



**USAID**  
FROM THE AMERICAN PEOPLE

ABDUL LATIF JAMEEL  
Poverty Action Lab



TRANSLATING RESEARCH INTO ACTION

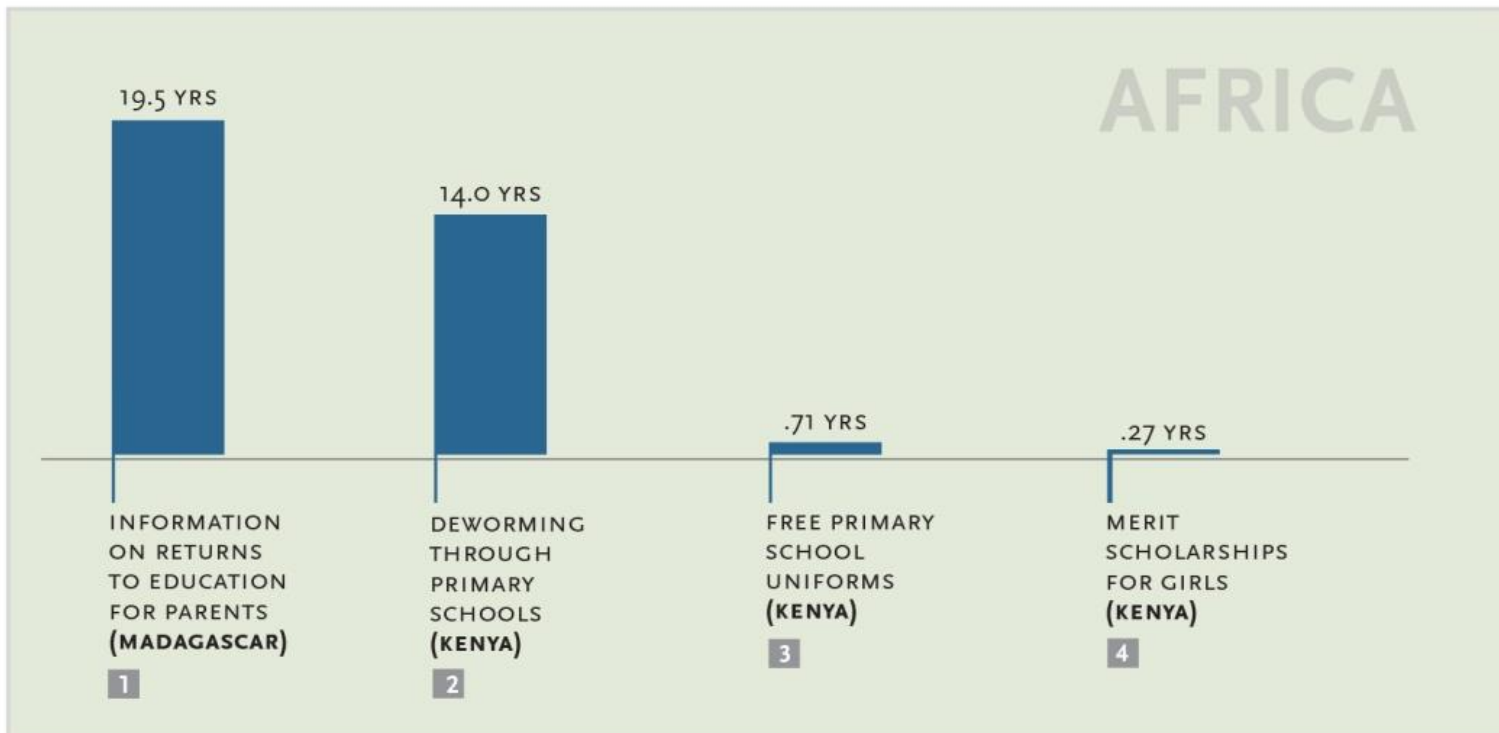
# Comparative Cost-Effectiveness Analysis

## *Key Issues and Tools*

Caitlin Tulloch, J-PAL Policy Associate  
Arlington, VA | August 22, 2011



## COST-EFFECTIVENESS: ADDITIONAL YEARS OF SCHOOLING PER \$100 SPENT





## Why Cost-Effectiveness Analysis at USAID?

- A. Use existing evidence to choose programs known to be cost-effective when making funding decisions
- B. Use existing data to calculate benchmarks for program cost-effectiveness to assess new programs
- C. Measure effectiveness of USAID programs by gathering cost data in conjunction with rigorous impact evaluations



