate wastewater collection and treatment technology for the sites

Market conditions (Situation)

There are no wastewater collection and treatment facilities for the municipality. The municipality is crossed by five (5) rivers and their tributaries, all draining into Laguna Lake. The establishment and operation of waste water collection and treatment facility would vastly contribute to prevention of water pollution of nearby rivers and tributaries and the nearby lake.

Operating conditions

The municipality does not have sufficient funds for the establishment of water treatment facility and its operation.

The businesses establishments to be serviced by the wastewater treatment facilities can be charged with fees for the maintenance and operating costs.

Regulatory conditions including all required approvals

Local ordinances from the municipality and regulatory requirements from the Department of Environment and Natural Resources.

Permission to use public land, to build facility and operate.

Owners and sponsors

Cooperative undertaking of the Ecosystems Research and Development Bureau, Department of Environment and Natural Resources and the Municipal government, funding institution(s), environmental engineering company

Team

DENR, Municipal government, funding institutions and engineering company

Stakeholders

Residential and business establishments near the wastewater collection and treatment facilities

Governance and management structure (decision making authority and responsibility)

Decision making shall emanate from ERDB-DENR as main implementor. Responsibilities in implementation shall be defined in the memorandum of agreement between the ERDB and the Municipal government and other entities.

Implementation steps and plan

Table 2. Implementation Steps and Plan

Project milestone	Task	Year -2				Year -1				Year 0			
		1 st qtr	2 nd qtr	3 rd qtr	4 th qtr	1 st qtr	2 nd qtr	3 rd qtr	4 th qtr	1 st qtr	2 nd qtr	3 rd qtr	4 th qtr
Planning	Memo of Agreements (MOA), i.e., ERDB and Municipal gov't, & others												
	Technical planning												
	Negotiating and preparing contracts												
	Obtaining all permits												
	MOA between ERDB and Environmental engineering firm												
	Technical Planning												
Pre-construction	Land acquisition												
	Final engineering and design												
	Machinery, facilities, and systems design												
Construction	Excavation												
	Structural												
	Mechanical												
	Electrical												
	Control and security system												
Operation	Testing of system & facilities												
	Commissioning												
	Maintenance and operation												

Impacts and returns

The project is envisioned to contribute greatly to water resources management and use of the municipality. The project will also demonstrate the possibility of establishing waste water collection and treatment system for a municipality that can serve as an example for other municipalities.

Risks and Measures to address them

Considering that the target town has a limited land area, there maybe difficulty in looking for space to build the facilities particularly for the public markets and main business area. A solution is to locate the facility in government land or public land. But if no public land is available, the municipality has to purchase the land.

The largest risk is where to draw the maintenance and operating cost after the construction and commissioning of the waste water treatment facilities.

The possible solutions are: (1) to design the waste water collection and treatment facilities in a way that these will not require high maintenance and operating cost; (2) a system could be devised to plow back savings generated in water use by the slaughterhouse, public markets and central business area for the operation and maintenance of the facilities; (3) part of income from slaughterhouse, the public markets and commercial establishments serviced by the facilities, shall be devoted to the maintenance and operating expenses of the facilities.

Ghana Koala Gas Proposal and Template Samples

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, Tel: xxx; Fax: xxx; E-mail: xxx
- **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	Construction	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 38,918¹⁰ (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.

¹⁰ 2000 population census.

- **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 then 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.

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 report															■	■
Drainage	Coordination	■	■	■	■												
	Piping		■	■	■	■	■	■	■	■							
	Manholes		■	■	■	■	■	■	■	■							
	Oil-water separators									■	■	■					
	Site drainage											■	■	■	■	■	■
	Closeout report															■	■
Structural	Coordination	■	■	■	■												
	Columns			■	■	■	■										
	Walls/roofing				■	■	■	■	■	■	■						
	Forecourt					■	■	■	■	■	■	■	■				
	Steel structure					■	■	■	■	■	■	■	■	■			
	Punch list														■	■	■
	Closeout report															■	■

Project milestone	Task	Weeks																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Mechanical	Coordination	■	■	■	■													
	Piping		■	■	■	■	■	■	■	■	■							
	Plumbing			■	■	■	■	■	■	■	■	■	■					
	Fire prevention				■	■	■	■	■	■	■	■	■	■				
	Air conditioning							■	■	■	■	■	■	■	■	■	■	
	Fuel handling								■	■	■	■	■	■	■	■	■	
	Commissioning															■	■	
	Closeout report																■	■
Electrical	Service	■	■	■	■	■	■	■	■									
	Wiring	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Stand-by power	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Equipment	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Lighting	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Commissioning															■	■	■
	Closeout report																■	■
Control systems	Coordination				■	■	■	■	■	■	■	■	■	■	■	■	■	
	Wiring									■	■	■	■	■	■	■	■	
	Equipment									■	■	■	■	■	■	■	■	
	Security system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Commissioning															■	■	■
	Closeout report																■	■

- **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.
- **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.

“Ghana LPG-Proposal-Detailed”

Task 1: Describing WHAT is being proposed, keeping the technology, service, product and client description, factual and clear.

1.1 Product or service

The business aims to improve accessibility and availability of LPG to rural and peri-urban communities in the region. The main services offered at the location will be sales of fuel, lubricants and LPG sales and delivery. The station will start operating 16 hours daily until other services are fully integrated into site operation. It is our aim to maintain a 24-hour operation as the surrounding area develops.

Country G has a universal price for LPG regardless of where the product is sold. The price of LPG in G is determined by the National Petroleum Tender Board. The international price of crude oil influences the price of the product on the local market. The current price structure of LPG is summarized below.

LPG price breakdown¹¹

	Cost/price breakdown (local currency)	Cost/price breakdown (foreign exchange)	Gross profit %
Ex-refinery price	4,235.11	0.455	
Excise duty @ 15%	635.27	0.068	
Excise duty specific	100.00	0.011	
Debt recovery fund levy	640.00	0.069	
Deregulation mitigation levy		0.000	
Cross-subsidy levy	(1,840.42)	-0.198	
Ex-depot price	3,769.96	0.405	
Unified Petroleum Price Fund (UPPF) margin	429.23	0.046	
Dealer’s margin	314.55	0.034	0.034
Marketer’s margin	251.47	0.027	
Filling plant costs (margin)	377.21	0.041	0.041
Distribution compensation margin	30.00	0.003	
Ex-pump price	5,172.42	0.556174	
Gross profit percentage			13.5

Koala Gas will earn a gross profit of 13.5 per cent on every kilogram of LPG sold.

