



# MILLENNIUM CHALLENGE CORPORATION

REDUCING POVERTY THROUGH GROWTH

# The MCC and Aid Effectiveness

Using Economic Rates of Return  
to Guide Development Assistance

# Outline of Comments

- MCC's approach to Aid Effectiveness
- Framework for Cost-Benefit Analysis
- Demonstration of Analysis Now Posted Online

# The MCC Model

- Established 4 years ago to deliver aid differently
- Fundamentals of aid effectiveness
  - Good governance matters → 17 indicators
  - Country Ownership matters → Partners develop proposal, aid is untied, country systems used
  - Reducing poverty through economic growth
  - Results matter
- Focus today on one aspect of aid effectiveness: Results matter

# The “Cold Chain” of MCC’s Results Focus

- Constraints Analysis – diagnosis of impediments to growth
- Cost-Benefit Analysis
  - ERRs are pre-investment estimate of expected impact
  - MCC’s ERRs look at increases in income or value added
  - Monetary metric allows comparison across sectors
- Monitoring and Evaluation
  - Baseline surveys
  - Implementation performance against expectations
- Rigorous Impact Evaluations, as appropriate

# MCC Program Portfolio

- Proposals developed through a broad-based consultative process in the partner country
- Proposals reviewed to ensure they adhere to MCC policies and guidelines on:
  - Gender
  - Environment
  - Procurement
- Each project is analyzed to determine its impact on local incomes
- Projects with low ERRs that have other compelling rationale may be funded

# Role of ERRs in Aid Effectiveness

- Private sector looks at profitability
- Cost-benefit analysis helps guide public sector investment decisions – like those made by the MCC
- MCC's focus on economic growth also a “bottom-line”
  - ERR calculates the interest rate at which profitability = 0: decision rule is ***invest when ERR is above discount rate***
  - MCC uses a country-specific hurdle rate of 10 - 15%
- In analysis, economic growth is measured by gains in household incomes and value added by firms

# Example of Summary Cost/Benefit Data

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Costs	20	20	20	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benefits	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Net Benefits	-15	-15	-15	-15	-15	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

