

GAO

Report to the Chairman, Committee on
Foreign Affairs, House of Representatives

June 2008

MILLENNIUM CHALLENGE CORPORATION

Independent Reviews
and Consistent
Approaches Will
Strengthen
Projections of
Program Impact





Highlights of [GAO-08-730](#), a report to the Chairman, Committee on Foreign Affairs, House of Representatives

Why GAO Did This Study

In January 2004, Congress established the Millennium Challenge Corporation (MCC) for foreign assistance. Eligible countries submit compact proposals for MCC funding for projects aimed at reducing poverty through economic growth. To assess the proposed compacts' likely impact, MCC performs economic analyses estimating the compacts' economic rate of return (ERR) and effects on income and poverty as well as the number of compact beneficiaries. MCC uses these analyses to inform its decisions to fund proposed compacts and to inform Congress and the public about its progress in achieving its mission of poverty reduction through economic growth. GAO was asked to examine MCC's projections of (1) ERR and (2) compacts' impact on income and poverty as well as numbers of beneficiaries. GAO reviewed MCC's stated impacts and analyses for four MCC compacts that represented 41 percent of MCC's compact assistance and met with MCC officials.

What GAO Recommends

GAO recommends that the Chief Executive Officer of MCC (1) adopt and implement written procedures for a secondary independent review of its economic analyses and (2) improve MCC's guidelines by identifying a consistent approach with preferred methods for projecting compacts' impact on income and poverty. MCC concurred with GAO's recommendations.

To view the full product, including the scope and methodology, click on [GAO-08-730](#). For more information, contact David Gootnick at (202) 512-3149 or gootnickd@gao.gov.

MILLENNIUM CHALLENGE CORPORATION

Independent Reviews and Consistent Approaches Will Strengthen Projections of Program Impact

What GAO Found

MCC used different time frames and methods to calculate ERRs for its compacts with Armenia, El Salvador, Lesotho, and Mozambique. In calculating ERR for 20 projects within the compacts, MCC used a 20-year time frame for 9 projects and used different time frames for the other 11. In 2 of the 11 projects, using a 20-year time frame, as MCC used for similar projects, would reduce the ERR below the level MCC set as the minimum acceptable ERR. At the compact level, MCC's use of varying time frames did not affect the ERRs significantly. MCC used varying methods to account for the costs of same-sector projects, although its approaches to determining project benefits were generally similar. MCC also used two different methods to calculate compact-level ERR; however, the choice of method did not reduce it below the minimum ERR. In three of the four compacts that we reviewed, MCC did not retain documentation of the economic analyses used to support the investment decision, but continued to modify the analyses. MCC has recently begun to standardize elements of its economic analyses and centralize its records management.

MCC identified and corrected analytic errors in its projections of impact on income and poverty. MCC also used varying methods to project these impacts.

- In responding to GAO's questions about its published projections of impact on income and poverty, MCC identified analytic errors for three of the four compacts and, in correcting these errors, generally lowered the projected impacts. Correcting these errors raised one projection by 5 percent but reduced others by 3 percent to 96 percent. According to MCC officials, the revised projections would not have affected MCC's decision to recommend signing the compacts. The officials noted that, in the future, compact impact projections will undergo peer review. However, MCC has not documented procedures for these reviews.
- MCC used varying methods for its projections of impact on income and poverty, limiting comparability and replicability across compacts. To project impact on income for Armenia, El Salvador, and Mozambique, MCC estimated the compacts' impact by summing the total benefits of individual compact projects and adding them to the income that would have prevailed without MCC. However, for Lesotho, MCC estimated the impact on income based on the published results of a World Bank model based on elements different from those of the MCC compact. In response to our questions, MCC revised its initial estimate of the effect of income growth on poverty for Mozambique by presenting two estimates, based on Mozambique-specific and cross-country data, respectively. Although a number of methods for projecting poverty impact are valid, the method chosen can affect the results, and MCC's guidelines do not identify preferred methods for these calculations. MCC also used varying methods to estimate numbers of beneficiaries for the compacts and has not provided specific criteria for defining beneficiaries; however, MCC officials reported they are taking steps to provide more detailed guidance.

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Abbreviations

CEO	chief executive officer
ERR	economic rate of return
GDP	gross domestic product
MCA	Millennium Challenge Account
MCC	Millennium Challenge Corporation
OMB	Office of Management and Budget

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United States Government Accountability Office
Washington, DC 20548

June 17, 2008

The Honorable Howard L. Berman
Chairman
Committee on Foreign Affairs
House of Representatives

Dear Chairman Berman:

In January 2004, Congress established the Millennium Challenge Corporation (MCC) to administer the Millennium Challenge Account (MCA) for foreign assistance. MCC's mission is to reduce poverty through sustainable economic growth in some of the world's poorest countries that create and maintain sound policy environments. MCC has received appropriations for fiscal years 2004 to 2008 totaling more than \$7.5 billion and, as of March 2008, has signed \$5.5 billion in compacts¹ with 16 countries. The President has requested \$2.225 billion for fiscal year 2009.

MCC uses income and country performance criteria to annually select a list of countries eligible for MCA assistance. Eligible countries may then submit proposals for compacts containing multiple projects for MCC's review and approval. On receiving proposals for MCA assistance, MCC undertakes a comprehensive review, or due diligence,² which seeks to ensure that the proposed compacts will advance MCC's mission. As part of due diligence, MCC assesses the potential economic impact of each compact. During due diligence, MCC identifies a minimum acceptable economic rate of return³ (ERR) for the compact and its projects; compares estimated costs and benefits to determine the compact's ERR; and

¹An MCC compact is an agreement between the U.S. government, acting through MCC, and the government of a country eligible for MCC assistance. MCC's authorizing legislation, Public Law 108-199, limits compact duration to no more than 5 years.

²The due diligence review also includes an evaluation of countries' consultative processes used to develop the proposal, donor coordination, and environmental and social impact, among other things.

³Economic rate of return is the expected annual average return to the countries' firms, individuals, or sectors for each dollar that MCC spends on the project. For example, if MCC spent \$100,000 on a project in year 1 and expected that the project would yield net benefits of \$120,000 in year 2, the project's ERR for year 1 would be $(120,000-100,000)/100,000=0.2$, or 20 percent.

projects the compact's impact, including its number of beneficiaries and its impact on income, economic growth, and poverty.

MCC uses its projections, as well as other information gathered during due diligence, to inform its internal decisions to fund proposed projects and compacts. The results of the due diligence assessment are reported in an investment memo—an internal document prepared by MCC's transaction team⁴ that analyzes the compact—submitted to MCC's investment committee.⁵ MCC also publishes its compact impact projections during ongoing consultations with Congress. This information—found in MCC documents such as compacts, compact summaries, annual reports, and congressional notifications and budget justifications—sets expectations for the compact and provides information to Congress and the public about MCC's progress in achieving its mission.

In July 2007, we reported that MCC's portrayal of the projected impact of its Vanuatu compact did not reflect MCC's underlying analyses.⁶ Our recommendations included that MCC revise its public reporting of the Vanuatu compact's projected impact and assess whether similar reporting for other compacts accurately reflects underlying economic analyses. The committee subsequently requested that we examine MCC's economic analyses for its compacts with other countries.

As agreed with your office, for this report, we assessed (1) MCC's projections of ERR and (2) MCC's projections of compacts' impact on income and poverty as well as numbers of beneficiaries.

To carry out this review, we reviewed MCC compacts with four countries: Armenia, El Salvador, Lesotho, and Mozambique. When we began our work in August 2007, these four countries represented about 41 percent of the \$3.85 billion MCC had set aside for 13 compacts and included the most recent compacts signed in Eurasia, Latin America, and Africa. To assess MCC's compact projections, we reviewed MCC public and internal documents as well as relevant World Bank and International Monetary

⁴Transaction teams comprise MCC staff, personnel from other U.S. agencies, and consultants.

⁵The investment committee consists of MCC's Chief Executive Officer (CEO), vice presidents, and other senior officials. The committee reviews the memo and decides whether to recommend proceeding to compact negotiations.

⁶GAO, *Millennium Challenge Corporation: Vanuatu Compact Overstates Projected Program Impact*, [GAO-07-909](#) (Washington, D.C.: July, 11, 2007).

Fund documents. We also reviewed MCC's original and revised spreadsheet calculations of its economic projections and interviewed MCC economists and other officials in Washington, D.C., regarding these analyses. Finally, we consulted Office of Management and Budget (OMB) and GAO guidance on establishing and implementing internal controls.⁷ We determined that the data we used were sufficiently reliable for the purposes of our analysis; however, we did not independently assess the reliability of all data and assumptions that affect the projections and that MCC used in its underlying economic analyses of compact projects and activities. We also did not assess MCC's progress in implementing these compacts or toward its projected results. We conducted this performance audit from August 2007 to June 2008, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. (See app. I for additional details of our scope and methodology.)

Results in Brief

MCC used different time frames and methods to calculate ERRs for the four compacts we reviewed. In calculating ERR for the 20 projects within the compacts that we reviewed, MCC used a 20-year time frame for 9 projects and used different time frames for the other 11 projects. In 2 of the 11 projects, applying a 20-year time frame, as MCC had done in similar projects, would reduce the ERR below the level MCC set as the minimum acceptable ERR. At the compact level, MCC's use of varying time frames did not significantly affect the results of the ERR calculations. MCC used varying methods to account for the costs of same-sector projects, although its approaches to determining project benefits were generally similar. MCC also used two different methods to calculate compact-level ERR; however, the choice of method did not reduce it below the minimum ERR. In three of the four compacts that we reviewed, MCC did not retain documentation of the economic analyses used to support the investment decision, but

⁷An internal control is an integral component of an organization's management that provides reasonable assurance that the agency is achieving: effectiveness and efficiency of operations, reliability of financial reporting, and compliance with applicable laws and regulations. For OMB guidance, see OMB circular A-123. For GAO guidance, see *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: November 1999).

continued to modify the analyses. MCC has recently begun to standardize elements of its economic analyses and centralize its records management.

MCC identified and corrected analytic errors in its projections of impact on income and poverty. In addition, MCC used varying methods for projecting compact impact on income and poverty, which affected the projections' results.