Guide to price breakdown

Filling plant margin:	Owner of filling plant
Dealer’s margin:	Owner of land
Marketer’s margin:	Oil marketing company
UPPF margin:	Transport
Distribution compensation margin:	Door-to-door retailers

1.2 Technology

The Koala Gas LPG plant consists of a 30-tonne stand-alone bulk storage tank mounted on a reinforced concrete platform above ground level. The storage tank will be fitted with various measuring gauges. The plant will operate within a work pressure of 18.6 and 26 bar and the ambient temperature of the storage tank will be about 50° Celsius. A sprinkler system with water intake from

¹¹ This table shows the LPG price structure in the country together with the gross profit margin Koala Gas will earn on each kilogram of LPG sold ((dealer’s margin + filling plant margin)/ex-pump price + foreign exchange margin = 13.5%).

an overhead water tank will be installed above the storage tank to control the ambient temperature of the tank.

A pressure pump which pumps 14.5kg of LPG per minute will be connected to the storage tank. During the filling process, LPG is pumped to the dispensing unit when the pump is activated. The inlet and outlet passages of the storage tank facilitate the intake of LPG from delivery lorries and the release of gas through the pipes to the dispensing unit. The plant will have two filling heads, allowing two cylinders to be filled simultaneously.

The company’s refilling plant will be automated to the extent possible to reduce potential human errors and maximize efficiency. The plant will have an integrated equipment system to provide safety measures and also a measure of the level of LPG in the storage tank(s) at any given time for effective stock management and cash control. A stand-by electric generator will switch on automatically upon power failure.

1.3 Customers

Potential clients of Koala Gas can be classified into three main categories:

Households: This market consists of individuals who use LPG mainly for domestic cooking purposes. Clients for this market can be found in the rural, peri-urban and urban areas. Cylinders used by domestic customers range from 5 kg to 14.5kg.

An average family of five people using charcoal spends about \$12.90 per month on fuel. If the same family uses LPG, it will spend \$8.10. The table below shows the potential savings for such a family from switching to LPG.

Description	Monthly use	Price per kg	Monthly cost (\$)
Charcoal	2 bags	6.450	12.9
LPG	14.5 kg	0.556	8.1*
Monthly saving			4.8

* Assumes 25 per cent subsidy on LPG cost

The monthly saving from switching to LPG is estimated to be about \$4.80. This can be used to pay for the cost of a 14.5 kg cylinder and a two-burner stove, which costs approximately \$66.00. Several rural banks offer 6–12 month finance for LPG equipment and the savings achieved by switching to LPG can be used to cover the payments. Through this facility, customers are able to afford the equipment more easily than having to pay cash up front.

Institutional: Potential customers include hotels, restaurants, hospitals, boarding schools and canteens. These institutions use LPG for large-scale cooking and usually have small and medium-sized storage tanks installed at their premises. Koala Gas will subcontract delivery trucks to service these clients.

Industrial: The potential industrial customers for the company include mines and large foundries that use LPG to fire their furnaces. Most of these industries already have medium-sized storage tanks on site and are supplied with their LPG requirements directly from haulage lorries.

Task 2: WHERE? Research and describe the setting in a balanced and transparent way to show that the local setting is understood.

2.1 Setting

Koala Gas Ltd is a newly created private petroleum and gas distribution company registered as a limited liability entity in N, a peri-urban community on the main road in the north-western region of G. The company’s rural location and proximity to the regional capital provides it with a prime physical location to introduce LPG gradually to the rural market while sustaining itself with sales to businesses and domestic customers in the urban areas.

2.2 Country conditions:

The four major occupations nationally are agriculture and related work (49.2 per cent), production and transport equipment (15.6 per cent), sales (14.2 per cent) and professional and technical (8.9 per cent).¹² The domestic economy continues to revolve around subsistence agriculture, which accounts for 46.7 per cent¹³ of GDP and employs 60 per cent of the work force, consisting mainly of small landholders. Presented below are some selected financial and economic indicators for G.

	November 2004	December 2004	January 2005	February 2005	March 2005	April 2005	May 2005	June 2005
Inflation (year-on-year, %, end period)	12.3%	11.8%	11.6%	14.0%	16.7%	16.6%	-	-
Local/forex	9,049.36	9,054.73	9,051.26	-	-	-	-	9,054.15
Prime/base rate	Not available	Not available	Not available	18.5%	18.5%	18.5%	16.5%	16.5%
Bank lending rate (base rate): 23–26%								

Source: Central Bank website.

2.3 Pricing

Under the Exchange Control Act of 1961, banks operating in country G are allowed to make only local-currency transactions. All loan transactions are therefore conducted in local currency and converted into the appropriate foreign currency at the prevailing exchange rate if required. For loans sourced externally, however, the Bank of G uses the London inter-bank offer rates (LIBOR) as a benchmark and currently permits a margin of 3 per cent to 4 per cent. Under the Exchange Control Act of 1961, local banks operating in G are not permitted to offer loans denominated in foreign currencies to customers. The prime/base rate announced by the Monetary Policy Committee in May 2005 was 16.5 per cent.

The annualized rate of inflation given by the national consumer price index increased from 11.8 per cent in December 2004 to 16.7 per cent in March 2005. On the foreign exchange market, the local currency continues to be relatively stable and traded within a narrow range against foreign exchange over the last first four months of 2005. The exchange rate currently fluctuates between 9,000 and 9,300 local currency to the dollar.

2.4 Market conditions

Only 5.3 per cent of households in the region use LPG as their primary fuel for cooking. Since 1999, the consumption of LPG has grown steadily at an average of 13 per cent per year at the national level. The north-western region has the highest population density in G. According to the 2000 census, the region has a population of 3,612,950. Of this population, 51.3 per cent live in urban areas and the remaining 48.7 per cent in rural areas. This region of G is one of the most richly endowed in terms of mineral resources and agriculture. As shown by the census statistics, most of the communities in the region are fairly big with brisk economic activities. The strategic site of the business provides it with an opportunity to reach out to the large LPG market in B, O, D, F and K, the regional capital and the country's second-largest city.

Traffic volume has increased dramatically since the construction of the main road to the regional capital. This is especially true of commercial vehicles. The five-mile-square area surrounding the location is in a rapid development mode. It is estimated that over the next 10 years the presence of construction lorries and through traffic to the country's capital and main port will continue to grow.

¹² Source: Living Standards Survey (2002).

¹³ 2005 budget statement.