**Total Costs = 100**

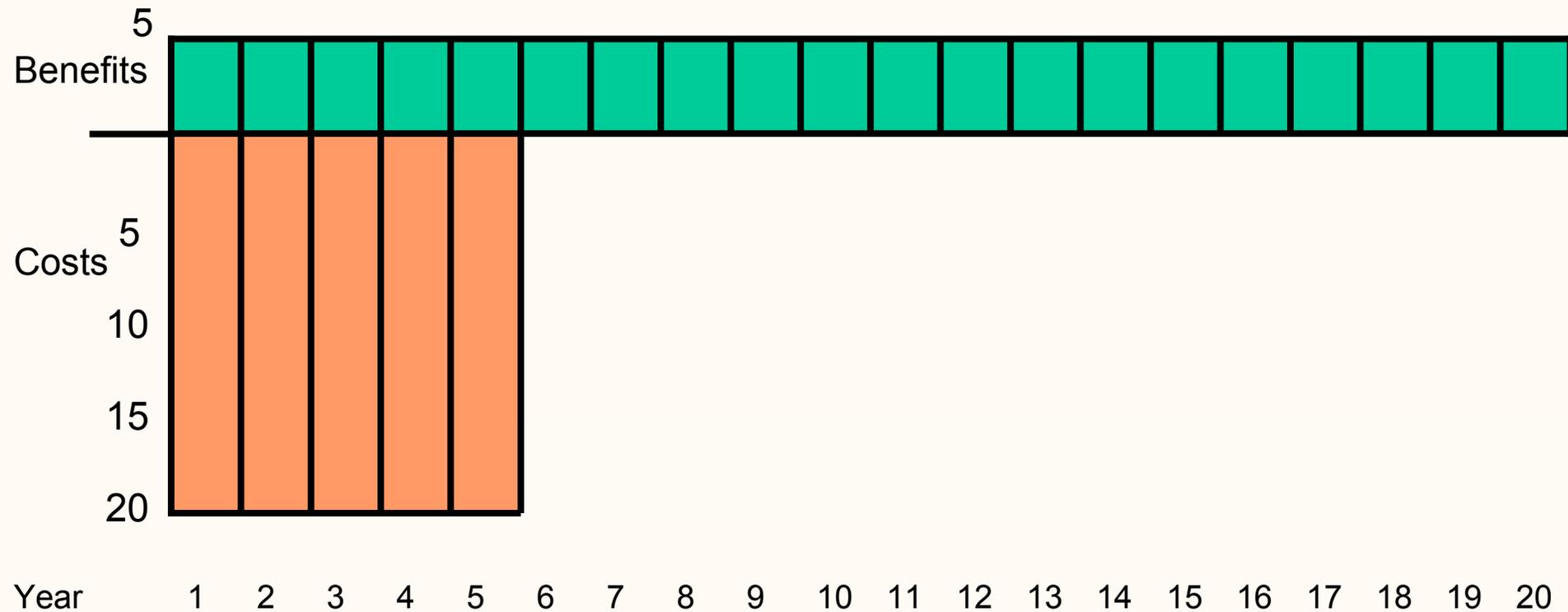
**Total Benefits = 100**

**Net Benefit = 0 if Discount Rate = 0%; so**

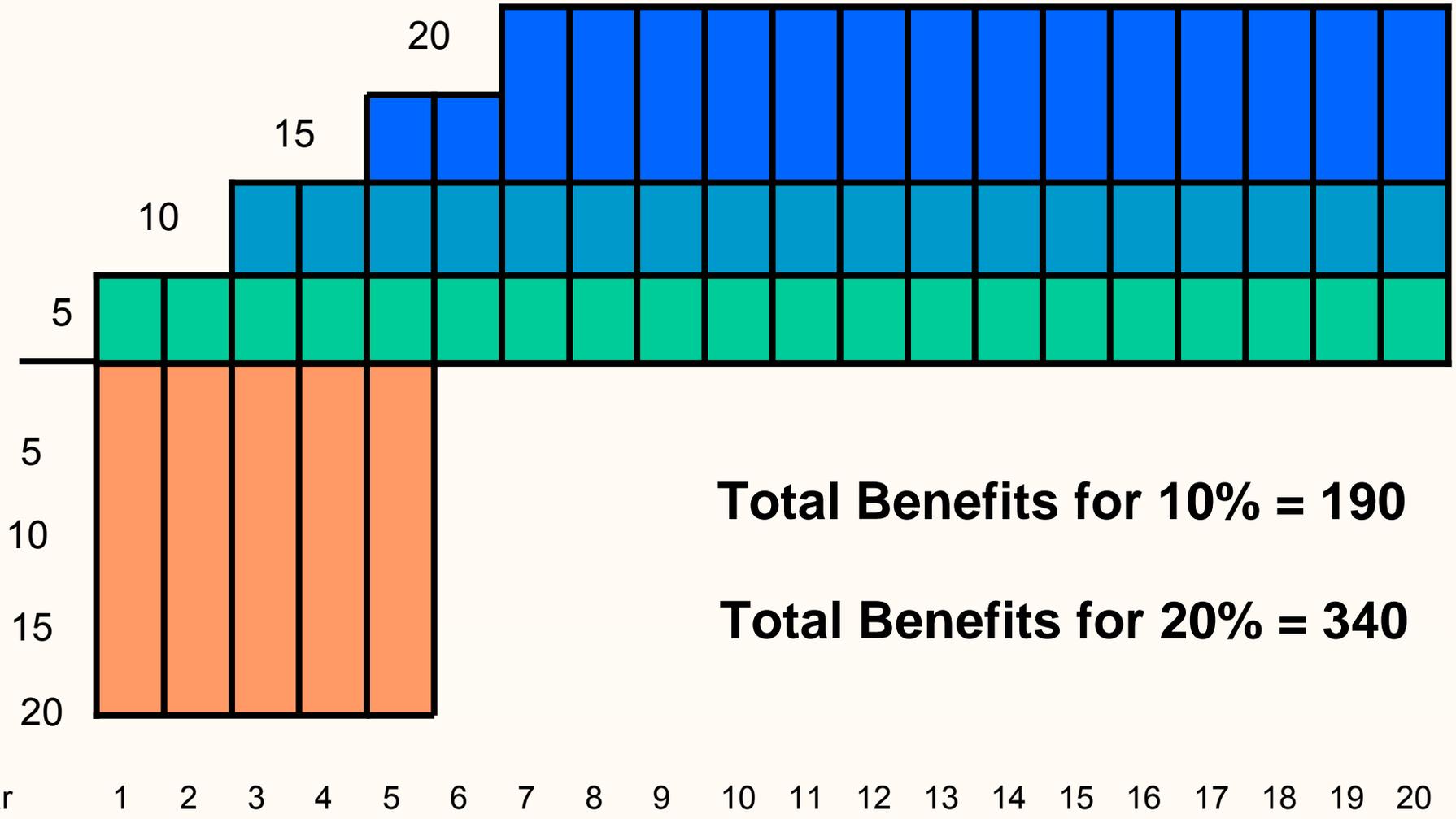
**ERR = 0%**

# Schedule of Costs and Benefits:

This is what 0% looks like – equal area on top and bottom



**This is what 10% and 20% projects look like:  
*Many more benefits than costs***



**Total Benefits for 10% = 190**

**Total Benefits for 20% = 340**

# Link Between ERRs and Poverty

- Effect on poverty determined by
  - Total benefits
  - Distribution of benefits
- Higher ERRs = more total benefits to be shared by society
- ERRs silent on distribution, but:
  - Countries target poverty in proposals, so distribution usually positive
  - Due diligence avoids projects with little impact on poverty alleviation
  - Currently investing effort in enhancing Beneficiary Analysis to document better
  - ERRs neutral on sectors
- ERRs provide valuable snapshot of effectiveness