## A. Using Existing Evidence to Select Programs



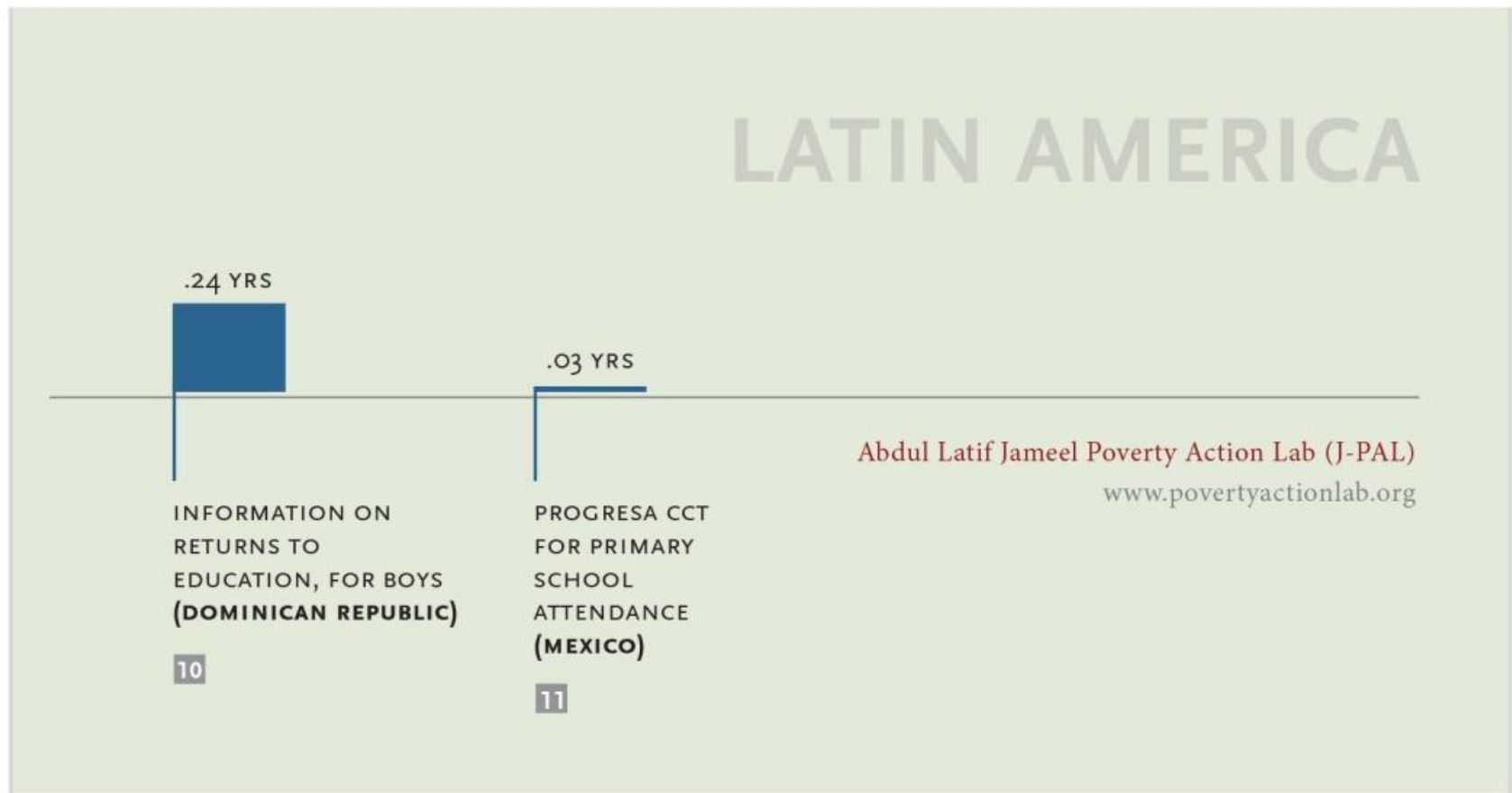
- Build more schools
- Conditional cash transfers
- Eliminate school fees
- Treat intestinal worms
- Merit scholarships
- Promote community involvement in schools
- Improve curriculum and teaching
- Increase inputs to schools
- Sanitation products for girls
- Increase awareness of returns to education
- Improve school management