2.5 Marketing plan

Campaign	Objectives	Activity	Output
Rural sales and marketing	<ol style="list-style-type: none"> Identify, make arrangements with and supply LPG to professional groups, associations, and cooperatives in rural areas Discuss and identify means to supply LPG to these entities Implement a selective cylinder-financing scheme with initial deposit from participants 	<ol style="list-style-type: none"> Install cylinder cages at secured locations Print leaflets to educate potential customers Use public address system to spread service information in rural areas 	<ol style="list-style-type: none"> Secure supply contract with rural entities such as teacher associations, farmers' groups, traders, etc. Work with cylinder suppliers and rural banks to improve supply of 6 kg cylinders to rural communities
Site sales and services (cylinder refilling at site)	Adopt good customer service practices such as maintaining honest weights to retain and increase number of customers	<ol style="list-style-type: none"> Print leaflets to educate potential customers Use public address system to spread services information in catchment areas Call-in services Cylinder checks and valve sales 	Consistent increase in patronage at the refilling plant
Commercial and industrial sales	<ol style="list-style-type: none"> Identify and approach potential customers with proposals to adopt/supply LPG Secure signed memorandum of understanding from customers and sign supply contract with customers 	Perform energy source audit; deliver efficient energy usage proposal to industrial and commercial clients to switch to LPG. Information to be provided includes economic/ environmental analysis for using LPG	Secure LP GAS supply contract with industrial clients

There are currently eight LPG distribution companies located in the market. These include LGas, GGas, Egas, NGas, PGas, GGas and T Gas. It is worth noting that none of those companies is currently involved in rural distribution of LPG as they operate mainly within the regional capital. The rural focus of Koala and its strategic location will therefore give it an edge over its competitors. The risk, however, is that when the rural market is developed, some of those other firms will invest in rural distribution. To mitigate this risk, the company will be encouraged to provide efficient services in its catchment area to win the loyalty of its rural customers

2.6 Regulatory setting

By legislation, retailers such as Koala Gas may not purchase LPG directly from the refinery. They 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.

LPG demand in the country has increased significantly since the beginning of the 1990s. During this period, the Government made great efforts to promote LPG use to forestall the detrimental environmental effects of felling trees for fuelwood and charcoal. This increased national LPG consumption from 5,000 metric tonnes (T) in 1990 to 32,000 T in 1996. National LPG consumption increased gradually from 45,100 T in 1999 to 65,667 T in 2004. It is estimated that national LPG use increases at an average rate of 13 per cent per year.

As part of the LPG promotion programme, the Government has installed an LPG processing plant at the oil refinery, which has increased the production capacity of the country to 166,000 T per year for both domestic consumption and export. This has largely helped eliminate previous intermittent shortages of LPG in G. The Government's fuel-switching programme has been given a further boost with the reduction of the price of the LPG from 5,700 per kg (\$0.63) to 5,172.42 (\$0.556) per kg.

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 the rural communities. In 2003, the Government adjusted the pricing of LPG to provide an incentive for transporters to supply remote rural communities. The Government is steadily decreasing its subsidy support, and since 2003 has increased LPG prices by 50 per cent per year in an attempt to charge economic prices that are

consistent with international market prices. So far it has been successful, and current subsidies on LPG, according to government sources, have been reduced to 25 per cent.¹⁴

There are firm and comprehensive environmental health and safety regulations and codes for the LPG industry which are enforced by the energy commission, the environmental protection authority and the standards board. Any filling plant that does not comply with those codes of conduct is shut down. Operational permits are issued and renewed biennially.

Koala Gas needs to obtain loan approval, an environmental protection authority permit, an energy commission license 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 then need to pass a fire service inspection and obtain insurance coverage and an approval note from the Country Planning Department to begin operations.

Task 3: WHO? Evaluate and present the team and stakeholders, showing who will be involved and demonstrating their capabilities.

3.1 Champion (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 in business administration in corporate finance and a Master's degree in telecommunications management, obtained from Lafayette College and the University of Dallas in the United States of America. He is a certified professional engineer and energy manager. He has worked as a project development manager and a design engineer for private consulting companies of international repute such as Johnson Controls, the United Illuminating Company, XENERGY, Inc. and Savage Engineering, Inc. Mr. Campos has experience as a design engineer in heating, ventilating and air conditioning (HVAC), refrigeration and building control systems. Most of his work over the past 15 years has been in energy engineering and conservation. He is currently the Technical Director of the Energy Foundation of G. In addition to these activities, Mr. Campos will manage the plant supervisor of Koala Gas.

The entrepreneur is currently involved in the promotion of LPG in G by virtue of his current participation in a national energy trade association. He therefore has ample knowledge of the LPG sector in G. The entrepreneur has high technical expertise and management acumen and it is expected that he will be able to combine all those skills to execute the business plan effectively for the success of the company.

3.2 Team

Koala Gas will initially hire seven employees.

The entrepreneur will oversee the operations of the business. His role will include placing orders for LPG from the oil marketing companies as well as managing the finances of the business.

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

The plant supervisor (yet to be hired) will oversee day-to-day plant operations and servicing customers' needs. Among other things, he will supervise the following activities:

- Stocktaking before the commencement of sales and after close of work each day.
- Checking of pressure/temperature levels intermittently in case safety measures such as sprinkling water on the storage tank are required.
- Weighing all cylinders/bottles before LPG is dispensed.
- Examining cylinders and cylinder heads for possible faults.
- Dispensing LPG into examined cylinders.
- Maintaining equipment.

¹⁴ Economic prices for LPG internationally is 25% more than what G customers pay for the fuel

The clerk/cashier (yet to be recruited) will be responsible for the records and cash transactions of the business. The clerk/cashier’s activities will include keeping records of daily sales and customers for accounting and planning purposes. This position will also support the Managing Director in his administrative activities for the business. A chartered accountant will be retained to prepare the company’s management and audited accounts twice a year.

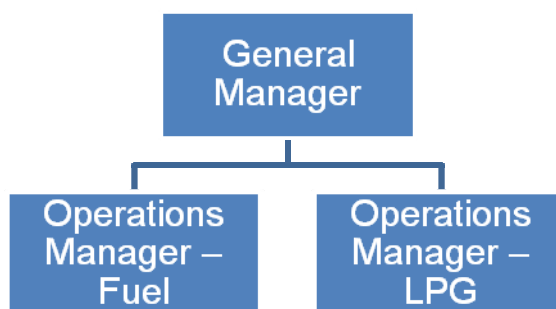
Task 4: Organizing and presenting the steps to implementation, showing HOW the core idea will be turned into an operating reality.

4.1 Implementation plan

The accompanying table lists important project milestones, with dates, managers in charge and budgets for each step. The milestone schedule shows our emphasis on planning for implementation. Commitment to these schedules is of prime importance for the success of the company. The business plan includes complete provisions for plan versus actual analysis, and we will hold monthly follow-up meetings to discuss any variances and the course for corrections.