- **Analytic errors.** In responding to our questions about its published impact projections, MCC identified analytic errors for three of the four compacts⁸ and, in correcting these errors, generally lowered its projected impacts on poverty and income. Correcting these errors raised one projection by 5 percent but reduced others by 3 percent to 96 percent. For example, for Armenia, MCC corrected an erroneous baseline, reducing the projected decrease in rural poverty from 6 percentage points to 3 percentage points. For Mozambique, MCC used a corrected formula and data, reducing its projection of the number of persons to be lifted out of poverty in Mozambique in 2015 from 270,000 to either 27,000 or 56,000, depending on the approach selected. According to MCC officials, the revised projections would not have affected MCC's decision to recommend signing the compacts. The officials noted that MCC's impact projections had not undergone a final check for accuracy and validity but that MCC has begun to implement a peer review process for compacts currently under development. However, MCC has not documented procedures for these reviews.
- **Varying methods.** MCC used varying methods to project the four compacts' impact on income and poverty, limiting the projections' comparability and replicability across compacts. For example, for Armenia, El Salvador, and Mozambique, MCC estimated the impact of compact projects on income by summing the total benefits of individual compact projects and adding them to the income that would have prevailed without MCC. For Lesotho, MCC extrapolated its compact results from the published results of a World Bank model based on elements different from those of the MCC compact. In response to our questions, MCC revised its poverty impact projection for Mozambique by presenting two estimates of the relationship between income growth and poverty—estimates based on either Mozambique country-specific data or its initial ad hoc estimate, which MCC stated was consistent with cross-

⁸We could not review MCC's calculations for the Lesotho compact, because MCC based its projections on a previous World Bank economic growth model rather than its own calculations.

country experience. Although a number of methods for projecting impact are valid, the method chosen can affect the results, and MCC's guidelines do not identify preferred methods for these calculations. MCC also used varying methods to estimate numbers of beneficiaries for the compacts and has not provided specific criteria for defining beneficiaries; however, MCC officials reported they are taking steps to provide more detailed guidance for estimating beneficiaries.

To improve the reliability and comparability of its projected ERR and economic impacts, we recommend that the CEO of MCC take the following actions:

- adopt and implement written procedures for a secondary independent review of the methods and results of its economic analyses and
- improve MCC's guidelines by identifying a consistent approach with preferred methods for projecting compacts' impact on income and poverty.

In commenting on a draft of this report, MCC concurred with our recommendations and outlined steps it is taking, including developing standard practices and templates and initiating a peer review process. MCC stated that in many cases the inconsistencies we identified were technically appropriate. MCC also stated that it disagreed with what it saw as our report's implication that ERRs are disconnected from income and poverty effects. However, we assert that ERRs do not provide information about MCC's impact on the poor and are not an absolute measure of income benefits, but a relative measure of benefits in relation to costs. We have reprinted MCC's comments, with our response, in appendix V. We have incorporated technical clarifications from MCC where appropriate.

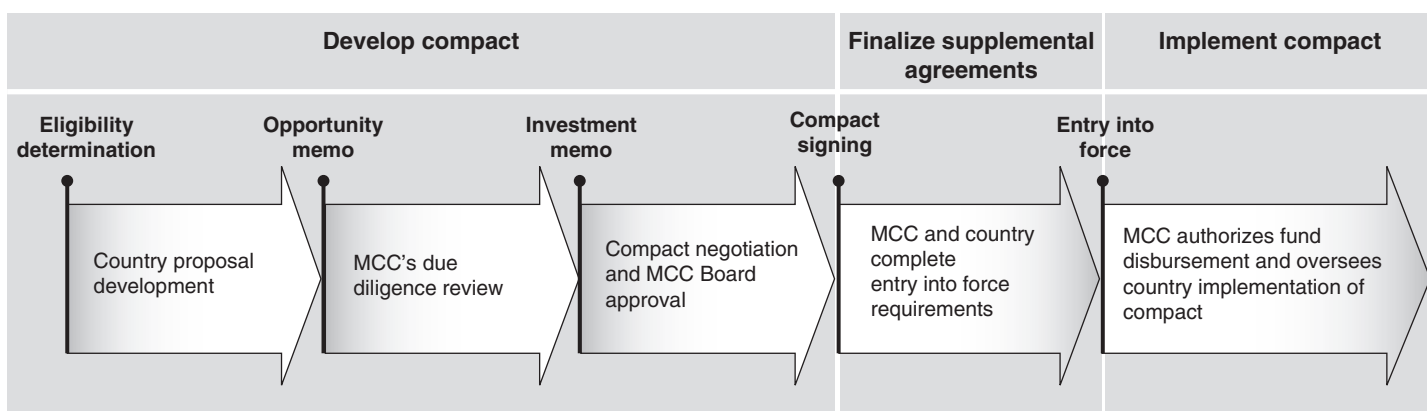
Background

MCC conducts its economic analyses during the compact development process, the first of three compact phases. These analyses include establishing the minimum ERR that the compact should achieve, projecting the compact's ERR, and estimating the compact's impact on income and growth. MCC did not publish ERR information for three of the four compacts we reviewed, but its public documents include statements of compact impact on income and poverty. Of the four compacts that we reviewed—Armenia, El Salvador, Lesotho, and Mozambique—three include funding for road projects, and three include funding for water projects, among other projects.

Compact Development Process

If MCC determines that a country is eligible for assistance, the country may submit a compact proposal, which generally comprises several projects. According to MCC guidelines,⁹ the proposal should include economic analyses of proposed projects to demonstrate their likely impact on growth and poverty in the country. MCC also may provide assistance and feedback in developing the proposal, including making grants to facilitate the development of the compact (see fig. 1).

Figure 1: MCC Compact Development and Implementation Process



Source: GAO analysis of MCC data.

After a country submits its proposal, MCC's transaction team for the compact conducts a preliminary assessment of the proposal and reports its findings in an internal opportunity memo to the MCC investment committee. MCC assembles a different transaction team for each compact. If the opportunity memo is approved, the team launches a detailed due diligence review that includes economic analyses of the proposed projects. As members of MCC country transaction teams, MCC's lead economists undertake these analyses while working with other members of the team and country officials. According to MCC, as part of this effort, MCC economists review the preliminary analyses performed by country counterparts and consultants. These due diligence reviews, including conducting economic analyses, have lasted, on average, slightly more than 10 months for the 16 countries with signed compacts as of March 31, 2008.

⁹MCC first issued guidelines for the compact development process in April 2005. MCC issued revised guidelines in January 2006 and, most recently, in November 2006.

At the conclusion of due diligence, the transaction team sends an investment memo to the MCC investment committee, with recommendations based on its assessment of the proposal. MCC notifies Congress 15 days prior to beginning negotiations with the country, sending a formal congressional notification.¹⁰ For the four compacts we examined, the congressional notifications included some of the results of MCC's economic analyses. If compact negotiations with the eligible country are successful, the investment committee submits the proposed compact to the MCC Board for approval.¹¹ With the Board's approval, MCC and the country sign the compact before completing additional agreements—such as a disbursement agreement and procurement agreement—and ultimately implementing the projects funded in the compact.¹²

Economic Analyses

For each compact proposal, MCC and the eligible country conduct economic analyses, which MCC uses to inform its decisions to fund compacts and report to Congress and the public.¹³ MCC generally conducts these analyses at the compact and project levels (see fig. 2).

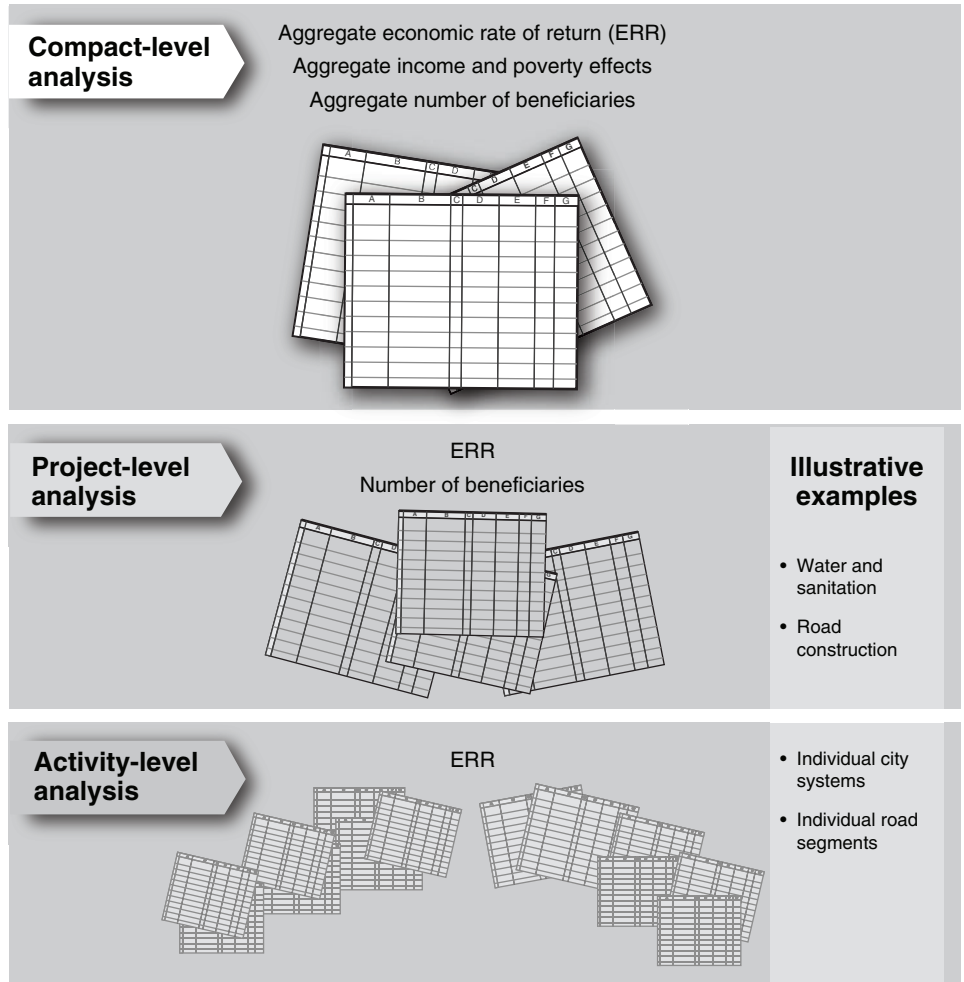
¹⁰MCC also must report to Congress prior to obligating funds.

¹¹The Secretary of State serves as MCC Board chair, and the Secretary of the Treasury serves as vice-chair. Other board members are the U.S. Trade Representative, the Administrator of the U.S. Agency for International Development (USAID), the CEO of MCC, and up to four Senate-confirmed public members who are appointed by the President from lists of individuals submitted by congressional leadership.

¹²We recently reported on MCC's progress in developing and implementing compacts. See GAO, *Millennium Challenge Corporation: Analysis of Compact Development and Future Obligations and Current Disbursements of Compact Assistance*, [GAO-08-577R](#), (Washington, D.C.: Apr. 11, 2008).

¹³MCC stated that these analyses do not capture all aspects of MCC's potential impact, such as the effect of government reforms or policy changes.