**How can you  
increase student  
attendance?**



## A. Using Existing Evidence to Select Programs

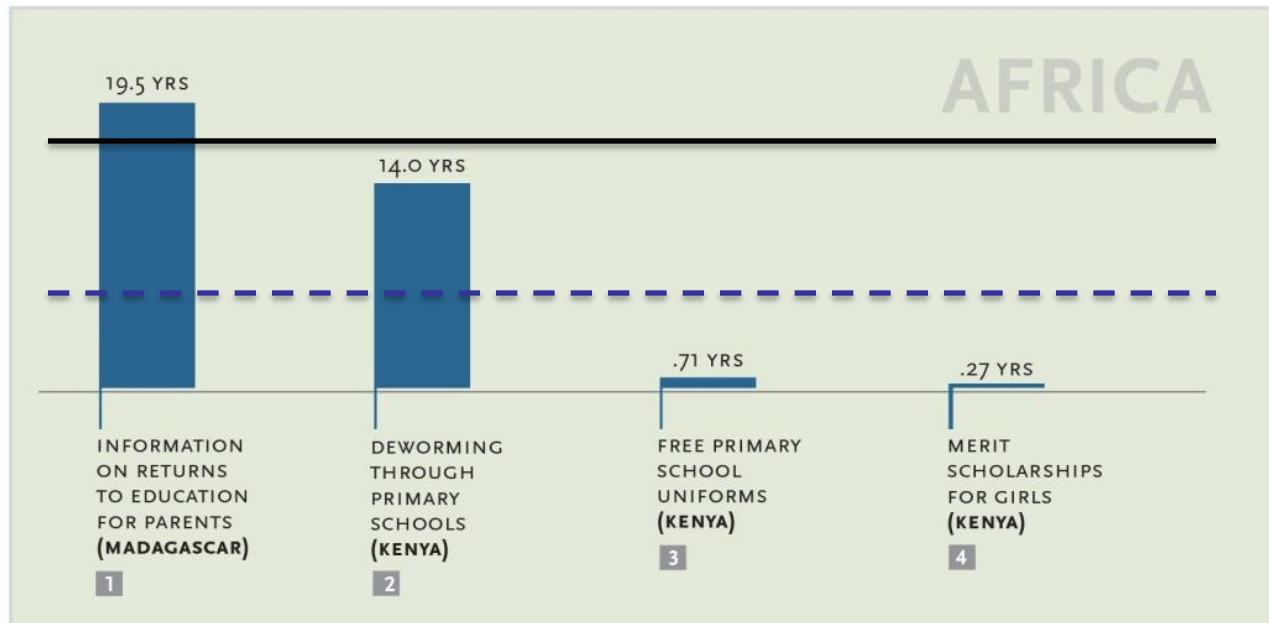
COST-EFFECTIVENESS: ADDITIONAL YEARS OF SCHOOLING PER \$100 SPENT





## B. Cost-Effectiveness Benchmarks to Assess New Programs

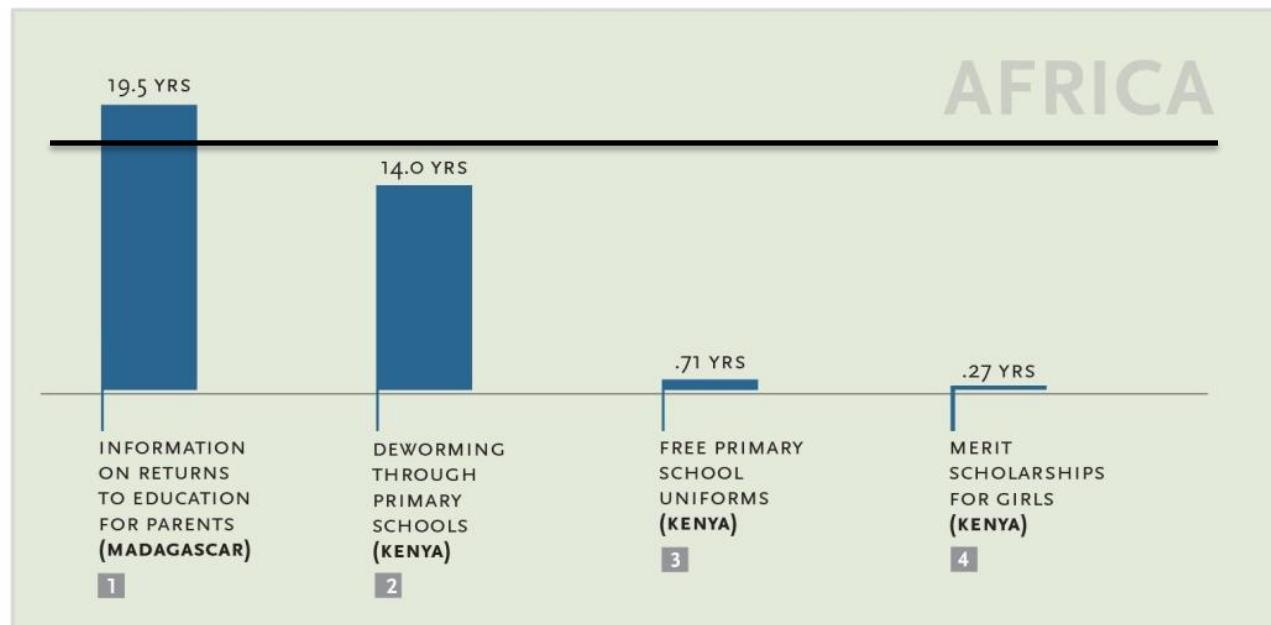
- **If impact estimates exist for similar programs, estimate prospective CE:**
  - You already have info about program cost per person
  - What is the likely impact of the new program, judging by the similar program?





## B. Cost-Effectiveness Benchmarks to Assess New Programs

- **If impact of similar programs has not been estimated, project a likely range of CE:**
  - You already have info about program cost per person
  - What impact would this program need in order to beat alternatives?



→ 1 year





# Resources to Compare Existing Programs & Set Benchmarks

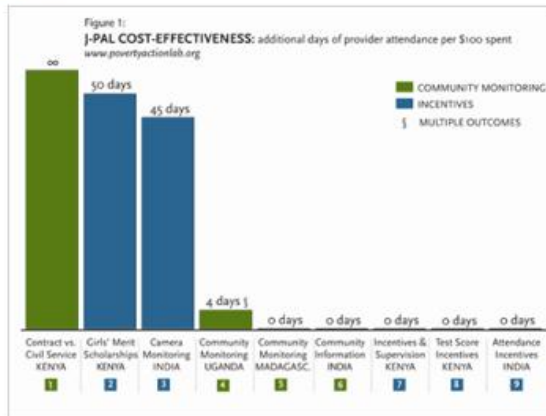
[www.povertyactionlab.org/policy-lessons](http://www.povertyactionlab.org/policy-lessons)

## Showing up is the first step

You can read about our methodology for estimating cost-effectiveness [here](#)

Impersonally administered and direct incentives for attendance are the most effective at increasing service provider attendance. However, in settings where supervisors were given discretion over administering incentives, these programs became ineffective. Attempts to increase accountability to the poor were successful in cases where the monitors had credible authority which the service providers respected, but untrained committees who had no actual power over service providers had little effect on attendance.

[Read more](#)



## Additional Days of Attendance per \$100 Spent

You can read about our methodology for estimating cost-effectiveness [here](#)

Evaluations	Cost Effectiveness (additional provider days per \$100 spent)	Academic Papers
<b>Community Monitoring</b>		
1 Contract vs. Civil Service Teachers in Kenya Hiring extra contract teachers	infinite	- Dutlo, Dupas & Kremer, 2010



Students in rural Udaipur, India wait for their absent teacher

## Policy Publications



## Coverage of this Research

- Computer Error? - Miller-McCune
- Measuring the Effectiveness of Foreign Aid - Slate
- Inside the Machine: Towards a New Development Economics - Boston Review
- Trial and Error - Forbes
- Camera Schools: The Way to Go - Times of India
- Camera and Cash Pill for Truant Tutors - The Telegraph
- Cash Talks - Forbes Magazine