Activity	Schedule	Planning	Construction	Pre-operation
P1 – Site selection	Year –1, month 10	650		
P2 – Testing conditions	Year –1, months 10–12	2,000		
P3 – Identifying all laws and regulations	Year –1, months 8–12	500		
P4 – Preparing construction documents	Year 0, months 1–5	500		
C1 – Land acquisition	Year –1		27,000	
C2 – Building	Year 0, months 6–9		15,000	
C3 – Utility connections	Year 0, months 8–9		1,000	
C4 – LPG tank installation	Year 0, months 6–9		47,800	
C5 – Overhead water tank installation	Year 0, month 8		2,000	
C4 – Other equipment, office set-up	Year 0, months 8–9		16,500	
Commissioning and trial runs	Year 0, months 10–12			4,000
Initial LPG inventory	Year 0, months 11–12			18,390
Working capital – legal fees	Year 0, month 12			11,300
Open for business	Year 1, month 1			

4.2 Organization chart



Task 5: WHY? Estimate the impacts, outcomes and expectations of the proposal, itemize its benefits and create a matrix of benefits, inventory proposal impacts and mitigation measures.

5.1 Environmental and social impacts and conditions to monitor

5.1.1 Social

Support for this business will provide direct employment for the staff of the plant and also create new jobs in the LPG sector for the beneficiary communities. Those jobs will include openings for rural distribution by agents and retail of end-use equipment and accessories such as stoves, cylinders, etc. The operations of Koala Gas will also create several microenterprises for women (food vendors). Most roadside food vendors depend on large volumes of fuelwood for their businesses. The quality of fuelwood required for their operations is scarce as a result of the acute deforestation in the region. The operations of Koala Gas will offer these microenterprises fuel options. The ready availability of LPG

and subsequent savings and health benefits from its use will be an incentive for these prospective clients to switch.

5.1.2 Environmental

The project site lies adjacent to the road to the regional capital N. Originally, the project site was farmland used intermittently by a local farmer. Later, sand-winning contractors extracted material for construction from this particular site and adjacent areas. It later lay unused until it was acquired for the proposed project.

The land lies adjacent to the confluence of two small streams. This makes the use of the land very sensitive in terms of potential pollution of the streams. In accordance with environmental protection authority regulations, the structure could not be located less than 30 metres from the stream. It is also a requirement that the facility must maintain the vegetation alongside the stream to minimize water loss through evaporation.

A provisional operating license is required to begin dispensing petroleum products to the public. This has been secured from the energy commission under the sponsorship of Total Ltd. Such sponsorship is required by the energy commission for newly established companies in the fuel distribution business.

Before applying to be licensed, Koala Gas was obliged to acquire an environmental permit from the environmental protection authority. Such permits are issued based on environmental impact assessments by the authority (see NAME of document). They state that the activities of the assessed facility will not degrade the environment. In addition, efficient effluent and emission controls have been incorporated in the design to minimize environmental risk and damage. Also, a fire mitigation plan had to be submitted to the environmental protection authority for approval. The authority required a zoning permit from the district administration office and a geotechnical report which analysed the land formation at the location. The report covered water table movements in terms of their effect on the adjacent streams. This information has been submitted for the licence to be issued.

It is the policy of Koala Gas policy to protect the streams to the best of its ability. We have designed adequate precautions into the facility's drainage system to prevent any contaminating spillage.

The project will be implemented with the utmost care to eliminate any possibility of upsetting the environmental balance as it exists. Wastewater collection systems have been designed into the drainage system to capture all contaminants, including oil. Two oil separators will be installed in series to prevent any contamination of the adjacent stream.

The streams dry up completely during the dry season but rise to full flow in the rainy season. Koala Gas has therefore found it prudent to incorporate flood control measures into the structural design to prevent future floods from affecting our operations.

The license, when granted, will authorize Koala Gas to sell petroleum products and gas to the public. Koala Gas must obtain a license under final licensing rules and conditions before entering into and executing agreements with the public.

It is estimated that every person in G currently uses around 640 kg of fuelwood a year. Today, forest growth in G is less than half fuelwood demand, which makes fuelwood an unsustainable option. As a result of the limited access to LPG in the northern region, the main sources of fuel for cooking are wood and charcoal. From an environmental point of view, the continuing felling of trees in a region already threatened by desertification is having fatal consequences for the region's flora and fauna, air quality and water bodies. The establishment of this business will therefore support LPG substitution of fuelwood, which will go a long way towards meeting the socio-economic challenges facing the people as a result of the depletion of their forest cover.

5.1.3 Health

LPG burns efficiently without producing smoke and with low emissions of pollutants. These inherently clean characteristics are especially important for reducing indoor air pollution, and consequently the establishment of this business can contribute to improving the health of women and children in the north-western region.

Task 6: Build the base case

6.1 Basic assumptions

Financial projections for the next five years were informed by real case studies of two existing LPG start-ups (M and F) and adapted to fit the market and operating environment of Koala Gas. A sensitivity analysis was conducted for two different scenarios using past trends in price increases, shortages and salary levels as variables and testing their impact on sales levels.

The selected base case offers the following information.

				Year -2	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
Capital Cost												
from donors	Capital grants		–									
from owner-investors	Equity investment	43,650		8,975	34,675	30%	of total value					
from lenders	Loans	102,990		21,175	81,815	70%	of total value					
	Capital cost	146,640		30,150	116,490							
Operations												
	Revenues	3,312,505					233,604	467,208	607,370	911,056	1,093,227	
	Operating grants or subsidies	–					–	–	–	–	–	
	Operating costs	3,101,880					233,420	441,542	572,527	843,326	1,011,000	
	Net revenues from operations (EBITDA)	210,625	For length of loan only				184	25,666	34,843	67,730	2,202	
	Interest	20,925					6,694	5,519	4,266	2,933	1,513	
	Taxes						–	757	2,843	9,687	2,866	
	Depreciation						16,360	16,360	16,360	16,360	16,360	
	Net income						(22,870)	3,030	11,374	38,749	11,463	
	Add back: Depreciation						16,360	16,360	16,360	16,360	16,360	
	Less: Amortization / principal payments	102,990					18,089	19,264	20,517	21,850	23,270	
	Net cash flow to owner-investors		IRR	5.4%	0	(8,975)	(34,675)	(24,599)	126	7,217	33,259	14,553
	DSCR	1.70					0.01	1.04	1.41	2.73	3.32	
	Average						By year					

The projected cash flow of the company shows that it will generate enough cash to sustain its operations. LPG filling plant equipment is notorious for breakdowns; the company will have sufficient capital to manage such situations should they occur. The cash flow and the balance sheet represent a financially sound company, which should position it to secure finance from local sources for expansion.