Figure 2: Illustrative Examples of MCC Economic Analysis at Compact, Project, and Activity Levels



Sources: GAO analysis of MCC data; Nova Development (clip art).

The economic analyses include projections of compacts' impact, including their ERR, the impact on income and poverty, and the projected number of beneficiaries.

- **ERR analysis.** To provide a basis for assessing the compact and project ERRs, MCC sets the minimum acceptable ERR that compacts and projects should achieve to be eligible for funding. (See app. II for a discussion of MCC's minimum ERRs for the four countries.) If the compact or project does not meet the minimum rate, MCC retains the discretion to fund it but requires justification based on the specific circumstances.

The ERR analysis compares costs and benefits, where the costs are the MCA grants and the country’s future recurrent costs—such as maintenance expenses—and the benefits are increases in incomes in recipient countries. (See fig. 3.) MCC guidelines state that normal practice is to calculate ERRs using 10-, 20-, and 30-year time horizons to determine project and compact ERRs’ sensitivity to varying time frames. If the ERR is sensitive to this time horizon, the guidelines require that this be noted explicitly.

Figure 3: Illustration of Net benefits and ERR Calculations

	Benefits	–	Costs	=	Net benefits	=>	ERR
Year	Annual benefits to the country		Expenditures to implement project(s)				Annual average expected rate of return on each dollar of MCC assistance
1	Benefits ₁		Costs ₁		Net benefits ₁	}	10-year ERR
2–9							
10	Benefits ₁₀		Costs ₁₀		Net benefits ₁₀	}	20-year ERR
11–19							
20	Benefits ₂₀		Costs ₂₀		Net benefits ₂₀	}	30-year ERR
21–29							
30	Benefits ₃₀		Costs ₃₀		Net benefits ₃₀		

=> Generate

Source: GAO analysis of MCC data.

Note: The ERR of a project is the discount rate (interest rate) at which the present value of the project’s cost stream is equal to the present value of its benefits stream.

- **Impact analysis.** MCC’s guidelines state that economic analyses should quantify the proposed projects’ expected beneficiaries and expected impact on incomes and on poverty.¹⁴ Based on our analysis, MCC does not establish minimum thresholds for compact impact.

Public Reporting

While MCC’s transaction team reports both ERR and impact projections to the MCC investment committee in its investment memo, MCC’s public

¹⁴MCC’s guidelines discuss this type of economic analysis under the heading “Beneficiary Analysis.” For the purposes of our report, we refer to this type of analysis as projections of impact on income and poverty or simply impact projections.

reporting for the four compacts in our review generally included information about only its projections of compact impact; for these four countries MCC published ERR projections for only Armenia. MCC's public reporting included projections of compact impact on income and poverty for three countries and projections of gross domestic product (GDP) growth for one country. For each compact, MCC also estimated the number of beneficiaries. (See table 1.)

Table 1: Compact Impact Indicators Included in MCC's Public Reporting

	Armenia	El Salvador	Lesotho	Mozambique
Increased income in compact areas	√	√		√
Increased GDP growth rate			√	
Decreased poverty	√	√		√
Number of beneficiaries	√	√	√	√

Source: GAO analysis of MCC compacts.

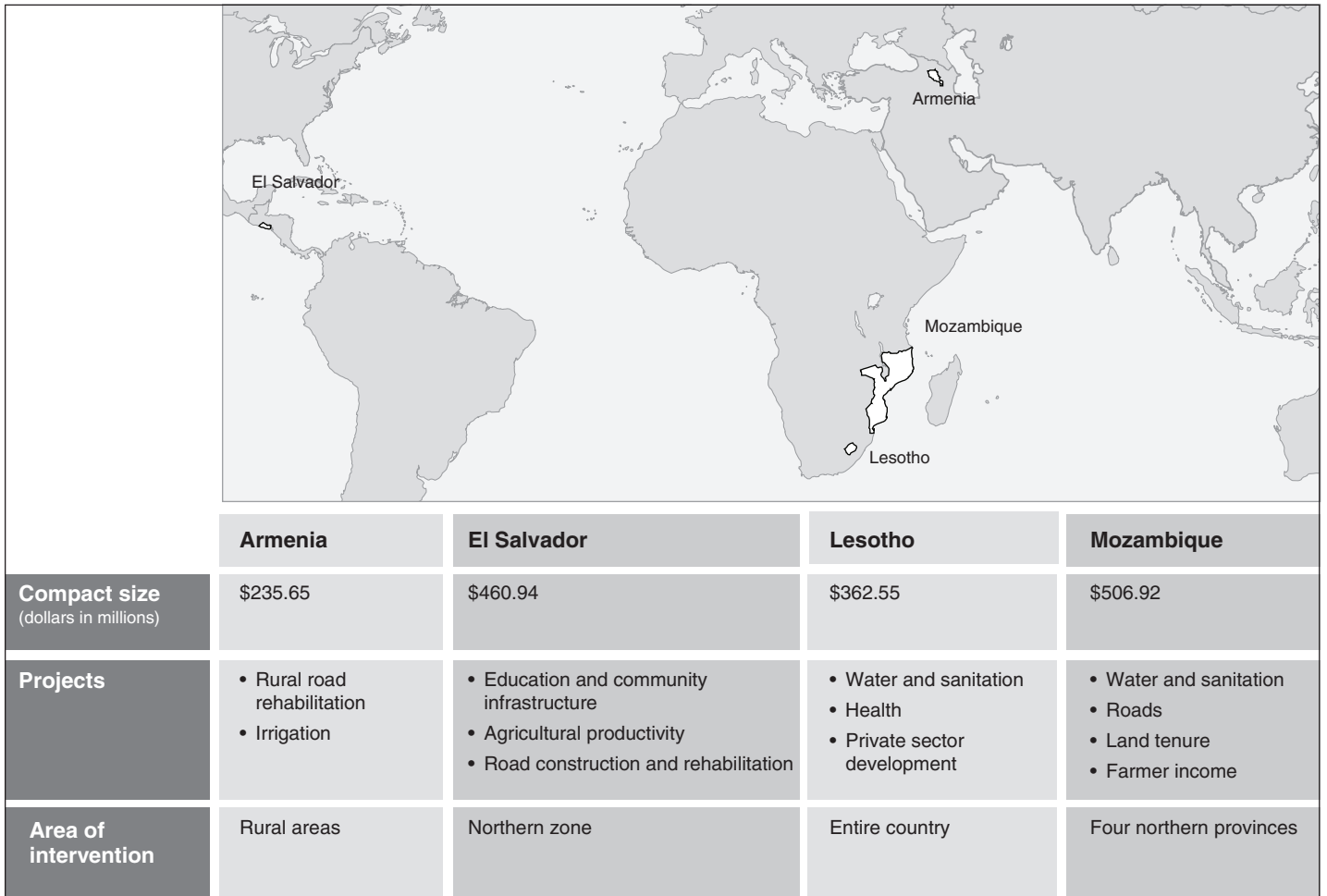
Compact Projects and Funding

The types of projects included in the four compacts vary, although El Salvador, Lesotho, and Mozambique include water projects¹⁵ and Armenia, El Salvador, and Mozambique include road projects. The compacts provide a total of approximately \$1.56 billion in MCA assistance.¹⁶ (See fig. 4.)

¹⁵In El Salvador, the water project is a component of the Community Infrastructure project.

¹⁶This amount includes both obligations and commitments. As of March 2008, MCC had provided a total of \$5.5 billion for all 16 countries with signed compacts. When we began our work in August 2007, MCC had signed 13 compacts totaling \$3.85 billion.

Figure 4: Summary of Compacts for Armenia, El Salvador, Lesotho, and Mozambique



Sources: GAO analysis of MCC data; Map Resources (map).

MCC Used Different Time Frames and Methods to Calculate ERRs but Is Taking Steps to Increase Consistency

MCC used different time frames to calculate project-level ERRs; these differences did not affect the ERR significantly in 18 of the 20 compact projects¹⁷ we examined, but two ERRs would fall below the minimum ERR if MCC applied the 20-year time frame it used for other compacts and similar projects. At the compact level, the different time frames did not change the ERR significantly. In addition, we found that MCC used varying methods to account for the costs of same-sector projects, although its approaches to determining benefits were generally similar. MCC also used two different methods to calculate compact-level ERR; however, the choice of method did not change the ERRs significantly. In some cases, MCC did not fully retain its documentation of its economic analyses. MCC has recently taken steps to standardize elements of its economic analyses and improve its records management and plans to implement additional measures.

MCC Used Different Time Frames for Project and Compact ERRs

In its ERR calculations for 20 projects included in the four compacts we reviewed, MCC used a 20-year time frame for 9 projects and used different time frames for 11 projects. Nearly all project ERRs that MCC initially calculated met the minimum ERR set for each compact.¹⁸ Our analysis shows that for 9 of the 11 ERRs calculated with other time frames, recalculating the ERR with a 20-year time frame does not lower the ERR below the minimum ERR. However, for two projects, recalculating the ERR with a 20-year time frame produces a result below the minimum ERR.

- The ERR for the El Salvador Community Infrastructure project, which MCC calculated as slightly below the minimum ERR of 10.8 percent over 25 years, drops to 9.0 percent when calculated over 20 years. Correcting a calculation error further reduces the El Salvador project's ERR to 6.8 percent over 20 years—four percentage points below the El Salvador minimum ERR.
- The ERR for the Mozambique roads project, which MCC calculated at 10.3 percent over 24 years, drops to 8.1 percent over 20 years, below the minimum ERR of 8.76 percent. Three of the four individual Mozambique

¹⁷In some cases, the ERRs we refer to were calculated by MCC at the activity level.

¹⁸The four compacts' minimum ERRs are 12.5 percent for Armenia, 10.8 percent for El Salvador, 10.8 percent for Lesotho, and 8.76 percent for Mozambique. MCC set the minimum ERR for each compact applying definitions contained in the guidelines current at the time. The initial ERRs for all but two projects—the El Salvador Community Infrastructure project and the Lesotho Rural Water project—met the respective minimums for each country. See app. II for further discussion of MCC's minimum ERR.

roads MCC analyzed as part of this project also fall below the minimum ERR at 20 years.¹⁹

If MCC had applied a 20-year time frame in calculating the ERR for these two projects, the projects might have been restructured to increase their ERR or MCC would have had to specifically justify the exception. MCC does not currently have a policy addressing what steps to take in cases where subsequent analysis results in a project ERR below the minimum. MCC stated that it would address changes such as this on a case-by-case basis depending on the timing of the change within the compact development process, and the magnitude of the change. MCC officials also noted that the ERR time frame is only one aspect of MCC's analysis of the ERR's sensitivity to various factors.