# MCC's Open Access ERRs

- Public dissemination reinforces good governance practices, including enhanced transparency in government decision-making.
- MCC is eager to encourage broader technical exchange on current practices.
- Posting ERR spreadsheets on MCC's public website (or Google "MCC and ERRs"):

<http://www.mcc.gov/programs/err/index.php>



[Home](#) > [Programs and Activities](#) > Millennium Challenge Corporati...

# Economic Rates of Return (ERR)

## Overview

	A	B	C	D	E
1					
2	<b>Cape Verde: Financial Sector Reform</b>				
3	ERR and sensitivity analysis				
4	Change the "User Input" cells in the table below to see the effect on the compact's Economic Rate of Return (ERR) and net benefits (s values to the default MCC estimates, click the "Reset Parameters" button at right. Be sure to reset all summary parameters to their ori values) before changing specific parameters.				
5					
6					
7					
8					
9	<b>Parameter type</b>	<b>Description of key parameters</b>		<b>Parame</b>	
10	Summary	Actual costs as a percentage of estimated costs		<b>User Input</b>	MCC Estimate
11	Summary	Actual benefits as a percentage of estimated benefits		100%	100%

A screen shot of an ERR Excel spreadsheet.

MCC is making available its Economic Rate of Return (ERR) data via interactive, downloadable Microsoft Excel spreadsheets. The spreadsheets are unique to each project within a compact.

Each spreadsheet includes:

## Spreadsheets

Download spreadsheets to see MCC ERR data which helped determine the approval of these compacts.



[Cape Verde](#)



[El Salvador](#)



[Georgia](#)



[Ghana](#)



[Madagascar](#)



[Mongolia](#)

These spreadsheets reflect the best information available to MCC at the time of the investment decision, and indicate the organization's estimate of the project's

## Calculating ERRs

MCC's methodology for ERR analysis is best described as *micro-economic growth analysis*, which measures the expected increases in household incomes or the value-added of individual firms. ERRs can also be considered MCC's best pre-investment estimate of the likely economic impact of the proposed investment. These ERRs also include income or value added that is expected to be generated through environmental and social improvements, but do not attempt to quantify and incorporate the broader social value of these improvements.

Every ERR calculation considers two scenarios:

1. The expected outcome with the project investment; and
2. The expected outcome without the project investment.

### Scenario 1:

#### Expected Outcome with Project Investment

This scenario reflects the increases in income or value added generated by the proposed program, as well as the full costs related to the program.

### Scenario 2:

#### Expected Outcome with No Project Investment

The second scenario, called the *counterfactual*, reflects an estimate of what is likely to happen in the future if no project investment takes place. While this may be considered a "status quo" scenario, the estimation of future economic outcomes without the project also accounts for dynamic trends. For example, a growing economy would be expected to continue growing consistent with recent projections, even without the project.

ERR analysis compares the difference in incomes or value added between the two scenarios. The ERR, then, is expressed in percentage terms, and represents the interest rate at which the discounted net benefits equal the

models; updated information will be posted here as it becomes available.

## Spreadsheet Data

### What the spreadsheet data represent:

- ★ *An overall impact estimate.* The spreadsheets provide MCC's best pre-investment estimate of the likely economic impact of the project and form the basis for monitoring and evaluation efforts.
- ★ *Estimated benefits.* The spreadsheets estimate the expected increases in either incomes or value added of individuals, households, firms or sectors of economic activity.
- ★ *A counterfactual scenario.* Potential benefits are compared against what is likely to happen without the project (e.g., a growing economy would be expected to continue growing, even without the project).
- ★ *A snapshot in time.* The spreadsheets reflect the best data available to MCC at the time the project was approved for investment.

### What the spreadsheet data do *not* represent:

- ★ *The sole reason for an investment decision.* Although ERRs are an integral part of MCC's decision-making process, other factors are taken into account when MCC decides whether or not to undertake a project.
- ★ *A detailed beneficiary analysis.* The ERR spreadsheets portray the overall economic impact of a project rather than apportioning the income gains along various demographic dimensions.
- ★ *Up-to-the-minute information for projects in implementation.* Many of the parameters that are used in these pre-investment estimates change over time, so ERRs may not reflect the actual implementation experience. When project designs or model parameters change significantly, MCC may revise these models; updated information will be posted here as it becomes available.

## Contact

Contact us at the [Office of the Chief Economist](#).