6.2 Evaluating feasibility

A sensitivity analysis was carried out to showcase two possible scenarios that could occur in the life of the company.

In the first scenario, the company could generate enough funds to cover all the operational and financial expenses. The worst case is presented in the second scenario, in which the company would not be able to service the loan. That scenario might occur in the unlikely event of a long absence on the part of the entrepreneur and a lack of commitment and possible misapplication of funds by his successor. In the event of that scenario, the lender has an option of recovering its investment through the sale of the filling plant.

The first scenario is considered the base case scenario based on conservative projections and guided by the actual sales of similar start-ups in comparatively developed markets. The growth in the sales is also informed by the researched market trends and is not overly ambitious.

6.3 Financing plan

To carry out the proposed business plan, 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 an interest rate of up to 7 per cent can be paid on an annual basis.

Description of finance required	Lender	Sponsor	Total
Start-up costs	–	3,650	3,650
Capital infrastructure:			
1. Land	–	27,000	27,000
2. Office, shop and fencing	–	5,000	15,000
3. Utility connection	10,000	1,000	1,000

4. Overhead water tank/installation	–	2,000	2,000
5. One 30-ton LPG tank/accessories	47,800	–	47,800
6. Transportation of tank to T	1,500	–	1,500
7. Two Avery industrial scales	2,500	–	2,500
8. Two pumps	2,000	–	2,000
9. Two dispensing machines	8,000	–	8,000
10. Cost of installation, commissioning and trial runs	1,500	5,000	6,500
Working capital (including legal fees)	11,300	–	11,300
Initial inventory (LPG)	18,390	–	18,390
Total	102,990	43,650	146,640
	70.2%	29.8%	100%

With an interest rate of 6.5 per cent, the debt service coverage ratio (DSCR) over the five years of the proposed five-year loan term is 0.01, 1.04, 1.41, 2.73 and 3.32. Even though we have low DSCRs during the first two years of operation, cash from owner's equity will be available to cover the debt obligation. In addition, the sponsor is willing to offer the company's assets including the land where the filling plant will be located as collateral for the loan.

Task 7: What If things do not go as planned? Show how reasonable it is to expect these results by examining and estimating contingencies.

Risks and mitigation strategies

Risk: Inexperienced management team

Mitigation: The sponsor has been in regular contact with LPG dealers and retailers and has developed a good relationship with suppliers, oil marketing companies and prospective clients. For the day-to-day administration of business operations, an experienced plant manager will be hired.

Risk: Non-achievement of sales targets

Mitigation: Failure to achieve sales targets will have significant consequences on the business's financial projections and thus its ability to repay the loan. In recognition of this, the business's financial projections have been prepared based on a conservative sales estimate that takes unforeseen implementation problems into account.

Risk: Failure to comply with safety codes and regulations

Mitigation: The business will provide continuous education to its staff and clients. In addition, the strict enforcement of safety standards by the regulatory bodies is also expected to mitigate this risk. The company will also secure comprehensive insurance coverage for the plant just before it commences operation.

Risk: Unreliable supplies

Mitigation: A lack of a regular and reliable supply of LPG to the Koala Gas plant, which is about 280 kilometres from the refinery, is a potential risk to the business. To mitigate this risk, the entrepreneur has concluded negotiations with LGas to provide the business with regular haulage services.

Risk: Foreign currency

Mitigation: The business will generate revenue in local currency; the repayment of the loan, however, is expected in dollars. A sharp depreciation in the value of the local currency against foreign exchange would therefore affect the repayment of the loan as more local currency would be needed. To mitigate this risk, the interest rate on the loan has been calculated taking into account currency depreciation, inflation trends and the tax rates in the country.

Risk: Competition

Mitigation: All eight filling plants that are potential competitors to Koala Gas are based in the central business district of the regional capital. Typically, LPG customers patronize the services of the closest credible filling station. Customers in the central business district nearest to Koala Gas will naturally patronize its services. Koala Gas will focus on the market towards O and build a strong customer base amongst communities there. Generally, the market in the region is large enough to accommodate at least 15 large retail filling plants.

Risk: Deregulation policy and price increases

Mitigation: The deregulation policy of the Government seeks to erase subsidies on petroleum products completely, which has the potential to increase LPG prices arbitrarily. This could contribute to a loss of customers for Koala Gas as most rural customers would find it difficult to afford the cost of the product. To mitigate this risk, the business will work to attract sufficient commercial and middle-income customers with inelastic demand for LPG to cushion it from any fall in demand from the rural communities as a result of government policies.

Templates with Ghana LPG Sample - KG Proposal Information follow

What? template

Product or service

Are you offering a product or service?

<input type="checkbox"/> Product Liquid petroleum gas	<input type="checkbox"/> Service cylinder refilling	<input checked="" type="checkbox"/> Both	<input type="checkbox"/> Other
--	--	--	--------------------------------

Is the product or service new?

<input type="checkbox"/> New	<input checked="" type="checkbox"/> New to this area	<input type="checkbox"/> Existing	<input type="checkbox"/> Other
------------------------------	--	-----------------------------------	--------------------------------

Have customers seen this product or service before?

<input type="checkbox"/> Never	<input checked="" type="checkbox"/> Saw elsewhere	<input type="checkbox"/> Yes, exists locally	<input checked="" type="checkbox"/> Other We have been conducting cooking demonstrations in markets and community meetings
--------------------------------	---	--	---

Product or service description

LPG cylinder refilling

Need being satisfied

Cleaner cooking fuel for households and small restaurants	Less smoke, higher efficiency, cost savings	Improved environment
---	---	----------------------

Technology

Refilling from 30 ton tanks into cylinders of 6 to 30 kilograms

Technology description

Reference for further technical details

Where is this technology used?

<input checked="" type="checkbox"/> Globally
<input checked="" type="checkbox"/> In this country
<input type="checkbox"/> In this local market
<input type="checkbox"/> Nowhere, it's new
<input type="checkbox"/> Other

Is the technology successful in those places?

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Don't know

What is your experience with this technology?

Expert Some experience Limited experience No experience

Are there other technologies that deliver the same product or service?