In addition, MCC used different time frames in calculating ERRs for comparable projects in different compacts. MCC calculated water project ERRs for El Salvador, Lesotho, and Mozambique over 25, 20, and 21 years, respectively, and calculated road project ERRs for Armenia, El Salvador, and Mozambique over 20, 25, and 24 years, respectively. MCC officials told us they explored the ERRs' sensitivity to varying time frames, as MCC's guidelines require, but they did not regard as prescriptive the guidelines' statement that normal practice is to examine 10-, 20-, and 30-year time horizons.²⁰ MCC officials also noted that MCC economists have recently committed to the use of a default 20-year time horizon for their analyses. MCC also will alter this time frame for specific circumstances or projects whose benefits have a longer duration—such as education projects and large-scale construction projects—or have a shorter or longer physical life expectancy.

At the compact level, our analysis shows that applying a 20-year time frame in place of varying time frames does not significantly affect the results of the ERR calculations. (See app. III for a summary of our comparison of the compact minimum ERR with the compact ERRs that MCC reported and our calculations of the 20-year ERRs.)

¹⁹Specifically, the Rio Lurio–Metoro Road segment ERR is 7.2 percent, the Namialo–Rio Lurio ERR is 5.9 percent, and the Nampula–Rio Ligonha ERR is 6.3 percent.

²⁰MCC's April 2005 guidance stated that project ERRs should be defined "over the natural life of that component."

MCC Used Varying Methods in Calculating Project and Compact ERRs

In calculating project ERRs, we found that MCC used varying methods to account for the investment and recurrent cost components of water and road sector projects for the four compacts we reviewed.

- **Investment costs.** For water projects, MCC counted the cost of construction in Lesotho as one lump sum in the first year of the analysis but phased in the cost in Mozambique and El Salvador over multiple years. Phasing the costs evenly over the 5-year compact in Lesotho would have increased the ERR for both the urban and rural water projects.²¹ For road projects, MCC phased the investment cost over time for Armenia, El Salvador, and Mozambique. However, in El Salvador, MCC accounted for the salvage value²² of the project in the last year of the analysis but did not include a similar projection in the analysis for Armenia and Mozambique.
- **Recurrent costs.** For water projects, MCC counted Lesotho and Mozambique's recurrent costs in the years after the original compact investment. For El Salvador, MCC counted recurrent costs only during the initial 5-year compact period. Including future recurrent costs would have reduced the ERR. For road projects, MCC spread recurrent costs over time for Armenia, El Salvador, and Mozambique.

According to our review, MCC's approaches to determining the benefits of water and road projects were generally similar.

- **Water projects.** MCC generally counted as water project benefits increased time available for work, resulting from less time spent fetching water or being ill, and lower spending on health care and water.

²¹According to MCC, the urban water analysis was revised after the investment memo to phase in costs.

²²Salvage value is the estimated value of an asset at the end of its useful life.

-
- **Road projects.** MCC generally estimated traffic volumes on the roads and determined road project benefits based on the savings from reduced travel time and vehicle operating costs for existing and generated traffic.²³

In calculating the compact-level ERRs for the four compacts' investment memos, MCC used two different methods.²⁴

- For Armenia and Mozambique, MCC first determined the net benefits in each year for each project and then calculated the compact ERR based on the total net benefits.
- For El Salvador and Lesotho, MCC first determined each project's net benefits and ERR and then determined the compact ERR by averaging the project ERRs, weighting each ERR according to the project's budgeted size relative to the overall compact.

According to MCC officials, the choice of method depended on the preference of the transaction team's lead economist. Our analysis shows that using the second method to recalculate each compact ERR reduces it by less than 2 percentage points and does not reduce it below the minimum ERR. However, these results demonstrate that the choice of method influences the compact-level ERR and may affect the comparability of ERRs across compacts. (See app. III for details of our analysis of MCC compact ERRs.)

²³MCC used an alternative method for calculating road project benefits in El Salvador. Because the existing road was nearly impassable, MCC thought its preferred method based on existing traffic estimates was a poor predictor of the project's impact. MCC instead substituted a measure of increases in land values as a proxy for income growth. MCC's transaction team reported both scenarios to the investment committee—the ERR would be 24 percent using a land value-based measure and between 13.8 percent and 14.7 percent using the traffic count method. The ERR in either method exceeds MCC's minimum ERR of 10.8 percent.

²⁴MCC's April 2005 guidance noted that overall compact ERRs may be calculated by using cost-weighted averages of project components, combining cost and benefit flows, or another approach—depending on the facts and circumstances of the compact. The January 2006 guidance and the November 2006 guidance do not define a procedure for calculating compact-level ERR.

Insufficient Records Management Led to Discrepancies between Investment Memos and Underlying Analyses

In three of the four cases we reviewed, the projections of ERR reported to the MCC investment committee differ from those in MCC's underlying spreadsheets.

- For Armenia, MCC changed its estimate of project benefits after the investment memo.
- For Lesotho, the MCC spreadsheets contain figures calculated using different methods or reflecting additional analysis after the investment memo.
- For Mozambique, the calculation of the figures presented in the investment memo relied on spreadsheet formula links that were not properly updated at the time. According to MCC, when they provided the spreadsheets to us, they updated the formulas and overwrote the original calculations.

For these three compacts, MCC's records management did not fully preserve the information and analysis used to support the investment decision. OMB guidance and GAO guidelines for internal controls both note the importance of controls over the information that U.S. agencies use to make decisions.²⁵

MCC Has Taken Several Steps to Improve the Consistency of ERR Analysis

After completing due diligence for the four compacts we studied, and during the course of our audit, MCC told us they took or began taking steps to increase the consistency of its analyses and improve its records management. For example, MCC

- committed to using 20 years as the default time frame for calculating ERRs and identified projects where this time frame may be altered;
- began revising its guidance to clarify that ERR sensitivity should be tested by varying the time frame of the analysis, rather than specifying 10-, 20-, and 30-year analyses;
- began developing standards for consistently analyzing certain types of projects across compacts;

²⁵See OMB Circular A-123, "Management's Responsibility for Internal Control," revised Dec. 21, 2004; and GAO, *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: November 1999).

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- established that summing net benefits and costs across all projects is the preferred method for calculating a compact-level ERR; and
 - planned to implement a data management system to centralize its records management.

MCC Made Analytic Errors in Compact Impact Projections and Used Varying Methods that Affected the Projections' Results

MCC identified and corrected analytic errors in its projections of compact impact for Armenia, El Salvador, and Mozambique, generally reducing each compact's estimated impact on income and poverty.²⁶ According to MCC, the revised calculations would not have affected its approval of the compacts, but it will perform peer reviews of future impact projections. In addition, MCC used different methods for projecting compact impact on income and poverty, limiting the estimates' comparability and replicability; its current guidance does not address the choice of method for these projections. MCC also used different methods to estimate numbers of compact beneficiaries, but stated that it is taking steps to provide more detailed guidance for estimating number of beneficiaries.

MCC Identified and Corrected Analytic Errors for Three Compacts

In responding to our questions about its impact analyses for Armenia, El Salvador, and Mozambique,²⁷ MCC identified a number of analytic errors in its projections of impact on income and poverty. MCC subsequently corrected these errors, generally reducing the projected impacts on income and poverty for each compact.

- **Armenia.** MCC determined that it had included road project benefits in estimating the income increase from agriculture for Armenia. MCC also used the wrong baseline in projecting poverty effects. Correcting these errors affected projections of the compact's effect, reducing the estimated increase in rural areas' real income from agriculture after 5 years from 5 percent to 3 percent and lowering the estimated decline in Armenia's

²⁶MCC's November 2006 *Guidelines for Economic and Beneficiary Analysis* states that poverty may be defined according to country-specific definitions, such as the official poverty line, or according to international standards such as the World Bank's extreme poverty definition of \$1.08 per capita per day in purchasing power parity, or \$2 per day. In making its public statements of poverty impact in the countries we examined, MCC used country-specific definitions.

²⁷We reviewed MCC's impact analysis spreadsheets for these three compacts. For Lesotho, although MCC economists conducted ERR analyses for activities and projects under the compact, MCC ultimately based its compact-level projections on a previous World Bank economic growth model. As such, we were not able to assess MCC's compact-level impact projections for Lesotho.

poverty rate from 6 percentage points to 3 percentage points. Figure 5 summarizes MCC's original impact projections for Armenia and its revisions after correcting the errors it identified.

Figure 5: MCC Revisions to Impact Projections for Armenia, Based on Its Corrections of Analytic Errors

Armenia	Original calculation	MCC's revised calculation	Absolute change	Percent change
Income/growth				
Annual income in rural areas	in 2010	\$36 million increase	No change	0
	in 2015	\$113 million increase	No change	0
<hr/>				
Real income from agriculture in rural areas at end of compact	5 percent increase	3 percent increase	- 2 percentage points	-40%
<hr/>				
Real income from agriculture in rural areas in 2013 ^a	23 percent increase	9 percent increase	- 14 percentage points	-61%
Poverty				
Rural poverty rate ^b	6 percentage point decrease	3 percentage point decrease	- 3 percentage points	-50%
Beneficiaries				
	750,000	No change	0	0%

Source: GAO analysis of MCC data.

^aMCC stated projections of real income increases in Armenia using an index, with the baseline set at 100 in 2005. Thus, MCC's initial projection of an increase from 2005 baseline index of 100 to 123 in 2013 corresponds to a 23 percent increase in real income, which was later revised to 109, or a 9 percent increase, for the same year.

^bMCC stated projections of poverty rate reductions in Armenia using a baseline of 32 percent. Thus, MCC's initial projections of a reduction in the poverty rate from 2004 baseline of 32 percent to a target of 26 percent in year 2013 corresponds to a decline of 6 percentage points, which was later revised to a reduction to 29 percent, or a decline of 3 percentage points, for the same year.

- El Salvador.** MCC determined that it had made an error in its formula for projecting per capita income increases and overestimated income increases in its projections of poverty rate reduction for El Salvador. In correcting these errors, MCC lowered its projections of income and poverty impact. Figure 6 summarizes MCC's original impact projections for El Salvador and its revisions after correcting the errors it identified. MCC also presented alternative methods for identifying beneficiaries, which further reduces the results of its compact-level projections. (See app. IV.)