...of the project, while the beneficiary analysis represents the potential range of outcomes.

★ [Guidelines for Economic Analysis](#)

## MCC Investment Decisions

MCC takes into consideration a number of factors when making its decisions to approve Compact investments. First, we value country ownership and place a premium on supporting initiatives that have broad based support in the country and that were developed through a consultative process. We also examine whether the program proposal is consistent with MCC policies and guidelines on gender, the environment, and procurement procedures, among others. Given our focus on measurable results that will reduce poverty, we analyze each program to determine its sustainability and its Economic Rate of Return (ERR). We expect programs will generate adequate benefit streams to justify the specific investments. MCC also conducts beneficiary analysis to ensure that investments will deliver tangible benefits to the poor.

## ERR and Due Diligence

MCC's due diligence process includes the estimation of the economic rate of return (ERR) for projects in the proposal from each compact-eligible country. An ERR is a comparison of costs and the potential benefits of those costs.

In MCC's analysis:

- ★ *Costs* are the financial expenses of a proposed project, including expenses covered by other parties;
- ★ *Benefits* are the increased income of a country's population or value added by its firms due specifically to the proposed project.

## ERRs and Compact Proposals

Compact-eligible countries prepare a compact proposal which identifies the main constraints to economic growth and proposes several programs to address those constraints.

These countries have the primary responsibility for analyzing the economic impact of their proposed programs, and are expected to estimate this impact with an ERR. MCC's due diligence process includes reviewing and validating ERR estimates produced by our country partners and, if necessary, working with a country to identify and assess possible alternatives, modifications or complements to the proposed projects.

Reducing Poverty Through Growth

# MCC's Online ERRs

- Spreadsheets reflect the best information available to MCC at the time of the investment decision
- When significant changes occur, MCC may revise its models and post updated ERRs
- We intend to make our enhanced Beneficiary Analysis available in the future, as well



[Home](#) > [Programs and Activities](#) > Millennium Challenge Corporati...

# Economic Rates of Return (ERR)

## Overview

	A	B	C	D	E
1					
2	<b>Cape Verde: Financial Sector Reform</b>				
3	ERR and sensitivity analysis				
4	Change the "User Input" cells in the table below to see the effect on the compact's Economic Rate of Return (ERR) and net benefits (s values to the default MCC estimates, click the "Reset Parameters" button at right. Be sure to reset all summary parameters to their ori values) before changing specific parameters.				
5					
6					
7					
8					
9	<b>Parameter type</b>	<b>Description of key parameters</b>		<b>Parame</b>	
10				<b>User Input</b>	<b>MCC Estimate</b>
11	Summary	Actual costs as a percentage of estimated costs		100%	100%
	Summary	Actual benefits as a percentage of estimated benefits		100%	100%

A screen shot of an ERR Excel spreadsheet.

MCC is making available its Economic Rate of Return (ERR) data via interactive, downloadable Microsoft Excel spreadsheets. The spreadsheets are unique to each project within a compact.

Each spreadsheet includes:

## Spreadsheets

Download spreadsheets to see MCC ERR data which helped determine the approval of these compacts.



[Cape Verde](#)



[El Salvador](#)



[Georgia](#)



[Ghana](#)



[Madagascar](#)



[Mongolia](#)

These spreadsheets reflect the best information available to MCC at the time of the investment decision, and indicate the organization's estimate of the project's



Home > [Programs and Activities](#) > Ghana Projects Economic Rates ...

# Economic Rates of Return (ERR)

## Ghana's Economic Rate of Return (ERR) Project Spreadsheets

Each compact project has a downloadable spreadsheet file containing:

- ★ A description of the project, including its economic rationale;
- ★ The expected project impacts, including detailed cost and benefit estimates;
- ★ A tool allowing users to modify key assumptions and study the effects of those modifications on the project's returns.

Some familiarity with [cost-benefit analysis](#) will be essential to use these spreadsheets.

### Spreadsheet Data

#### What the spreadsheet data represent:

- ★ *Overall impact estimate.* The spreadsheets provide MCC's best pre-investment estimate of the likely economic impact of the project and form the basis for monitoring and evaluation efforts.
- ★ *Estimated benefits.* The spreadsheets estimate the expected increases in either incomes or value added of individuals, households, firms or sectors of economic

### Spreadsheets

- ★ Development of Agricultural Productivity and Value-Added Project
  - ↓ [Farmer and Enterprise Training, Irrigation, Credit, and Land Tenure Activities](#)
  - ↓ [Feeder Roads](#)
  - ↓ [Post-Harvest Handling](#)
- ★ Transportation Infrastructure Development Project
  - ↓ [Upgrade Highway N1](#)
  - ↓ [Improve Roads](#)
- ★ Rural Services Development Project
  - ↓ [Education](#)
  - ↓ [Electrification](#)
  - ↓ [Water and Sanitation](#)



## Economic Rates of Return

### Ghana's Economic Rates of Return

Each compact project has a downloadable spreadsheet that provides:

- ★ A description of the project, including its economic and social impacts.
- ★ The expected project impacts, including detailed information on the project's benefits and costs.
- ★ A tool allowing users to modify key assumptions and make sensitivity analysis modifications on the project's returns.

