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# **The Costs and Benefits of a Maternal and Child Health Project in Nigeria**

**JANUARY 2010**

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## EXECUTIVE SUMMARY

In October 2008, the Nigerian government's National Health Insurance Scheme (NHIS) launched a pilot health project, titled the "NHIS/MDG Maternal and Child Health Project" (hereafter referred to as "the Project"). The Project focuses on reducing maternal and child mortality and uses funds from the World Bank's Heavily Indebted Poor Countries Initiative (HIPC), which provides dollar-for-dollar debt reduction against government allocation of funds to poverty-reduction programs. Nigeria's Office of the Presidency/Millennium Development Goals (MDGs)—in coordination with the NHIS, Nigerian Congress, and Ministry of Health—designed the Project to leverage HIPC support in the fight against maternal and child mortality; its first two phases already have received funding approvals from Congress.

By late 2009, it was clear that the Project was having a positive effect on the women, children, and facilities enrolled in the pilot. The Project's investments reduce maternal and child mortality and benefit Nigeria far beyond the costs of the Project through the increased health of its citizens and the value these lives represent, including the ability of citizens to lead more productive lives. The Health Policy Initiative's analysis found that the Project's investment of US\$13.3 million (from October 2008 to December 2009) resulted in a benefit of US\$85.5 million in terms of the value of women's and children's lives saved due to the use of the Project's health services. In cooperation with the Office of the Presidency, NHIS, and USAID, the Health Policy Initiative prepared this report to help assess progress and identify ways to improve the Project's effectiveness.

In August and October 2009, the Health Policy Initiative completed interviews with officials from the government, health maintenance organizations (HMOs), and development partners, as well as academics and several primary healthcare providers, to establish a greater understanding of the political and economic context of the Project. The Health Policy Initiative collected information on the costs of delivering services under this Project and analyzed the financial sustainability and incentive structure of the program design.

Based on this analysis, the Health Policy Initiative presents the following recommendations for the Government of Nigeria's consideration:

To achieve greater impact and improve the Project's financial sustainability

- Leverage new funding to expand the Project's reach and duration;
- Include family planning consultations and services in the service package;
- Study the quality and comparative benefit of the services provided by the Project;
- Further support HMOs in their efforts to achieve enrollment goals and service delivery;
- Differentiate capitation rates between women and children;
- Lower provider capitation rates to public facilities after one or two years of participation;
- Provide performance-based incentives to states; and
- Facilitate public-private partnerships in the Project.

## **ABBREVIATIONS**

CEO	Chief Executive Officer
CIDA	Canadian International Development Agency
DFID	Department for International Development (UK)
FP	family planning
GON	Government of Nigeria
HERFON	Health Reform Foundation of Nigeria
HIPC	Heavily Indebted Poor Countries Initiative
HMO	health maintenance organization
LGA	Local Government Area
MDG	Millennium Development Goal
MMR	maternal mortality ratio
MOH	Ministry of Health
NHIS	National Health Insurance Scheme
NGOs	nongovernmental organization
RH	reproductive health
TA	technical assistance
TFR	total fertility rate
USAID	United States Agency for International Development
WHO	World Health Organization
WRA	White Ribbon Alliance for Safe Motherhood



# **I. INTRODUCTION**

## **Background**

In October 2008, the Nigerian government's National Health Insurance Scheme (NHIS) launched a pilot health project, titled the "NHIS/MDG Maternal and Child Health Project" (hereafter referred to as "the Project"). The Project focuses on reducing maternal and child mortality and uses funds from the World Bank's Heavily Indebted Poor Countries Initiative (HIPC), which provides dollar-for-dollar debt reduction against government allocation of funds to poverty-reduction programs. Nigeria's Office of the Presidency/Millennium Development Goals (MDGs)—in coordination with the NHIS, Nigerian Congress, and Ministry of Health—designed the Project to leverage HIPC support in the fight against maternal and child mortality; its first two phases already have received funding approvals from Congress.

By late 2009, it was clear that the Project was having a positive effect on the women, children, and facilities enrolled in the pilot. The Project's investments reduce maternal and child mortality and benefits Nigeria far beyond the costs of the Project through the increased health of its citizens and the value these lives represent, including the ability of citizens to lead more productive lives. In cooperation with the Office of the Presidency, NHIS, and USAID, the Health Policy Initiative prepared this report to help assess progress and identify ways to improve the Project's effectiveness.

## **Current Design of the NHIS/MDG Project**

The NHIS/MDG Maternal and Child Health Project currently has two phases, each of which is designed to provide free healthcare to 600,000 women and children (combined) at any one point in time. Each phase covers six states and up to 100,000 Nigerians per state at any point.

### **Service Package**

The two phases provide the same health service package, which covers primary care for all enrolled children and primary plus secondary care for all enrolled pregnant women. Children may be enrolled from birth until age five, while women may be enrolled from the moment their pregnancy is confirmed to six weeks after childbirth. Given this enrollment structure, turnover for women is higher than for children because women drop out of the Project in a matter of months, while children may be enrolled for years. Secondary care for pregnant women is designed to cover complications from pregnancy and operations such as caesarean sections.

### **Administration**

Each state in Nigeria falls under a zone administered by an NHIS zone coordinator. The zone coordinator's office is responsible for accrediting any health facility that wishes to participate in the NHIS/MDG Project. Pregnant women and children under the age of five can enroll at any accredited facility near them. (Enrollment is not general to the Project but rather is specific to a facility.)