Figure 6: MCC Revisions to Impact Projections for El Salvador, Based on Its Corrections of Analytic Errors

El Salvador	Original calculation	MCC's revised calculation	Absolute change	Percent change
Income/growth				
<i>Incomes in the region</i>				
<i>Within 5 years</i>	18 percent increase	No change	0	0%
<i>Within 10 years</i>	26 percent increase	No change	0	0%
<i>Annual per capita income of beneficiaries</i>				
<i>Within 5 years</i>	\$148 increase	\$123 increase	-\$25	-17%
<i>Within 10 years</i>	\$230 increase	\$189 increase	-\$41	-18%
Poverty				
<i>Number of persons for whom poverty is alleviated^a</i>				
	150,000 persons	145,000 persons	- 5,000 persons	-3%
<i>Poverty rate in the Northern Zone</i>				
<i>Within 5 years</i>	11 percentage point decrease	10 percentage point decrease	- 1 percentage point	-9%
<i>Within 10 years</i>	17 percentage point decrease	15 percentage point decrease	- 2 percentage points	-12%
Beneficiaries	850,000	No change	0	0%

Source: GAO analysis of MCC data.

Notes: For El Salvador, MCC calculated with- and without-project scenarios and cited these figures in its public documents. To estimate compact impact attributable to MCC, we calculated the differences between with- and without-project scenarios.

MCC also presented alternative methods for identifying beneficiaries of two education projects, which affect the results of MCC's compact impact analysis. (See app. IV.)

^aMCC's spreadsheet calculations show a figure of more than 160,000 Salvadorans lifted out of poverty in year 10 of the project. However, MCC's compact summary stated that "the program is projected to directly alleviate the poverty of over 150,000 Salvadorans." The compact summary's projection of 150,000 is used here.

- Mozambique.** MCC determined that it had not updated formula links in its analytic spreadsheets for Mozambique. Correcting this error led MCC to revise the projected income increase upward by \$4 million for 2015 and downward by \$13 million for 2025. In addition, MCC corrected both the formula and the data²⁸ used to calculate the effect of this income increase on poverty in Mozambique, presenting two alternative approaches for estimating poverty elasticity.²⁹ In making these changes, MCC lowered the projected

²⁸In its initial projections of the impact of increased incomes on poverty in Mozambique, MCC used two types of income estimates – GDP and GDP per capita – to compare with- and without-project scenarios.

²⁹Poverty elasticity measures the extent to which economic growth reduces poverty by estimating the percentage change in poverty caused by a 1 percent change in income.

decline in the poverty rate as well as the number of persons likely to be lifted out of poverty because of the compact. For example, MCC originally projected a 7 percent reduction in Mozambique’s poverty rate in 2015; using the alternative approaches for estimating poverty elasticity, MCC projected a poverty rate reduction of either 0.6 percent or 2 percent in 2015. Likewise, MCC originally projected that 270,000 people would be lifted out of poverty in Mozambique in 2015; using the alternative approaches, MCC projected that either 27,000 persons or 56,000 persons would be lifted out of poverty in 2015. Figure 7 summarizes MCC’s original impact projections for Mozambique and its revisions after correcting errors and presenting alternative approaches for estimating poverty elasticity.

Figure 7: MCC Revisions to Impact Projections for Mozambique, Based on Its Corrections of Analytic Errors

Mozambique	Original calculation	MCC’s revised calculation	Absolute change	Percent change
Income/growth				
<i>Income</i>				
in 2015	\$75 million increase	\$79 million increase	+ \$4 million	+5%
in 2025	\$180 million increase	\$167 million increase	- \$13 million	-7%
Poverty				
<i>Poverty rate</i>				
in 2015	7 percent decrease	0.6 percent decrease (lower estimate) 2 percent decrease (higher estimate)	- 6.4 percentage points - 5 percentage points	-91% -66%
in 2025	16 percent decrease	0.7 percent decrease (lower estimate) 3 percent decrease (higher estimate)	- 15.3 percent points - 13 percent points	-96% -83%
<i>Number persons lifted out of poverty</i>				
in 2015	270,000 persons	27,000 persons (lower estimate) 56,000 persons (higher estimate)	- 243,000 persons - 214,000 persons	-90% -79%
in 2025	440,000 persons	32,000 persons (lower estimate) 43,000 persons (higher estimate)	- 408,000 persons - 397,000 persons	-93% -90%
Beneficiaries	5 million by 2015	No change	0	0%

Source: GAO analysis of MCC data.

Notes: For Mozambique, MCC’s public documents stated projections of poverty (1) with the MCC compact and (2) without the MCC compact. To estimate compact impact attributable to MCC, we calculated the differences between with- and without-project figures.

In addition to correcting its formula used to calculate the effect of increased income on poverty in Mozambique, MCC presented alternative approaches for estimating poverty elasticity. MCC’s poverty impact projections using both alternatives are shown here.

Revised Projections Would Not Have Changed Funding Decisions, but Future Compact Impact Projections Will Undergo Review

According to MCC officials, the revisions to its initial calculations of compact impact on income and poverty for Armenia, El Salvador, and Mozambique would not have changed MCC's decision to recommend each compact to the MCC Board. The officials emphasized that MCC's economic impact projections are one of many aspects of the due diligence process that inform its compact investment decisions. A senior official stated that MCC's compact-level analysis is separate from the decision about whether to invest in specific projects; the two levels of analysis are connected but play different roles in MCC's decision making. MCC officials also told us they used conservative data and assumptions to project compacts' impact on income, growth, and poverty. However, future public statements would reflect MCC's corrections and revised analyses.³⁰

In addition, MCC officials said that although lead economists independently review the economic projections performed by others on the transaction team for each country, calculations and assumptions performed by the lead economists for the compacts we reviewed did not undergo a final check for accuracy and validity. The officials stated that such a review might have caught the errors that MCC later identified and corrected.³¹ They further stated that, with fewer compacts undergoing due diligence in the future, MCC will have the staff capacity to ensure that such reviews are performed. MCC officials told us they have begun to implement this peer review for compacts currently under development. However, MCC has not documented its procedures for conducting these reviews, so it is unclear what criteria and level of detail the peer review includes.

³⁰As of May 2008, MCC has posted spreadsheets on its Web site showing calculations of ERR for El Salvador projects. These spreadsheets do not include MCC's compact ERR calculation or calculations of compact impact on income and poverty.

³¹According to OMB and GAO guidelines, an effective control environment for data processing may include edit checks. OMB Circular A-123 calls on federal agencies to establish management controls to ensure that reliable and timely information is maintained for decision making. See OMB Circular A-123, "Management's Responsibility for Internal Control," revised Dec. 21, 2004. GAO's *Standards for Internal Control in the Federal Government* cites edit checks as an example of a control activity used in information processing [[GAO/AIMD-00-21.3.1](#) (Washington, D.C.: November 1999)].

MCC Used Varying Methods to Project Compact Impact on Income and Poverty

MCC used different methods to project the four compacts' impact on income and poverty, limiting the estimates' comparability and replicability. Although the method chosen can affect the results, MCC has not provided preferred methods, or guidelines for selecting a method, for these calculations.

MCC Used Varying Methods for Economic Growth Projections

MCC used a different method to estimate impact on economic growth for Armenia, El Salvador, and Mozambique than it used for Lesotho. As a result, the estimates are not comparable.

- For Armenia, El Salvador, and Mozambique, MCC estimated the impact of compact projects on aggregate income or income growth.³² This method entailed summing the total benefits of individual compact projects and adding them to the income that would have prevailed without MCC.
- For Lesotho, MCC estimated the impact of the compact on the country's GDP growth rate using the published results from a World Bank simulation model. According to MCC, the World Bank's model showed that a public and private investment of about \$100 million would lead to an increase in GDP growth rate of 3.75 percentage points. Reasoning that its projected investment in the Lesotho compact is analogous to the investment in the World Bank model, MCC extrapolated from the World Bank's estimate to project that the compact, if successfully implemented, would nearly double Lesotho's GDP growth rate.³³

According to MCC, its use of GDP growth impacts based on the published World Bank model's results was appropriate, in that the model was consistent with the scale and type of public infrastructure investments proposed under the compact. MCC also noted that the World Bank model provided more information than did MCC's analyses for the other compacts.³⁴ However, our analysis of the World Bank report³⁵ shows some

³²Income growth is defined as the percentage change of income from year to year.

³³Specifically, MCC projected that the compact could nearly double GDP growth by the end of the 5-year compact implementation period (using the International Monetary Fund's baseline of 2.6 percent). MCC also stated that the acceleration of GDP growth was expected to continue, propelling growth toward 7 percent per annum within 5 years after compact completion.

³⁴The World Bank model tracks flows of all transactions, from sector to sector, within the economy. In most countries, the economists could not use such analysis either because no well-calibrated model exists or because the MCC package is not easily incorporated into existing models.

MCC Used Varying Methods to Project Poverty Reduction

differences between MCC's and the World Bank's interventions. For example, whereas MCC's compact comprises only increased public investment in infrastructure, the World Bank report's model projects the combined effect of three elements: increase in garment exports, growth in commercial agriculture, and increase in public investment in infrastructure.³⁶ Because the model's three elements have different and interlinked effects, MCC's extrapolation of the effect of one of these elements, public investment in infrastructure, to its compact requires a number of assumptions that cannot be validated.

Although MCC guidelines call for projecting compacts' impact on economic growth starting from the project level, MCC has not provided preferred methods, or guidelines for selecting a method, for estimating compacts' impact on GDP growth rate.

MCC estimated compacts' impact on the poverty rate for Armenia, El Salvador, and Mozambique based on the responsiveness, or elasticity, of the poverty rate to changes in income.³⁷ MCC uses several income measures in this analysis. For Armenia, MCC estimated poverty reduction based on its elasticity with respect to agricultural value added to the local economy; for El Salvador, with respect to increased annual national GDP; and for Mozambique, with respect to increased annual regional GDP.³⁸

Each of these measures can be a valid measure of income and corresponding elasticity of the poverty rate to income changes. However, the types of data used to estimate poverty elasticity can significantly affect poverty impact projections. For example, in projecting the Mozambique compact's impact on poverty, MCC initially used an ad hoc estimate of elasticity rather than an elasticity based on historical income and poverty data specific to Mozambique; according to MCC officials, the ad hoc

³⁵The World Bank, *Lesotho Country Economic Memorandum: Growth and Employment Options Study*, Report No. 35359-LS, Apr. 21, 2005.

³⁶An alternative scenario developed by the World Bank involves an approximate \$50 million investment in infrastructure by the government of Lesotho. MCC did not choose to extrapolate the results of this scenario.

³⁷MCC did not publicly report an estimate of poverty impact for Lesotho.