Yes, these include: _____
 No _____
 Don't know _____
 Other Wood and charcoal used _____

What sizes will be available?	What is the estimated customer price?	What is the average price of competitive products?	What is the estimated cost to you?
6 to 30kgs	\$0.556 per kg	Charcoal costs 50% more	\$0.451
_____	_____	_____	See market price schedule—regulated and subsidized
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

List the components of the technology	Sources of each component	Alternative sources	Is maintenance required?
Land	_____	_____	routine
Buildings	_____	_____	routine
Water and Electric	local	_____	no
LPG tank 30 tonnes	Name 1	Name 2	yes
Water Tank	Name 3	Name 4	yes
Operating Equipment	Name 5	Name 6	yes
Initial Inventory of LPG	_____	_____	_____

Customer

What types of customers will you serve?

Individuals or families Small businesses Large businesses Other

Approximately how many customers will be served in next three years?

Between 5,000 and 10,000 – see “Market Setting” in Where Template for details. _____

Average customer income / revenue

Average customer will save \$4 per month	However, one-time investment of \$66 needed	Financing available at 16% = \$6 month for 12 months	_____
--	---	--	-------

Average customer income / revenue trends

Spends \$12 per month

If there is only one large or a few customers, what is their credit rating and track record of paying bills?

Does not apply

Current product or service being used by this customer: (1) Identify product(s) or service(s) and (2) state reason why customers choose current products or services.

wood	charcoal	Kerosene / white gas	
<input type="checkbox"/> Lower price	<input type="checkbox"/> Lower price	<input type="checkbox"/> Lower price	<input type="checkbox"/> Lower price
<input type="checkbox"/> Better performance	<input type="checkbox"/> Better performance	<input type="checkbox"/> Better performance	<input type="checkbox"/> Better performance
<input type="checkbox"/> Better reliability	<input type="checkbox"/> Better reliability	<input type="checkbox"/> Better reliability	<input type="checkbox"/> Better reliability
<input type="checkbox"/> Better support	<input type="checkbox"/> Better support	<input type="checkbox"/> Better support	<input type="checkbox"/> Better support
<input checked="" type="checkbox"/> No other choice	<input checked="" type="checkbox"/> No other choice	<input checked="" type="checkbox"/> No other choice	<input type="checkbox"/> No other choice
<input checked="" type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other
Labor not cash	Alternative is wood	Not readily available or efficient	

What other companies or programmes are targeting these customers? Are they similar to this proposal?

5 urban competitors in region's main city

No rural or peri-urban competitors

<input type="checkbox"/> Similar	<input type="checkbox"/> Similar	<input type="checkbox"/> Similar	<input type="checkbox"/> Similar
<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar
<input type="checkbox"/> Similar	<input type="checkbox"/> Similar	<input type="checkbox"/> Similar	<input type="checkbox"/> Similar
<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar
<input type="checkbox"/> Similar	<input type="checkbox"/> Similar	<input type="checkbox"/> Similar	<input type="checkbox"/> Similar
<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar	<input type="checkbox"/> Not similar

Why would customers choose your product or service?

<input checked="" type="checkbox"/> Lower price	<input type="checkbox"/> Lower price	<input type="checkbox"/> Lower price	<input type="checkbox"/> Lower price
<input checked="" type="checkbox"/> Better performance	<input type="checkbox"/> Better performance	<input type="checkbox"/> Better performance	<input type="checkbox"/> Better performance
<input checked="" type="checkbox"/> Better reliability	<input type="checkbox"/> Better reliability	<input type="checkbox"/> Better reliability	<input type="checkbox"/> Better reliability
<input checked="" type="checkbox"/> Better support	<input type="checkbox"/> Better support	<input type="checkbox"/> Better support	<input type="checkbox"/> Better support
<input type="checkbox"/> No other choice	<input type="checkbox"/> No other choice	<input type="checkbox"/> No other choice	<input type="checkbox"/> No other choice
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

How will you reach these customers?

<input type="checkbox"/> New sales force	<input type="checkbox"/> New sales force	<input type="checkbox"/> New sales force	<input type="checkbox"/> New sales force
<input type="checkbox"/> Existing distributors	<input type="checkbox"/> Existing distributors	<input type="checkbox"/> Existing distributors	<input type="checkbox"/> Existing distributors
<input type="checkbox"/> NGOs	<input type="checkbox"/> NGOs	<input type="checkbox"/> NGOs	<input type="checkbox"/> NGOs

<input checked="" type="checkbox"/>	Government	<input type="checkbox"/>	Government	<input type="checkbox"/>	Government	<input type="checkbox"/>	Government
<input type="checkbox"/>	Other	<input type="checkbox"/>	Other	<input type="checkbox"/>	Other	<input type="checkbox"/>	Other
Marketing, advertising, demonstrations...local availability							

Where? template

Market setting

Where are you located?

Country	Province	District	City/town
Ghana	Northwest	urban	Region capital
		rural	5 community names

Where are your customers located?

Country	Province	District	City/town
	3.6 million		1 million
			Communities targeted = 50,000

What is the population of the country/ region?

Country/region/district/town	Population
See above	

What is the number of expected customers?

Time period	Number of customers	
First six months	1000	See calculations
First year	2400	Based on 174kg per customer py
Second year	4800	
Full development	11,300 (year 4)	

Average income in the area you operate in is about:

	Per household	
For top 25%	>\$1800 year	\$150 per month
For middle 50%	\$1000 year	\$80 per month
For bottom 25%	< \$360 year	\$30 per month

Your local currency is

Current exchange rate in terms of dollar or euro =

Foreign currency	Local currency
\$1 is equal to	Cedi 1
€1 is equal to	Previously Cedi 1000

Inflation rates (past three years)

Year 1 (current)	Year 2	Year 3
9-11%	12%	14%

Interest rates for deposits

9.5%	For local currency
	For foreign exchange (dollars or euros)

Interest rates for bank loans

12%-14%

List requirements to obtain bank loans, such as collateral, guarantees, etc.

150% fixed assets

Personal guarantee

Co-signer

Any other information about region/market conditions specific to your business

Government program subsidizes
and promotes LPG substitution

Operating setting

Property rights mean the right to the exclusive use of property and the right to control, transfer, sell and benefit from the property.

In your setting, can property rights be described as well defined and clear cut?

Yes No Don't know

The process for purchasing and taking possession of land can be described as:

Short/fast Slow/lengthy Don't know

Security refers to personal safety and the likelihood that property will be destroyed or stolen.

In your setting, the security level can be described as:

High Medium Low Dangerous

Corruption refers to the need to pay people either to process approvals or to protect your rights as a business. In your setting, the Corruption level be best described as:

No corruption Low Medium High

The process for hiring and firing workers/employees can be described as

Easy Not so Difficult Difficult

The process for obtaining credit/loans can be described as:

Short/cheap Slow/costly Don't know

Interaction with inspectors and other public officials can be described as:

Short/fast Not so difficult Slow/lengthy Difficult

Contract enforceability processes can be described as:

Short/fast Not so difficult Slow/lengthy Difficult

Are reliable contractors easily available?