Some familiarity with [cost-benefit analysis](#) will be essential to use these spreadsheets.

### Spreadsheet Data

#### What the spreadsheet data represent:

- ★ *Overall impact estimate.* The spreadsheets provide MCC's best pre-investment estimate of the likely economic impact of the project and form the basis for monitoring and evaluation efforts.
- ★ *Estimated benefits.* The spreadsheets estimate the expected increases in either incomes or value added of individuals, households, firms or sectors of economic

Do you want to open or save this file?



Name: mcc-err-ghana-water.xls

Type: Microsoft Excel Worksheet, 317KB

From: www.mcc.gov



 Always ask before opening this type of file


While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. [What's the risk?](#)

★ [Feeder Roads](#)

★ [Post-Harvest Handling](#)

★ Transportation Infrastructure Development Project

★ [Upgrade Highway N1](#)

★ [Improve Roads](#)

★ Rural Services Development Project

★ [Education](#)

★ [Electrification](#)

★ [Water and Sanitation](#)

A

B

## Ghana: Water & Sanitation

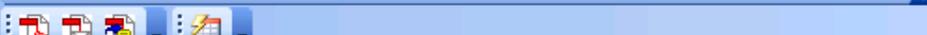
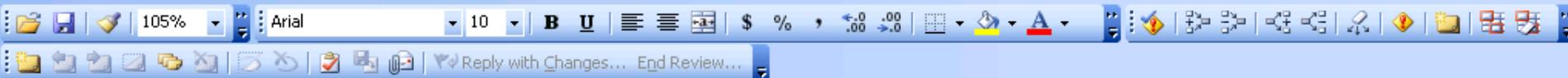
### Summary

The Community Services Activity is designed to complement the Agriculture Project by providing educational, water and sanitation and rural electrification infrastructure in the Intervention Zones and by enhancing the capacity of local governments to deliver the related services. These interventions are part of a larger effort by the Government to expand the provision of basic community services throughout Ghana, and are specifically expected to enhance the sustainability of the Agriculture Project by providing the necessary infrastructure to improve health of communities, to enhance skill development through access to education, and to facilitate small-scale post-harvest processing of agricultural products. Availability of funding to the districts in the Intervention Zones will be a function of population, relative poverty and actual investment performance under the Agriculture Project. Specific investments will be driven by the demands of local communities, prioritized through a broad-based, inclusive process to enhance community ownership and strengthen sustainability.

### Components

Construction of water and sanitation facilities to achieve improved health, to reduce the incidence of illness and loss of productivity due to unsafe drinking water and poor sanitation and hygiene, and to reduce the time required to procure potable water. MCC Funding will be used to fund boreholes (whether mechanized or using hand-pumps), small town pipe systems and community sanitary facilities. Funding for schools, water and sanitation facilities, and rural electrification will be conditioned on:

1. Consistency with the norms, standards, policies and strategic plans of the Ministry of Education, Science and Sports and the Ghana Educational Service.
2. Community commitment to the construction through contributions of cash or other property (including land or raw material) or labor.
3. Adequate provision for operating costs (including staffing, as well as the operation and maintenance, of the facilities) and cost recovery mechanisms adopted by MiDA (Millennium Development Authority)' with approval of MCC.
4. Location within a district in which the Agriculture Project is being implemented.
5. Meeting criteria satisfying cost effectiveness.
6. Not creating any adverse environmental or social impact under the standards adopted by MiDA with the approval of MCC.



D33

A

B

## Economic Rationale

The analysis identified several different types of community investments in water supply, including boreholes, boreholes with piping system, and piping systems. Time saved in water collection is one of the benefits of these investments. For stand-alone boreholes, the family will still have to carry water, but for a shorter distance, whereas piping systems eliminate the necessity to transport water any meaningful distance. Therefore, the opportunity cost from hauling water either is drastically reduced by a borehole or eliminated with the introduction of

A second major benefit of the water projects is the effect clean water has on health. Three water diseases are prevalent in Ghana – diarrhea, guinea worm, and bilharzia. Each illness is the direct result of contact with poor quality water and sanitation. The effects of clean water and sanitation, along with education, will reduce the incidence and cost of such diseases.