³⁸Poverty analysis generally involves measuring economic welfare of individuals and constructing poverty lines to determine the number of people deemed poor—the poverty rate—and the depth of poverty—the poverty gap. Viable measures of economic welfare include, for example, income per capita, consumption per some “standardized” adult, food share of total expenditures, and nutritional indicators. For each compact, MCC measured poverty by the country's headcount poverty rate—that is, the number of people with incomes below the poverty line.

elasticity was consistent with conservative cross-country estimates. In a response to our questions about its original analysis, MCC projected revised poverty impacts for Mozambique in two ways, in both cases correcting for analytic errors discussed above. For one revised projection, MCC used its initial elasticity based on cross-country data. For the second projection, MCC used an alternative elasticity calculated from Mozambique data, which resulted in lower poverty reduction estimates.³⁹ The resulting estimates for the number of persons to be lifted out of poverty were 56,000 versus 27,000 persons by 2015 and 43,000 versus 32,000 persons by 2025, respectively.

MCC's guidelines call for estimating compacts' impact on reducing the poverty rate but do not discuss or prioritize various possible methods for estimating poverty reduction.⁴⁰ Because the methods chosen for each compact can vary, the resulting estimates of poverty reduction may not be comparable or replicable across countries.

MCC Used Different Methods to Estimate Beneficiaries and Is Taking Steps to Strengthen Guidance

MCC used two different methods to estimate the number of beneficiaries it reported for the compacts we reviewed: (1) summing beneficiaries from the individual projects, with adjustments for double counting and timing of benefits, and (2) counting the intervention area's entire population as beneficiaries.

- For Armenia and Mozambique, MCC counted the population of the areas where the compact is being implemented as project-specific beneficiaries and summed these project totals to produce the reported number of beneficiaries. MCC corrected for double counting of beneficiaries in areas

³⁹Cross-country data are data drawn from multiple countries. MCC's memorandum additionally noted the possibility of using a mixed approach that assumes a nonlinear relationship between poverty and income, using different values for specific ranges of poverty.

⁴⁰MCC's November 2006 guidelines state that impact on poverty should be measured in terms of both the poverty rate and the poverty gap. However, MCC did not estimate changes in the poverty gap for any of the four compacts we reviewed. According to the guidelines, "the poverty gap is calculated as the sum of money required to bring all poor households up to the poverty line, and the effect of an MCC investment on the poverty gap would reflect incremental income to poor households in aggregate. The poverty rate, in contrast, would not reflect, for example, significant improvements in income levels for households remaining below the poverty line." As a result of estimating the impact on the poverty rate but not on the poverty gap, MCC estimates its compacts' impacts on the number of beneficiaries lifted out of poverty but does not evaluate potential impact on the severity of beneficiaries' poverty.

where more than one project was implemented. For Mozambique, MCC projected a gradual increase in the number of beneficiaries as benefits accrue over time, whereas for Armenia it did not.

- For El Salvador, MCC reported that the entire population of the intervention area would benefit,⁴¹ although the project-specific beneficiary counts did not sum to the area's population.
- For Lesotho, assuming that the compact would have economywide impact, MCC reported the country's entire population as beneficiaries although estimates of project beneficiaries were available.

MCC guidelines define program beneficiaries as individuals or groups that derive economic gains from MCC investments. However, the guidelines do not explicitly define economic gain or provide criteria for counting beneficiaries based on the amount of accrued benefits or the degree of exposure to compact-provided services. As a result, it is unclear whether MCC's transaction teams would count as equal beneficiaries a person using a compact-related benefit once and a person using the same benefit regularly or whether MCC would apply an equivalence scale to adjust for varying use of the benefit. For example, for El Salvador education programs, MCC first counted as beneficiaries all individuals entering the programs—assuming they would experience some income increases, and later revised the method to include only individuals completing the programs, assuming they would experience measurable income increases. The transaction team's choice of method for defining beneficiaries, in turn, affects the compact-level projections of impact on income and poverty. For example, MCC's estimate of the number of persons to be lifted out of poverty by the compact as a whole ranges from 145,000 in the first case to 83,000 in the second, depending on the assumptions used. (See app. IV for more details.)

According to MCC officials, MCC is in the process of making its guidance regarding program beneficiaries more operational by establishing criteria

⁴¹In MCC's public documents, MCC cited the entire population of the Northern Zone of El Salvador (850,000 people) as the total number of compact beneficiaries. In addition, in its 2006 annual report, MCC characterizes these beneficiaries as poor. However, according to MCC's investment memo, 450,000 (53 percent) of these people are poor. The investment memo further defines poverty in the context of its Productive Development Project in two ways: (1) relative poverty as defined by El Salvador's General Directorate for Statistics and Census and (2) more than half the population of the Northern Zone living on less than \$2 dollar per day and more than 25 percent living on less than \$1 per day. However, the investment memo does not specify the poverty definition used to generate the estimate of 450,000 poor people.

for defining beneficiaries. The officials also noted that increases in income are considered a starting point for measuring economic gains and therefore determining the number of compact beneficiaries.

Conclusions

As MCC works in some of the world's poorest countries, it has taken on the difficult challenge of projecting its compacts' likely ERR, and economic growth and poverty effects. However, our analysis shows that analytic errors affected the results, and the choice of analytical method can change the results of economic projections. Without a consistent approach and preferred methods for its due diligence economic analyses, MCC's transaction teams and individual team members have used different methods to identify compact results. This heterogeneity means that different teams could reach different conclusions about the worthiness of individual projects or compacts based on the method chosen. MCC has refined its guidance over time, and continues to do so. Further refinements that include formal procedures for reviewing the results of due diligence economic analyses and establishing a consistent approach with preferred methods—which could be modified if required by specific country conditions—would help MCC reduce the likelihood of errors and provide a common MCC lens for projecting compacts' ERRs and impacts. This in turn would enhance the reliability and comparability of the information MCC uses internally for decision making as well as the information it provides to Congress and the public for oversight of MCC's activities.

Recommendations for Executive Action

To improve the reliability and comparability of its projected ERR and economic impacts, we recommend that the CEO of MCC take the following actions:

- Adopt and implement written procedures for a secondary independent review of the methods and results of its economic analyses.
- Improve MCC's guidelines by identifying a consistent approach with preferred methods for projecting compacts' impact on income and poverty.

Agency Comments and Our Evaluation

MCC provided comments regarding a draft of this report, which we have reprinted, with our response, in appendix V. MCC also provided technical clarifications, which we have incorporated as appropriate.

In commenting on a draft of this report, MCC concurred with our recommendations and outlined related steps that it is taking—including developing standard practices and templates, initiating an independent

peer review process, and posting its economic analyses on the Internet. MCC commented that there is not a single cost-benefit standard practice and that in many cases the inconsistencies we identified were technically appropriate. We acknowledge that there is not a single standard practice; however, we maintain that consistent analytic approaches are needed to ensure the reliability of MCC's analyses. According to MCC, the choice of analytic time frames was in some cases based on the judgment of the individual lead economist rather than on established criteria. The steps that MCC has stated it is taking—using a default time frame for analyses and subjecting the time frame decision to peer review—will help to enhance the comparability across compacts of the time frame of ERR calculations. MCC also stated that it disagreed with what it saw as our report's implication that ERRs are disconnected from income and poverty effects. However, we assert that ERRs do not provide information about MCC's impact on any specific population group, including the poor. Also, ERRs are a relative measure of benefits in relation to costs that can fluctuate owing to changes in costs alone—and therefore cannot be considered absolute measures of impact on income.

We are sending copies of this report to interested congressional committees as well as the Chief Executive Officer of MCC. We will also make copies available to others upon request. In addition, this report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact David Gootnick at (202) 512-3149 or gootnickd@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix VI.

Sincerely yours,

A handwritten signature in black ink, appearing to read "David Gootnick". The signature is stylized with a large, looping initial "D" and a cursive "Gootnick".

David Gootnick
Director
International Affairs and Trade

Appendix I: Objectives, Scope, and Methodology

At the request of the chairman of the House Committee on Foreign Affairs, we assessed the Millennium Challenge Corporation's (MCC) economic analyses, including its projections of the compact's economic rate of return (ERR), changes in income and poverty, and the number of beneficiaries. To carry out this review, we reviewed MCC compacts with four countries: Armenia, El Salvador, Lesotho, and Mozambique. We selected these countries based on their percentage of total compact funding, the recentness of the compact, and geographical representation. These four compacts make up a total of about \$1.56 billion in compact assistance. When we began our work in August 2007, this represented about 41 percent of the \$3.85 billion MCC had set aside for 13 compacts¹ and included the most recent compacts signed in Eurasia, Latin America, and Africa. We chose to include two African countries in acknowledgement of MCC's focus on Africa, which accounted for 7 of MCC's 13 compact countries and more than half of the total compact value.

MCC's compact-level projections are influenced by the specific data points and assumptions used in project- and activity-level analysis. We determined that the data we used were sufficiently reliable for the purposes of our analysis; however, within our scope of work, we did not independently evaluate the thousands of data points and assumptions at the project and activity levels or the sensitivity analyses used in MCC's economic analyses and therefore are not assessing all aspects of the validity of MCC's ERR or impact projections. We also did not assess MCC's progress in implementing these compacts, and therefore its progress toward achieving projected compact results.

To assess MCC's compact ERR projections, we reviewed MCC's public and internal documents for statements of compact and project ERR. When we began our review, MCC had published the compact and project ERRs for only Armenia.² However, for all four countries, MCC stated ERRs in the internal investment memo. Next, we consulted MCC's guidance for ERR analyses as well as the spreadsheets provided by MCC to support its calculations of ERR and document its work. We reviewed MCC guidance

¹As of March 2008, MCC had 16 signed compacts.

²These internal documents are restricted from public dissemination based on MCC policy, but MCC made them available to us for analysis. As of April 2008, MCC had posted its spreadsheets showing calculations of project-level ERR for El Salvador projects on its Web site, see www.mcc.gov/programs/err/. As of April 2008, MCC has not released the supporting ERR spreadsheets for Armenia, Lesotho, and Mozambique, but MCC officials have told us they plan to release all such spreadsheets.

on calculating ERR and minimum ERRs and compared MCC's internal documentation and spreadsheets to elements of this guidance. We examined the spreadsheets to determine how MCC aggregated project-level ERRs into one compact-level ERR for the four countries in our review and identified the two approaches—summing net benefits and using weighted averages—that MCC used. To determine the effects of MCC's alternative approach on the compact ERR, we used MCC's cost and benefit data to calculate the alternative ERRs. We also used these data to calculate compact- and project-level ERRs over different time horizons to explore the sensitivity of the ERRs to differing time horizons. To determine how MCC approached same-sector projects in different compacts, we studied road and water projects because these were each in three of the four compacts. We then compared the broad approaches MCC used in assessing the costs and benefits associated with these projects. We interviewed MCC economists and other officials regarding MCC's ERR analysis to further discuss MCC's approaches and clarify aspects of MCC's analysis. We also consulted Office of Management and Budget (OMB) guidance and GAO guidance³ on establishing and implementing internal controls to inform our assessment of MCC's processes for developing and maintaining information for the purpose of management decision making.