Demographics	Number	Unit	Enrollment and Attendance, Baseline & Impacts
10 Number of Treatment EAs-CCT Arm	46	EAs	Comparison Group Enrollment 79.9%
11 Total Number of EAs (UCT, CCT, and control)	176	EAs	Percentage Pt. Change 9.5%
12 Baseline Schoolgirls per EA	16.5	girls	Treatment Group Enrollment 89.4%
13 Baseline Schoolgirls, as % of Eligible Population	87%		
14 Proportion of Eligible Girls in Secondary School	33%		Comparison Group Attendance 81.0%
15 Total Baseline Schoolgirls Eligible for Transfers	759	girls	Percentage Pt. Change 8.0%
16			Treatment Group Attendance 89.0%
17			
18 Parent Time Spent at Initial Meeting (travel + meet)	3.5	hours	
19 Parent Time to Pick Up Transfer, per Month	2.5	hours	
20 Program Duration	2	years	
21 Average # of Months Transfers Actually Given, per Year	7	months	
22 Number of Transfers per Year	3	terms	
23			
24 Avg US Annual Inflation, Base Year to 2009	2.19%		
25 Avg US Annual Inflation, Base Year to Year of Analysis	1.56%		
26 Time Elapsed Between Base Year and Year of Analysis	2	years	
27 Discount Rate	10%		
28 Base Year Standard Exchange Rate	140.52	MWK/USD	
29 Year of Analysis Standard Exchange Rate	140.52	MWK/USD	
30 Year of Analysis PPP Exchange Rate	48.95	MWK/USD	
31			
32			
33			

Ingredient	Unit Cost	Currency (Location & Yr)	Units Req'd (per year)	Years Req'd	Total Cost/Yr, Local Currency	Total Cost/Yr, USD	Total Cost/Yr, Base Yr USD	PV of Cost, Base Yr USD	Total Cost, Yr of Analysis USD	Cost Incurred By
34 Census to Identify Never-Married Girls 13-22 in CCT Eas	\$26,136	2008 USD	1	1	\$26,136	\$26,136	\$26,136	\$26,956	\$26,956	Implementer
35 Admin Costs of Transfer Distribution, per Year	\$12,792	2008 USD	1	2	\$12,792	\$12,792	\$24,421	\$25,186	\$25,186	Implementer
36 Admin Costs of Attendance Checks, per Year	\$40,600	2008 USD	1	2	\$40,600	\$40,600	\$77,509	\$79,938	\$79,938	Implementer
37 Fixed Costs of Admin, per Year	\$ 6,301	2008 USD	1	2	\$6,301	\$6,301	\$12,030	\$12,407	\$12,407	Implementer
38 Parents' Foregone Hourly Wage to Attend Meeting	\$ 0.08	2009 USD	2657	1	\$207	\$207	\$202	\$209	\$209	Users
39 Monthly Transfer per Girl Meeting Criteria (Parents)	\$ 4.00	2008 USD	5351	2	\$ 21,404	\$ 21,404	\$ 40,862	\$42,142	\$42,142	Implementer
40 Monthly Transfer per Girl Meeting Criteria (Girls)	\$ 1.00	2008 USD	5351	2	\$ 5,351	\$ 5,351	\$ 10,215	\$10,536	\$10,536	Implementer
41 Per Term Secondary School Fees, per Girl	\$ 3,000	2008 MWK	759	2	\$ 16,204	\$ 16,204	\$ 30,935	\$31,904	\$31,904	Implementer
42 Parents' Foregone Hourly Wage to Collect Transfers	\$ 0.08	2009 USD	13377	2	\$ 1,041	\$ 1,019	\$ 1,945	\$2,006	\$2,006	Users

Impacts	# Eligible Girls	Enrollment Rate	Attendance (Conditional on Enrollment)	Total Years of Schooling Achieved
46 Years of Schooling Achieved per Year, Comparison Girls	759	79.9%	81.0%	491
47 Years of Schooling Achieved per Year, Treatment Girls	759	89.4%	89.0%	604
48				
49				
50 Additional Years of Schooling from Treatment				113
51 Present Value of Additional Years				216
52				
53				

Cost-Effectiveness	Standard	PPP	Sensitivity Analysis: 90% CI of Impact Estimate	Impact Estimate (percentage points)	Cost per Year of Schooling Gained	Additional Years of Schooling per \$100
54 Total Cost	\$31,284	\$663,969	2009 USD	Point Estimate		
55 Total Cost to Implementer	\$29,069	\$657,611	2009 USD	Upper Bound		
56 Total Cost to Users	\$ 2,215	\$ 6,358	2009 USD	Lower Bound		
57						
58 Cost-Effectiveness	\$ 1,073	\$ 3,080	per year			
59 Cost per Additional Yr of Schooling, to Implementer	\$ 1,063	\$ 3,051	per year			