With the introduction of a clean water source, new opportunities for income generation open up to the community. Although such activities are difficult to predict in terms of both type and magnitude, they are real and are significant contributions to the economic welfare of a community. Therefore, we have assumed three new income generation opportunities will be created from the introduction of a clean water source, i.e., food vendor, cassava processing, and sewing. Each primarily is a female type enterprise (which agrees with the fact the time savings is exclusively a reduction in the female opportunity cost). In addition, two of the three enterprises are directly impacted by clean

<sup>1</sup> Through an act of its Parliament, the Government of Ghana (GoG) created the Millennium Development Authority (MiDA), a public corporation that will serve as the accountable entity for the implementation of the Program under the Compact. MiDA will be governed by an independent board of directors consisting of six representatives of key ministries of the GoG, two representatives of the private sector, and one representative from the non-governmental organization (NGO) community. A chief executive officer will manage the day-to-day activities of MiDA, supported by key officers in the areas of operations, agriculture, infrastructure, procurement, financial services, land administration, and administration and finance.

MILLENNIUM CHALLENGE CORPORATION

Last updated: 6/22/2006

	A	B
--	---	---

Last updated: 6/22/2006



**MILLENNIUM  
CHALLENGE  
CORPORATION**  
REDUCING POVERTY THROUGH GROWTH

## Ghana: Water & Sanitation

8		<b>Rural Services Development Project</b>
9	Project name	Support for Community Services Activity Water and Sanitation Sub-Activity
10		
11	Spreadsheet version	Investment memo, final
12	Date	6/22/2006
13	Amount of MCC funds	\$75.0 million total for Support for Community Services Activity
14	Project description	The Community Services Activity is designed to complement the Agriculture Project by providing educational, water and sanitation and rural electrification infrastructure in the Intervention Zones and by enhancing the capacity of local governments to deliver the related services. Specific sub-projects and locations will be identified during Compact implementation.
15		Time saved in water collection
16	Benefit streams included in ERR	Reduced incidence of water-borne diseases
17		New income generation opportunities created by the introduction of a clean water source
18	Costs included in ERR (other than costs borne by MCC)	Recurrent operational costs
19	Estimated ERR and time horizon	20.5% over 20 years
20		
21		<a href="#">Activity Description</a>
22	Worksheets in this file	One should read this sheet first, as it offers a summary of the activity, a list of components, and states the economic rationale for the project.
23		



	A	B
20		
21		<a href="#">Activity Description</a>
22	Worksheets in this file	One should read this sheet first, as it offers a summary of the activity, a list of components, and states the economic rationale for the project.
23		<a href="#">ERR &amp; Sensitivity Analysis</a>
24		A brief summary of the project's key parameters and ERR calculations.
25		<a href="#">Cost Benefit Analysis</a>
26		Compares the total economic costs and benefits of all projects, and computes the resulting ERR over a 20-year time
27		<a href="#">Project Summaries</a>
28		Lists the several types of community water supply investments under consideration and shows the cost and ERR for
29		<a href="#">Projects</a>
30		Determines the exact number of individual projects included in the ERR calculations.
31		<a href="#">Project Cost</a>
32		Tables listing the costs of all individual projects.
33		<a href="#">Time Saving</a>
34		Describes the potential time saving benefits of each type of investment and calculates the economic value of the time
35		<a href="#">Health</a>
36		Estimates the economic benefits of reduced incidence of water-borne diseases as a result of the project.
37		<a href="#">Income Creation</a>
38		Calculates the potential income from three new income generation opportunities - food vendor, cassava processing, and
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		

**Ghana: Water & Sanitation**

MILLENNIUM CHALLENGE CORPORATION

ERR and sensitivity analysis

Last updated: 6/22/2006

Change the "User Input" cells in the table below to see the effect on the compact's Economic Rate of Return (ERR) and net benefits (see chart below). To reset all values to the default MCC estimates, click the "Reset Parameters" button at right. Be sure to reset all summary parameters to their original values ("MCC Estimate" values) before changing specific parameters.

**Reset Parameters**

**Parameter values**

Parameter type	Description of key parameters	Parameter values			
		User Input	MCC Estimate	Plausible Range	Values used in ERR computation
Summary	Actual costs as a percentage of estimated costs	100%	100%	80 - 120%	100%
Summary	Actual benefits as a percentage of estimated benefits	100%	100%	80 - 120%	100%
Specific	Number of diarrhea cases per household per year	9.0	9.0	5 - 15	9
Specific	Number of Guinea worm cases per household per year	0.04	0.04	0.02 - 0.10	0.04
Specific	Number of bilharzia cases per household per year	0.015	0.015	0.01 - 0.03	0.015
Specific	Percentage of households that will form new businesses as a result of increased water supply	5%	5%	0 - 10%	5%

All summary parameters set to initial values?  
Y

**More Info**

[Activity Description](#)

[User's Guide](#)