To assess MCC's projections of the number of compact beneficiaries, and changes in income and poverty, we first compiled and analyzed MCC's public documents for statements of compact impact. These documents included MCC's compacts, compact summaries, congressional notifications and budget justifications, and MCC's annual reports. MCC makes all of these documents available online.⁴ We identified statements that fell into four categories of economic projections: impact on national or regional income, impact on national or regional gross domestic product (GDP) growth rate, impact on national or regional poverty, and number of compact beneficiaries. MCC reviewed and concurred with our compilation and summary of these statements of compact impact. We also reviewed MCC's guidance on projecting these economic impacts. We reviewed the spreadsheets for each compact that MCC used to conduct and document its economic analyses. After an initial examination of these spreadsheets, we met with MCC economists and other officials to discuss MCC's methods and calculations for projecting compact impact. MCC officials also provided responses to our questions in written form. In these

³See OMB circular A-123. For GAO guidance, see *Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington, D.C.: November 1999).

⁴See www.mcc.gov/about/reports/ and www.mcc.gov/countries/index.php

responses, MCC revised its initial calculations of its impacts in Armenia, El Salvador, and Mozambique and also presented alternative methods. We then reviewed the updated information that MCC submitted to us and calculated the magnitude of the difference in MCC's original statements and those supported by its revised analyses. In the case of Lesotho, we reviewed the World Bank Country Economic Memo regarding the economic growth model that MCC used to estimate compact impact in Lesotho. We also reviewed World Bank country assistance strategies and International Monetary Fund Article IV consultation reports and Poverty Reduction Strategy Papers to improve our contextual understanding of each country's compact program. Finally, we consulted OMB guidance and GAO guidance on establishing and implementing internal controls to inform our assessment of MCC's internal processes.

We conducted this performance audit from August 2007 to June 2008, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: MCC Minimum Acceptable ERRs

MCC has issued two definitions of the minimum acceptable ERR, which MCC refers to as the hurdle rate, for compacts and projects. In its initial guidelines, issued in April 2005, MCC defined the hurdle rate as the average of the country's real growth rates for the previous 3 years.¹ The January 2006 guidelines did not set a hurdle rate. The November 2006 guidelines defined the hurdle rate as the greater of (1) two times the average real growth rate of GDP for the country for the most recent 3 years for which data are available or (2) two times the average real growth rate of GDP for all of the MCC eligible countries for each country for the most recent 3 years for which data are available.² The November 2006 guidelines also state that the hurdle rate may not be higher than 15 percent.

In setting the hurdle rate for each compact that we reviewed, MCC applied the definition of the rate from the guidelines current at the time. For Armenia and Mozambique, MCC used its April 2005 guidance. For El Salvador, according to MCC officials, and for Lesotho, MCC used the definition in the November 2006 guidelines. (See table 2.)

Table 2: MCC Compact Hurdle Rates and Hurdle Rate Definition

Compact	MCC hurdle rate ^a	Hurdle rate definition
Armenia	12.5 percent	April 2005 guidance: The country's average real growth rate for the past 3 years.
Mozambique	8.76 percent	
El Salvador	10.8 percent	November 2006 guidance: Based on two times the average real growth rate of GDP for all of the MCC eligible countries for each country for the most recent 3 years for which data are available.
Lesotho	10.8 percent	

Source: MCC documents.

^aFor Armenia, Mozambique, and Lesotho, the hurdle rate was stated in the investment memo. The investment memo for El Salvador did not state the hurdle rate, but MCC officials reported that a hurdle rate of 10.8 percent, based on the November 2006 definition, was applied.

¹MCC's April 2005 guidelines noted that the hurdle rate definition will be revised based on MCC's subsequent experience and data on the experiences of developing countries in general. Although other development agencies, such as the World Bank and the Asian Development Bank, link their hurdle rate to the notion of opportunity cost of capital rather than GDP growth rate, in practice the results are similar, in that the resulting hurdle rate generally remains between 10 percent and 12 percent. According to MCC officials, they considered other measures but decided on a method that was tied to economic growth and did not require extensive and debatable data analysis—MCC's current hurdle rates are generally between 10 percent and 15 percent.

²MCC's November 2006 guidelines note that the hurdle rates will be set once per year, using data available in the September edition of the International Monetary Fund's World Economic Outlook Database for the 3 previous years.

In two cases, the ERRs that MCC initially calculated did not meet the compact hurdle rates. MCC originally calculated the El Salvador Community Infrastructure Project ERR as slightly below the hurdle rate at 10.4 percent over 25 years. MCC's investment memo for Lesotho stated that the ERR for the Rural Water Project was under 6 percent. Subsequent revisions to the Lesotho analysis reduced the projected ERR to less than 1 percent. The Lesotho investment memo discusses the 6 percent ERR but notes a different view within the transaction team that other benefits are not captured by the economic analyses.

Appendix III: Compact ERRs

We assessed the sensitivity of MCC’s compact-level ERRs to the use of varying time frames and varying methods for calculating the compact-level ERR. We found in each case that the variance does affect the results, but does not change the ERRs to below the applicable hurdle rate.

Time Frames

MCC used different time frames to calculate and report compact ERRs.

- For Armenia, MCC calculated and reported a 20-year time frame for the compact and both of its projects.
- For El Salvador, MCC calculated a 25-year ERR for most projects and for some projects reported the ERR as a 25-year ERR in its investment memo. MCC officials explained that their El Salvador country counterparts originally performed the analysis over 25 years and that MCC’s lead economist determined this to be a reasonable approach.
- For Lesotho, MCC used a 20-year ERR for all but one ERR calculation but did not state the time frame of the calculations in the investment memo.
- For Mozambique, MCC used a 24-year ERR for most compact projects. According to MCC officials, MCC intended to present a 25-year ERR, but a delay in the beginning of compact implementation pushed the compact’s time horizon 1 year into the future and reduced the time frame for the analysis to 24 years. The Mozambique investment memo does not state the number of years used for the time frame of the ERR calculation.

Table 3 summarizes our comparison of the compact hurdle rates with the ERRs that MCC reported and our calculations of the 20-year ERRs. Our analysis shows that applying a 20-year time frame in place of varying time frames does not significantly affect the results of the ERR calculations by lowering it below the hurdle rate.

Table 3: Comparison of MCC Compact ERRs Stated in Investment Memo with ERRs Calculated Using a 20-Year Time Frame

	Hurdle rate	ERR reported in investment memo ^a	GAO calculation: 20-year ERR ^b
Armenia	12.5 percent	25 percent over 20 years	27.4 percent
El Salvador ^c	10.8 percent	21 percent over 25 years	17.0 percent ^d
Lesotho	10.8 percent	16.3 percent, period of years not specified	15.9 percent ^e
Mozambique	8.76 percent	19.6 percent, period of years not specified	17.2 percent

Source: GAO analysis of MCC economic analyses.

^aIn some cases, MCC’s underlying spreadsheets stated different ERRs than those reported in the investment memo. However, for Armenia, the revision to a 27.4 percent ERR occurred after the investment memo. We based our calculations on the spreadsheet calculations of the ERRs: for Armenia, 27.4 percent over 20 years; for El Salvador, 20.6 percent over 25 years; for Lesotho, 16.4 percent over 20 years; and for Mozambique, 18.7 percent over 24 years.

^bThese alternative ERRs use the method used by MCC for the original ERR—that is, weighted averages for El Salvador and Lesotho and sums of net benefits for Armenia and Mozambique.

^cMCC provided updated spreadsheets for its education and water and sanitation projects that reduced some expected benefits and incorrectly entered some compact administration costs for another project. Using the weighted average method originally used by MCC, the ERR with these revisions would be 16.3 percent at 20 years.

^dThe formula used to calculate the ERR for the Productive Development project in El Salvador returns an error when used to calculate the ERR for 20 years. However, since the total net benefits for the project at 20 years are negative, the ERR also would be negative. We used a zero ERR over 20 years in place of a negative ERR for this project in calculating the compact ERR. The total net benefits and ERR for the Productive Development project become positive at 21 years.

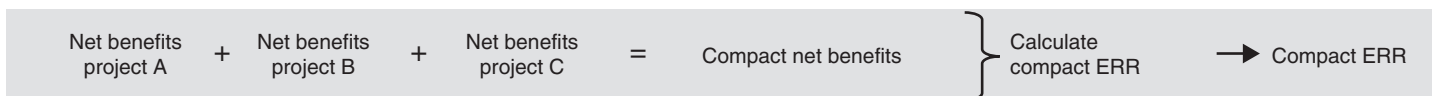
^eMCC originally calculated the Lesotho compact-level ERR using a weighted average of ERRs, some of which did not match the ERRs in its underlying spreadsheet calculations and the investment memo. We have used the ERRs in these underlying spreadsheets to calculate the 20-year ERR. MCC also originally used a 30-year ERR for the Metolong Dam project to calculate the 20-year compact-level ERR. We have used the 20-year ERR for the Metolong Dam for this 20-year compact ERR calculation.

Methods

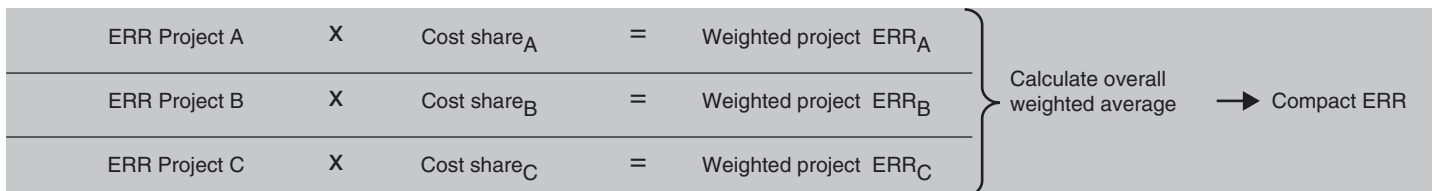
Figure 8 illustrates the two different methods—summing net benefits and calculating a weighted average—that MCC used to determine a compact-level ERR.

Figure 8: MCC’s Alternative Methods for Calculating Compact ERR

Alternative 1: Sum of net benefits across all projects, for each year



Alternative 2: Weighted average of project ERRs



Source: GAO synthesis of MCC information.

We compared the results of the compact ERR calculation using different methods and determined that the choice of method affects the results, but does not reduce the ERR below the hurdle rate. See table 4 for details of our analysis.