## C. Measuring Cost-Effectiveness of USAID Programs

- You need rigorous estimates of impact in order to do cost-effectiveness analysis
- When implementing programs that may be replicated, build in rigorous evaluation techniques
- When running rigorous evaluations, build in cost-gathering up front



# Resources to Measure CE of USAID Programs

[www.povertyactionlab.org/publication/cost-effectiveness](http://www.povertyactionlab.org/publication/cost-effectiveness)

## Comparative Cost-Effectiveness Analysis to Inform Policy in Developing Countries: A General Framework with Applications for Education

Iqbal Dhaliwal, Esther Duflo, Rachel Glennerster, Caitlin Tulloch<sup>1</sup>  
Abdul Latif Jameel Poverty Action Lab (J-PAL), MIT  
August 9, 2011

### Abstract

In this paper we discuss how comparative cost-effectiveness analyses can help inform policy in developing countries and the underlying methodological assumptions necessary for performing this kind of analysis using data gathered as part of rigorous impact evaluations. This paper does not suggest a single set of “correct” assumptions, because the assumptions adopted in a cost-effectiveness analysis should reflect the perspective of the intended user. Rather, we discuss the issues surrounding many of these assumptions, such as what discount rate to use or whether to include cash transfers as program costs, and make recommendations on which assumptions might be reasonable given the perspective of a policymaker allocating resources between different projects. Examples are drawn from the education field to illustrate key issues and focus on some specific applications to education. We hope this paper will contribute to the development of a more standard methodology for cost-effectiveness analyses and a better understanding of how these analyses can be created and used.

<sup>1</sup> We are grateful to Abhinav Banerjee, Paul Glewwe, Jere Behrman, Miguel Ángel López-Lecuona, and Patrick Robinson for valuable discussions and feedback. We also thank participants at the 4th annual conference on “Education Policy in Developing Countries” for their comments and many colleagues at J-PAL including Mary Ann Estes, Cristóbal Marshall, Lesh Hoggan, Dana Grossman, Anna Yalovans and Shawn Powers.

### B. Cost Data

Please bring together all of the costs of running the project you’re evaluating (distinct from the costs of actually evaluating it) and fill out information on all cost items that apply to this program. The goal of this information is to get an idea of how much it would cost a government or NGO to replicate the program, so it’s important to consider whether the project had any cost categories covered for you (i.e. by piggybacking on existing NGO infrastructure) which a scaled-up model of your program would have to pay for. One useful way to think about this cost gathering exercise is like writing a recipe for the intervention you are testing, and you need to come up with a list of all ingredients.

- ~What is every single ingredient necessary for this program to have the observed impact?
- ~How much of each ingredient is needed?
- ~How much does one unit of this ingredient cost?
- ~When is this ingredient used?

The categories listed are intended as ideas for the kinds of costs you might incur. Please add your own categories and items as necessary.

Costs of Administration & Targeting	Unit Cost	Currency (Location & Yr)	Units Req'd (per year)	Years Required
Hourly wages, surveyors for targeting survey?				
Transportation (per diem for surveyors)?				
Hourly wages, data entry staff?				
[Insert your own cost items]				
[Insert your own cost items]				

Costs of Marketing & Education	Unit Cost	Currency (Location & Yr)	Units Req'd (per year)	Years Required
Development of outreach leaflets?				
Printing of outreach leaflets?				
Hourly wages of trainers, for marketing training?				
Per diems of trainers, for marketing training?				
Transportation per diem, for marketers?				
Hourly wages of marketers?				
[Insert your own cost items]				
[Insert your own cost items]				

Cost of Materials & Productive Assets	Unit Cost	Currency (Location & Yr)	Units Req'd (per year)	Years Required
Procuring productive assets?				
Productive asset (per client)?				
Transportation fee (per asset)?				
Cash subsidy (per client per month)?				
[Insert your own cost items]				
[Insert your own cost items]				

Costs to Clients	Unit Cost	Currency (Location & Yr)	Units Req'd (per year)	Years Required
Hourly wage of clients incorporating new technology?				
Subsidies for clients (negative cost of cash subsidy)?				
[Insert your own cost items]				
[Insert your own cost items]				

[Insert Your Own Category Here]	Unit Cost	Currency (Location & Yr)	Units Req'd (per year)	Years Required
[Insert your own cost items]				
[Insert your own cost items]				



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