**Economic rate of return (ERR):** 20.5%

**MCC Estimated ERR (as of 6/22/2006):** 20.5%

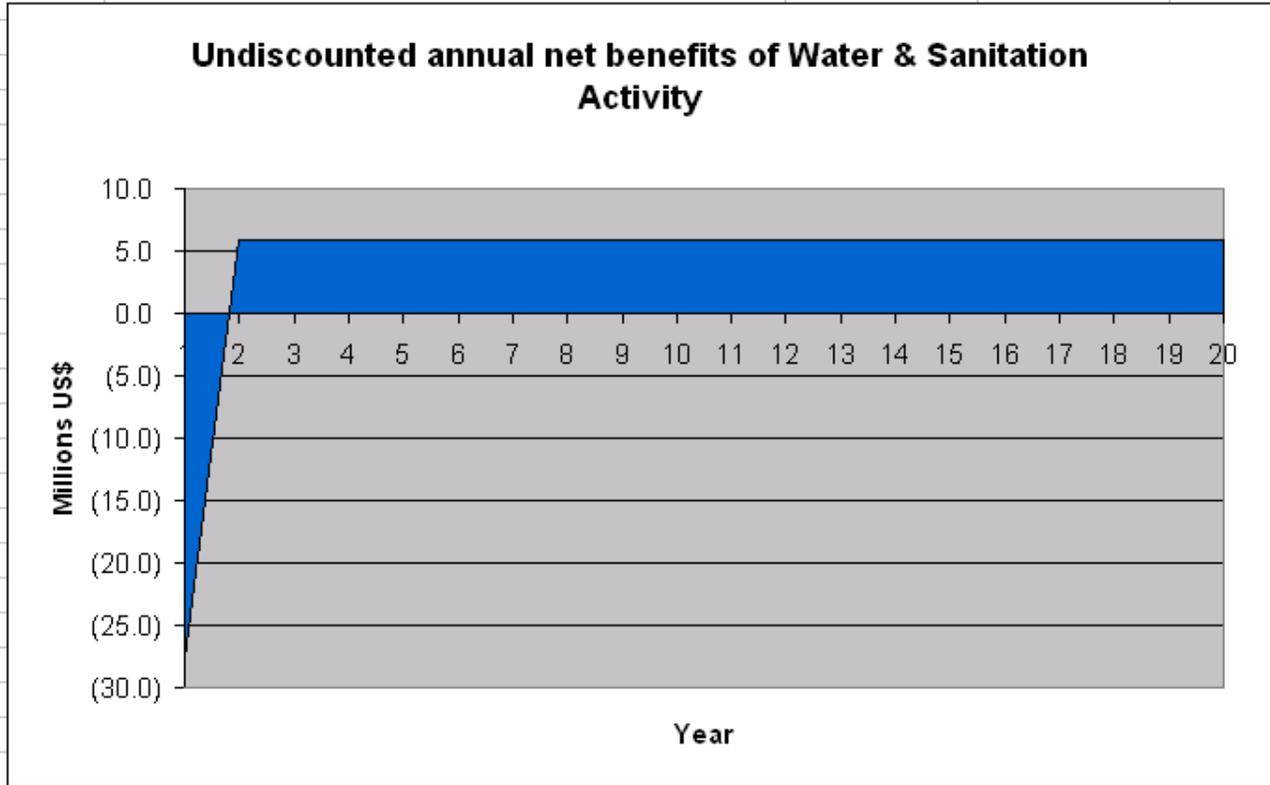
File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

110% Arial 10 B U

H23

	A	B	C	D	E	F	G
20			Economic rate of return (ERR):	20.5%			
21							
22			MCC Estimated ERR (as of 6/22/2006):	20.5%			
23							