Table 4: Compact ERR Using Alternative Methods

Country	ERR reported in investment memo	ERR from underlying spreadsheets ^a	ERR using alternative method	Difference
Armenia	25 percent over 20 years	27.4 percent over 20 years	25.6 percent over 20 years	-1.8
El Salvador	21 percent over 25 years	20.6 percent over 25 years	19.6 percent over 25 years	-1
Lesotho	16.3 percent, period of years not specified	16.4 percent over 20 years	15.4 percent over 20 years	-1
Mozambique	19.6 percent, period of years not specified	18.7 percent over 24 years	17.3 percent over 24 years	-1.4

Source: GAO analysis of MCC economic analyses

^aThe ERR in MCC’s underlying spreadsheets for Armenia, Lesotho, and Mozambique was different from that stated in its investment memos. However, for Armenia, the revision to a 27.4 percent ERR occurred after the investment memo. In order to determine the ERRs from an alternative method, we needed to use these spreadsheets; therefore they are the appropriate comparison for determining the magnitude of the change in results from using the alternative method. El Salvador’s reported ERR was rounded in the investment memo.

Appendix IV: Impact of Alternative Beneficiary Counts on El Salvador Compact Impact Projections

During the course of our engagement, MCC changed its method for determining the beneficiaries and benefits of education projects in El Salvador. In its initial calculations for both projects, MCC assumed that all students entering the programs would experience an increase in income. In its revised calculations for the formal education project, MCC assumed that all nongraduates would have zero income increases—an underestimate of the impact—because of lack of data. For the informal education project, MCC estimated an income increase of more than 200 percent for those who obtain employment, based on a study conducted by the training institute in El Salvador. However, MCC assumed that many entering students would not complete the program or obtain employment and their income would therefore not increase. (See table 5.)

Table 5: MCC’s Compact-Level Impact Estimates for El Salvador, with Alternative Assumptions for Estimating Beneficiaries of Education Projects

	Assumption for estimating beneficiaries of education projects ^a	
	Individuals entering the program will experience increase in income	Individuals completing the program ^b will experience increase in income ^c
Results of compact-level analysis		
Incomes in the region		
5 years	18 percent increase	10 percent increase
10 years	26 percent increase	13 percent increase
Annual per capita income of beneficiaries		
5 years	\$123 increase	\$73 increase
10 years	\$189 increase	\$97 increase
Number of persons for whom poverty is alleviated		
10 years	145,000 persons	83,000 persons
Poverty rate in the Northern Zone		
5 years	10 percentage point decrease	6 percentage point decrease
10 years	15 percentage point decrease	8 percentage point decrease

Source: GAO analysis of MCC data.

Note: These figures also reflect MCC’s corrections of formula errors.

^aMCC’s compact with El Salvador comprises a formal education project and an informal education project. We consider these two projects jointly for the purposes of this summary table.

^bFor the informal education project, MCC estimated the number of individuals who complete the program and obtain employment.

^cThe revised projections also reflect MCC changes to (1) the number of beneficiaries of the productive development project, and (2) projected income increases resulting from the water and sanitation project.

Appendix V: Comments from the Millennium Challenge Corporation

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



May 23, 2008

Mr. David B. Gootnick
Director, International Affairs and Trade
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20001

Dear Mr. Gootnick:

Thank you for the opportunity to respond to GAO's draft report, *MCC: Independent Reviews and Consistent Approaches Will Strengthen Projections of Program Impact*.

MCC appreciates GAO's recognition of the ground-breaking nature of MCC's projections of program impact, reflected in the report's conclusion: "As it works in some of the world's poorest countries, MCC has taken on the difficult challenge of projecting its compacts' likely ERR, and economic growth and poverty effects." MCC concurs with GAO's overall recommendations for enhanced guidance and a secondary independent review of economic analyses. Indeed, as GAO notes, MCC has already "taken steps to standardize elements of its economic analyses and centralize its records management" in addition to establishing an independent peer review process.

Independent Reviews

Economic analysis, conducted for the purpose of informing MCC investment decisions, already undergoes a series of reviews as part of our standard practice. Much of the initial analysis is performed by professional counterparts in our partner countries and by private consultants hired by them or by MCC. In every case, MCC economists represent an independent review of that preliminary analysis.

MCC supports an additional layer of review and, as the report notes, has already established an independent peer review process. This process, which is managed by the Chief Economist, provides a review of the models, formulae and parameters used to estimate the expected impact of programs. MCC has already used the new process to review forecasts for one compact program currently under consideration, and has begun the process for a second country.

MCC has taken the unprecedented step of making our economic analysis accessible on our public website, opening our work to the broader scrutiny of interested NGOs, academics, and private analysts, which we believe will generate useful feedback further strengthening our analysis. MCC has posted the economic models and resulting impact estimates for nine countries, along with explanatory descriptions and documentation. We will post the analysis for all other compacts before the end of this fiscal year. Independent observers, including senior officials at Center for

875 FIFTEENTH STREET NW WASHINGTON, DC 20005-2221 P: (202) 521-3600 F: (202) 521-3700 WWW.MCC.GOV

See comment 1.

See comment 1.

Appendix V: Comments from the Millennium Challenge Corporation

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MCC Response to GAO Draft Report

Global Development and Bread for the World Institute, have lauded this initiative as setting a new standard for transparency in government.

Consistency in Technical Approaches

The report recognizes that “MCC has refined its guidance over time, and continues to do so.” MCC is still a new and evolving agency, and we are continually refining our standard procedures, for economic analysis and in other areas. MCC’s rigorous, transparent use of economic analysis to estimate the cost-effectiveness of potential interventions is exceptional within the international development community and U.S. foreign assistance agencies.

We endorse GAO’s conclusion that “establishing a consistent approach with preferred methods – which could be modified if required by specific conditions – would help MCC to reduce the likelihood of errors.” MCC has an effort underway to develop standard practices and baseline templates for a number of core sectors prevalent in past proposals, including roads, water services & sanitation, and agriculture & irrigation. We are also considering such templates for education, land reform, and microfinance.

Placing Consistency in Context

GAO analyzed more than 20 projects’ economic models, most of which comprise numerous spreadsheets incorporating data from reams of academic research, country sources, and professional judgment. The report cited a number of “inconsistencies” in MCC practices, and GAO identified some as minor, with trivial effect on our estimates. In many cases, these “inconsistencies” are technically appropriate variations of standard practices that can be explained by the specific country context.¹

There is simply no single cost-benefit “standard practice,” because many of the technical details are by necessity context specific. In some cases, the data available allow reasonable estimation using different models, and MCC needs the flexibility, as the GAO report notes, to apply professional judgment as to when the attainment of uniformity in practice is either not cost-effective or will yield perverse results. For example, when existing data allow the use of a different model and the collection of new data needed for the standard model would require both significant time and cost, MCC might find the alternative model acceptable. Similarly, when application of a standard time horizon does not appropriately reflect a project whose useful life is either shorter or longer, MCC will prefer to “deviate” from consistent practice rather than inaccurately estimate the economic impact of the proposed investment. In all such cases, however, MCC will fully subject these decisions to peer review and document them for public viewing and any subsequent external assessment. MCC will also use sensitivity analysis to explore the implications of alternative assumptions or parameters.

MCC’s ERRs Estimate the Impact on Local Incomes

GAO differentiates between ERRs and what the report refers to as MCC’s “projections of compacts’ impact on income and poverty,” which implies that our ERRs are an aggregate

¹ In one example, local counterparts developed initial calculations for a road project using a 25-year time horizon instead of the 20-year horizon used by MCC in most other countries. MCC’s economist reviewed the analysis and found the difference unimportant to the outcome. The economist decided it was better to accept the high-quality work done locally than to insist on revisions solely for the sake of attaining uniformity of practice.

See comment 1.

See comment 2.

See comment 1.

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measure of impact disconnected from welfare levels experienced by the low-income residents in our partner countries. This characterization is based on a common misunderstanding about how MCC calculates ERRs and what those numbers represent.

MCC follows standard cost-benefit practices in most ways, but includes only incremental increases in incomes earned by households and domestic firms. By excluding other possible benefit streams that do not affect domestic incomes, MCC's ERRs represent a direct estimation of the magnitude by which local incomes will rise as a result of the MCC program. When MCC reports high returns for our projects, these estimates do not reflect a broad impersonal measure of economic activity, but rather a much more tangible estimate of the project's effect on people's lives.

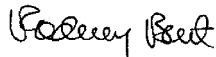
Conclusion

MCC uses economic analysis and other technical work to direct taxpayer funds to investments that will generate significant benefits in well-governed developing countries. MCC's performance of cost-benefit assessments for virtually all proposed investments, posted on our public website, is unprecedented. This assessment represents a critical tool for accountability. For every proposed project, MCC assesses whether it is a wise investment of American taxpayer funds that will generate ample returns for our intended beneficiaries.

It is instructive to compare MCC practices to those found in other foreign assistance agencies around the world. Most other aid agencies rarely, if ever, subject their projects to such technical scrutiny. MCC does it as a matter of practice, and our practices have generally been both reliable and transparent.

Both our use of economic analysis as a tool for decision-making and our openness to public review are critical parts of the MCC model. MCC has established a new standard for project efficacy and transparency, and we will continue to review and enhance our practices to meet the high standards we have set for ourselves.

Sincerely,



Rodney G. Bent
Deputy CEO
Millennium Challenge Corporation

See comment 3.

The following are GAO's comments from the Millennium Challenge Corporation letter, dated May 23, 2008.

GAO Comments

1. We recognize MCC's constructive responses to the issues identified in the course of our audit—including posting economic analyses on the Internet, developing standard practices and templates, and initiating an independent peer review process.
2. We acknowledge that there is not a single standard practice; however, we maintain that consistent analytic approaches are needed to ensure the reliability and comparability of MCC's analyses. According to MCC, the choice of analytic time frames was in some cases based on the judgment of the individual lead economist rather than on established criteria. The steps that MCC has stated it is taking—using a default time frame for analyses and subjecting the time frame decision to peer review—will help to enhance the comparability of its of ERR calculations across compacts.
3. We disagree that MCC's ERRs estimate the project's effect on people's lives. ERRs do not provide information about MCC's impact on any specific population group, including the poor. ERRs also are a relative measure of benefits in relation to costs and can fluctuate owing to changes in costs alone. For example, if costs increase and the income benefits remain the same, the ERR would decrease. Therefore, ERRs cannot be considered an absolute measure of income benefits.

Appendix VI: GAO Contact and Staff Acknowledgments

GAO Contact

David B. Gootnick, Director, 202-512-3149 or gootnickd@gao.gov

Staff Acknowledgments

In addition to the person named above, Emil Friberg, Jr. (Assistant Director), Todd M. Anderson, Gergana Danailova-Trainor, Reid Lowe, Michael Simon, and Seyda Wentworth made key contributions to this report. Also, C. Etana Finkler, Ernie Jackson, and Tom McCool provided technical assistance.

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