Yes No Don't know

The cost of reliable contractors can be described as:

Low Medium High

Infrastructure cost

Cost of	Can be described as		
	Low	Medium	High
Transportation of goods			X
Transportation of people		X	X
Electricity		X to high	
Gas		X	
Fuel oil		X	
Telephone		X	
Mobile phone		X	
Water	X		

Any other information about operating setting specific to your business

Regulatory setting

Do you need a permit to start the business?

Yes No Don't know

The process for obtaining the above permit takes about:

6-12 months

- 3–6 months
- 1–3 months
- 15 days–1 month

Do NGOs need permits to operate in the area?

- Yes No Don't know

The process for obtaining the above permit takes about:

- 6–12 months
- 3–6 months
- 1–3 months
- 15 days–1 month

Is a permit needed to start a feasibility study or a project study?

- Yes No Don't know

The process for obtaining the above permit takes about:

- 6–12 months
- 3–6 months
- 1–3 months
- 15 days–1 month

Do you need a permit to obtain a concession?

- Yes No Don't know

The process for obtaining the above permit takes about:

- 6–12 months
 - 3–6 months
 - 1–3 months
 - 15 days–1 month
- Don't know

Do you need a permit to use a natural resource?

- Yes No Don't know

The process for obtaining the above permit takes about:

- 6–12 months
- 3–6 months
- 1–3 months

Accelerated depreciation (5 years) on all capital except buildings and land (20 years)...Income Tax is 20% on net profit

Who? template

Champion self-assessment

What is your main motivation for starting this business?

<input type="checkbox"/>	Earn a regular income
<input checked="" type="checkbox"/>	Be involved day to day
<input type="checkbox"/>	Be involved only part time
<input type="checkbox"/>	Earn a one-time fee or lump-sum payment
<input checked="" type="checkbox"/>	Create a valuable business over time by growing it slowly
<input type="checkbox"/>	Engage family members
<input checked="" type="checkbox"/>	Gain experience
<input checked="" type="checkbox"/>	Improve the well-being of a particular community
<input type="checkbox"/>	Improve the environment
<input type="checkbox"/>	Other Please specify _____

**Continue
completing
questions
and entering
data until
you are
comfortable
with
questions
and
template
data
entry...then
proceed to
HOW
template**

HOW Template (Step 1)

Capital Costs

Capital Costs are Planning and Construction Costs

Planning Costs represent the expenditures that must be made for a proposal to be readied to begin construction. It is important to recognize the difference between payments to others versus keeping track of the time (and its value) spent by the Champions.

An input sheet is shown below. This data will be used to come up with the initial "Base Case"

	Planning Costs			Year -2	Year -1	
P1	Site Selection		650		650	
P2	Testing of Conditions		2,000		2,000	
P3	Identifying all laws and regulations		500		500	
P4	Preparing construction documents		500			
P5			-			
P6			-			
P7			-			
P8			-			
P9			-			
P10			-			
	TOTAL		3,650	-	3,150	

Now we shall look at the Construction Costs.

Construction / Pre-operations Costs represent the expenditures made to actually build a project or put in place the facilities to deliver a product or service. This part of the template automatically and very roughly estimates something called "interest during construction" which is a real cost incurred while a project or facility is being prepared but before it produces revenues.

If you have no interest expenses please adjust the cell (C45) to 0%.

All figures are in local currency denominations

	Construction / Pre-operations Costs			Year -2	Year -1	Year 0
C1	Land Acquisition				27,000	
C2	Building					15,000
C3	Utility Connections					1,000
C4	Propane Tank Installation					47,800
C5	Overhead Water Tank Installation					2,000
C6	Other Equipment Set-up					16,500
C7	Commissioning and Trial Runs					4,000
C8	Initial LPG Inventory					18,390
C9	Working Capital/Legal fees					11,300
	Subtotal		142,990	-	27,000	115,990
	Annual Interest during construction=	0.0%				
C10			-	-	-	-
	TOTAL		142,990	-	27,000	115,990

Now that we have the Capital costs in place lets move to the next sheet and fill the amounts that have received in Grants and Subsidies

HOW Template (Step 2)

Grants and Subsidies

Capital Grants and Operating Subsidies serve two different purposes:

- 1) They can reduce the Construction or Pre-operation cost of a project
- 2) They can lower the cost of the product or service being offered

Important: if this proposal is to receive a grant or a subsidy the amounts being requested should be clearly identified and separated from those already obtained.

Like Step 1 a sample of the sheet is shown below, with data which will be used through the sheets

Grants and Subsidies		Year -2	Year -1	Year 0	Year 1	Year 2
1	For Planning or Construction / Pre-operation					
	NEW requests					
	Existing or other requested grants and subsidies					
2	For Operation-NEW					
	For Operation-Existing or other requested					
	TOTAL	-	-	-	-	-

Please feel free to insert your data in the blue areas

HOW Template (Step 3)

Revenues

Revenues represent what customers are expected to pay for goods and services offered.

This spread sheet usually takes a while longer to complete but, it is an important step in determining the financing needs of the project.

It is very important to take the time and itemize the assumptions regarding both the number of units being sold and the price per unit.

Arbitrary assumptions about price increases should be avoided. Be conservative in your estimates.

Revenues	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
LPG (kg)	420,000	840,000	1,092,000	1,638,000	1,965,600							
Revenue per Unit	0.56	0.56	0.56	0.56	0.56							
R1 Revenue from 1												

		233,604	467,208	607,370	911,056	1,093,267							
	Units												
	Revenue per Unit												
R2	Revenue from 2												
	Units												
	Revenue per Unit												
R3	Revenue from 3												
	REVENUES	233,604	467,208	607,370	911,056	1,093,267	-	-	-	-	-	-	-



HOW Template (Step 4)

Operating Costs

	OPERATING COSTS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
O1	Labor	202,020	404,040	525,252	787,878	945,454					
O2	Rent	180	270	297	327	359					
O3	Marketing / Communications	1,800	3,180	4,518	4,779	5,256					
O4	Transport and Travel	675	810	891	980	1,078					
O5	Electricity & Water	630	1,260	1,890	2,079	2,287					
O6	Insurance	1,350	2,025	2,228	2,450	2,695					
O7	Maintenance	315	473	800	1,000	1,500					
O8	Auditing Services / Miscellaneous	3,950	1,359	1,495	1,645	1,811					
O9	General and Administrative Costs	22,500	28,125	35,156	42,188	50,625					
	TOTAL	233,420	441,542	572,527	843,326	1,011,065	-	-	-	-	-



How-Step 5 Income Statements

The cells in this sheet have already been linked. All changes made in Step 1-4 will have flowed through to here.