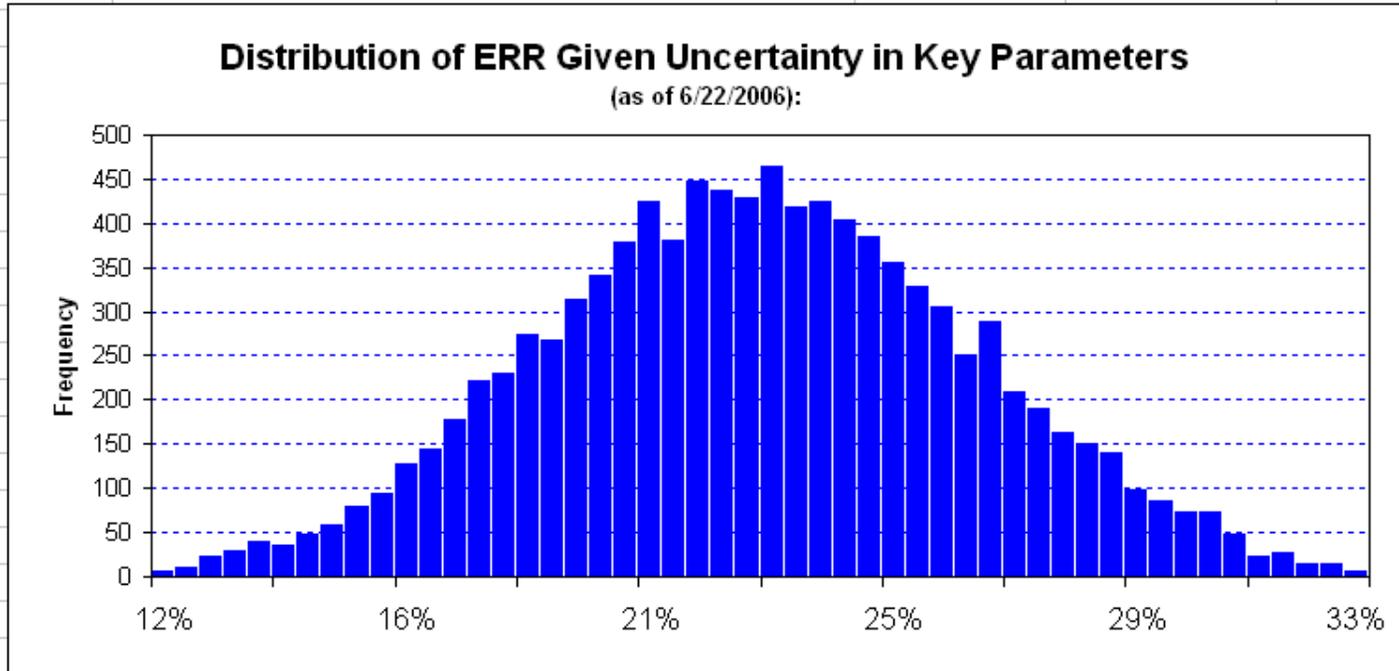
File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

120% Arial 10 B U

Reply with Changes... End Review...

G40



File Edit View Insert Format Tools Data Window Help Adobe PDF Type a question for help

85% Arial 10 B U \$ % 0.00 0.00

Reply with Changes... End Review...

D11 50%

	A	B	C	D	E	F	G	H	I	J
2		<b>Ghana: Water &amp; Sanitation</b>			MILLENNIUM CHALLENGE CORPORATION					
3										
4		ERR and sensitivity analysis			Last updated: 6/22/2006					
5										
6		Change the "User Input" cells in the table below to see the effect on the compact's Economic Rate of Return (ERR) and net benefits (see chart below). To reset all values to the default MCC estimates, click the "Reset Parameters" button at right. Be sure to reset all summary parameters to their original values ("MCC Estimate" values) before changing specific parameters.							<b>Reset Parameters</b>	
7										
8				<b>Parameter values</b>						
9		<b>Parameter type</b>	<b>Description of key parameters</b>	<b>User Input</b>	MCC Estimate	Plausible Range	Values used in ERR computation	All summary parameters set to initial values?		
10		Summary	Actual costs as a percentage of estimated costs	100%	100%	80 - 120%	100%	II		
11		Summary	Actual benefits as a percentage of estimated benefits	50%	100%	80 - 120%	50%			
12										
13		Specific	Number of diarrhea cases per household per year	9.0	9.0	5 - 15	9	<b>More Info</b>		
14		Specific	Number of Guinea worm cases per household per year	0.04	0.04	0.02 - 0.10	0.04	<a href="#">Activity Description</a>		
15		Specific	Number of bilharzia cases per household per year	0.015	0.015	0.01 - 0.03	0.015	<a href="#">User's Guide</a>		
16		Specific	Percentage of households that will form new businesses as a result of increased water supply	5%	5%	0 - 10%	5%			
17										
18										
19										
20		<b>Economic rate of return (ERR):</b>			14.9%					
21		<b>MCC Estimated ERR (as of 6/22/2006):</b>			20.5%					
22										
23										



# What's Up Now?

- 6 countries currently posted:
  - Cape Verde
  - El Salvador
  - Georgia
  - Ghana
  - Madagascar
  - Mongolia
- A variety of projects and sectors:
  - *Infrastructure* (CV, ES, Ghana, Mongolia)
  - *Education* (ES, Ghana, Mongolia)
  - *Agriculture* (ES, Geo., Ghana, Mad.)
  - Others such as Land, Finance, and Water

# Future ERR Postings

**May 23<sup>rd</sup>**

- Armenia
- Benin
- Honduras

**Late June**

- Tanzania
- Lesotho
- Nicaragua

**August**

- Mozambique
- Mali
- Vanuatu
- Morocco

# Posting is just the Beginning

- We hope the site will be informative
  - MCC business model
  - MCC analytical frameworks
  - Program Content
- We are serious about establishing a dialogue with interested parties
  - What else is needed?
  - What can be done better?
  - What should be done differently?
- Visit us and let us hear from you ...