RESULTS	Total, all years	Year -2	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Planning Costs	3,650	-	3,150	500	-					
Construction / Pre-operations Costs	142,990	-	27,000	115,990	-					
CAPITAL COSTS	146,640	-	30,150	116,490	-					
Grants and Subsidies For Planning, Construction or Pre- Operations	-			-						
GRANTS AND SUBSIDIES	-	-	-	-	-	-	-	-	-	-
REVENUES	3,312,505				233,604	467,208	607,370	911,056	1,093,267	-
OPERATING COSTS	3,101,880				233,420	441,542	572,527	843,326	1,011,065	-
NET REVENUE FROM OPERATIONS	210,625	-	-	-	184	25,666	34,843	67,730	82,202	-
Operating Grant	-				-					
"EBITDA"	210,625	-	-	-	184	25,666	34,843	67,730	82,202	-

Simple Feasibility Test	9%	-	(30,150)	(116,490)	184	25,666	34,843	67,730	82,202	-
-------------------------	----	---	----------	-----------	-----	--------	--------	--------	--------	---

This is the Pre-Tax, Pre-Financing Rate of Return you expect from the venture

cells have been populated by data from the previous sheets automatically

Rough Guidelines on Pre-Tax Rates of Return:

1. If negative, revenues and grants cannot cover the capital and the operating costs of the proposal. Without additional grants or subsidy, the proposal is probably not financially viable.
2. If positive but less than 5%-7%, the proposal is financially self sustaining but may be of limited interest to the private sector. Specialized lenders-investors-donors who value development, environmental and market transformation impact may consider such a proposal.
3. If positive, and over 5%-7%, 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 private sector. Specialized lender-investor-donors who see the blended value potential of investments will likely be a target.
4. If over 10% the financial details need to be developed with a strong view towards engaging private sector investors and lenders.

HOW Template (Step 6)

Financing Needs

We know from previous steps the following:

Capital Costs	146,640
from Grants	-
Balance	146,640
Owner's Equity Investment	43,650



The amount of cash you are investing, including any fees earned as part of the Capital Cost.

Balance to be Raised	102,990
Equity from new owner - investors	-
Balance to be raised from loans	102,990



These are funds raised in return for a share of the ownership and the profits of what is proposed.

70%



This is the percentage of debt in loans needed to finance the venture in year 0. The higher this is, the more the risk the Bank/Lender is taking.

2.36



Debt to Equity Ratio.
Amount of Debt compared to amount of Equity in the business.

There are many different ways to calculate debt service. Three such methods are illustrated below:

1

Interest only for a time (e.g. one year), followed by fixed payments of combined principal and interest.

2

Equal payments every year.

3

Equal principal payments every year with declining interest payments.

Method 1

Loan Amount	102,990
Assumed Interest Rate	6.5%
Number of Years of Loan	5



It is best to use the real rate of the loan
Please enter



6,694



Will apply for the year 1

30,063

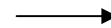


Will apply for Year 2 onwards

Year	1	2
	6,694	-
		30,063
Debt Service	6,694	30,063
Loan Balance	102,990	79,621
i	(6,694)	(6,694)

Method 2

24,783



Will apply as a constant debt service for all years

Year	1	2
Debt Service	24,783	24,783
i	(6,694)	(5,519)
Loan Balance	84,901	65,637
principal paid	18,089	19,264

Method 3

20,598

Will apply as a constant debt service for all years

Year	1	2
p	20,598	20,598
i	6,694	5,355
Debt Service	27,292	25,953
Loan Balance	82,392	61,794

The objective of this exercise is to determine whether a loan makes sense and if so what type of terms that loan should have. When seeking a loan, annual debt

	Year	1	2
"EBITDA"		184	25,666
Method 1		6,694	30,063
Method 2		24,783	24,783
Method 3		27,292	25,953

In order to make a determination, we need to calculate the Debt Service Coverage Ratio (DSCR) as follows:
The table is set up to do it automatically for you. The higher the ratio the better, but not too high!

	Year	1	2
Method 1		0.03	0.85
Method 2		0.01	1.04
Method 3		0.01	0.99

Things to keep in mind:

- Lenders tend worry about DSCRs (debt service coverage ratios) that are 1.4 or less.
- Lenders may restrict the amount of cash that can be distributed to investor-owners. They can insist that certain debt service coverage "tests" be met.
- Or they can insist on reserves being set aside for future debt service before payments to investors-owners (called DIVIDENDS) can be made.

Enter the Selected Method and Data

Year	1	2	3	4	5	6
Debt Service	24,783	24,783	24,783	24,783	24,783	-
i	(6,694)	(5,519)	(4,266)	(2,933)	(1,513)	-
p	18,089	19,264	20,517	21,850	23,270	-
DSCR	0.01	1.04	1.41	2.73	3.32	0.00


After determining the best debt service coverage method for the venture we can focus on the last piece of the financial puzzle.

HOW Template (Step 7)

Financing Needs 2

Depreciation/Amortization is a charge against earnings to write off the cost of an asset over its estimated useful life. It reduces taxable income but does not reduce cash.

Capital equipment degrades at different rates. Such rates are available at your local Tax authority

Sample  Please feel free to insert your data in the blue areas

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Class 1:													
Number of Years	20												
Amount	42,000	2,100	2,100	2,100	2,100	2,100							
Class 2:													
Number of Years	5												
Amount	71,300	14,260	14,260	14,260	14,260	14,260							
Class 3:													
Number of Years													
Amount													
Depreciation Allowance		16,360	16,360	16,360	16,360	16,360	-	-	-	-	-	-	-

Finally we can work out your Income Taxes and Residuals

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Net Income	184	25,666	34,843	67,730	82,202	-	-	-	-	-	-	-
Minus Interest Expense	(6,694)	(5,519)	(4,266)	(2,933)	(1,513)	-	-	-	-	-	-	-
Minus Depreciation	(16,360)	(16,360)	(16,360)	(16,360)	(16,360)	-	-	-	-	-	-	-
Taxable Income	(22,870)	3,787	14,217	48,437	64,329	-	-	-	-	-	-	-
Rate-Please use appropriate rate	20%											
Allowance for Income Taxes		757	2,843	9,687	12,866	-	-	-	-	-	-	-

Only Apply Income Tax rate if Taxable Income is greater than 0