Zone coordinators are expected to encourage enrollment in accredited facilities by communicating with health maintenance organizations (HMOs), local government officials, the public, community leaders, and media outlets. The 500 million Naira administrative budget for Phase One covers the cost of NHIS officials' involvement in Project promotion and administration. HMOs must fund their own enrollment campaigns on the presumption that increased enrollment will bring them more capitation fees.

Only public facilities may be considered for accreditation and participation, except in Oyo State, where private facilities also are allowed to participate but have not yet done so to date.

Two arguments were made to justify the focus on public (versus private) facilities.

1. Public facilities need a funding boost, so the Project is designed to bolster the functioning of these facilities in addition to lowering maternal and child mortality. Several NHIS zone coordinators and facility administrators explained that their public primary care facilities had been severely under-utilized and sometimes abandoned entirely before the NHIS/MDG Project began. One official stated that he had to lower the accreditation standards for some public facilities to enroll enough facilities for the Project to proceed.
2. Supplementary funding to public facilities encourages state governments to support the Project. State government officials welcome the Project, in part because it relieves some of their burden to fund the same facilities.

The NHIS and state governments chose three HMOs per state to implement the Project. Each HMO therefore covers one or two Local Government Areas (LGAs), and each LGA is covered by only one HMO. For example, within Niger State, the Rosenberger HMO covers the Chanchaga LGA, the Mark Fema HMO covers the Agwarra LGA, and the Prepaid Medicare HMO covers the Lapai LGA. When the number of LGAs doubles to six, each of the three HMOs covers two LGAs.

There is a lack of competition among HMOs, given the high administrative costs of operating in a single LGA and the low client base. HMOs are motivated primarily by the incentive to collect capitation fees—in particular, the 36-Naira portion designated for HMO administration and any money retained from the fee-for-service capitation payments. There is also the concern that HMOs could potentially collect a portion of the 550 Naira capitation payments intended for providers by taking a cut of machine procurement contracts or other contracts intended for facility improvements.

### **Payments to HMOs and Providers**

Payments to HMOs and providers follow the same rules in Phase One and Phase Two of the Project. The NHIS disburses a fixed capitation for each enrolled child or woman to the HMO covering the enrollee. The HMO keeps 36 Naira per person per month of this capitation payment and passes along 550 Naira per person per month to providers. In addition to these payments, a fee-for-service payment is disbursed to HMOs to cover secondary care of pregnant women, which, in theory, covers HMO payments to secondary care providers when necessary.

In practice, however, this fee-for-service payment appears to be handled as a second capitation payment to HMOs regardless of whether they have enrolled women or children or whether the women actually are receiving secondary care services. This payment began as a 91-Naira per person per month disbursement to HMOs and changed to 36 Naira in early 2009, according to the NHIS payment data. The payment data indicate, however, that sometimes the NHIS has attempted to reimburse more specifically for women only. The data also indicate that payments often are made on a capitation basis for both women and children. It is clear that more work needs to be done to standardize payment procedures across various participating states and LGAs.

### **Project Design Elements Unique to Phase One**

Phase One began in October 2008 and is funded with 5 billion Naira (roughly US\$33 million), which is available for use at any time through 2015 under a conditional grant scheme approved by the Nigerian Congress. Of this funding, 500 million Naira are allocated to administration, with the remaining 4.5 billion Naira divided evenly among the six participating states (750 million Naira per state, or roughly US\$5 million).

According to the NHIS and Office of the Presidency/MDG officials, the Government of Nigeria (GON) considered the latest maternal and child mortality statistics when selecting the first six states for Phase

One of the Project. (See Annex B for a map of Phase One and Phase Two states.) Phase One originally allowed each state to enroll people in only three LGAs, one per Senatorial District. This rule later was relaxed in at least one of the Phase One states (Oyo State) because the NHIS officials and HMOs involved in enrollment found it difficult to reach the goal of 100,000 enrollees within such a small pool of possible enrollees. Doubling the pool to six LGAs makes reaching the enrollment goals easier. Some NHIS officials stated that there actually may not be 100,000 pregnant women and children in a three-LGA geographic area, thereby necessitating the expansion to six LGAs.

### **Project Design Elements Unique to Phase Two**

Phase Two legislation passed the Congress in 2009 under a different funding mechanism than Phase One, and implementation began in late 2009. Phase Two allows for 4 billion Naira of disbursements but must be re-approved each year and so is not guaranteed to continue through 2015.

Phase Two claims to “require” states to make available matching grants of 50 percent of the amount disbursed but, according to a GON official, it is unlikely that this requirement will be enforced. It also allows each state to select six LGAs to participate in the Project, as opposed to the limit of three LGAs originally mandated by the Phase One design. This change recognizes the difficulty of achieving enrollment goals in areas where the pool of possible enrollees is quite small—sometimes smaller than the goal itself.

## II. COST, BENEFIT, AND SUSTAINABILITY ANALYSES

### Overview

The Health Policy Initiative visited two primary health facilities during October 2009 to assess the cost of providing the NHIS/MDG Maternal and Child Health Project services. These facilities are accredited by the NHIS and participate in Phase One of the Project. The following map shows the location of these facilities; red arrows → designate facilities visited in Agwarra LGA, Niger State, and Ibadan South East LGA, Oyo State.



→ Phase One participating facilities in Agwarra LGA, Niger State, and Ibadan South East LGA, Oyo State

The cost data collected from the two NHIS-accredited facilities participating in Phase One provide information to calculate whether the Project's capitation rates are aligned with actual costs. Because this sample is so small, however, it cannot be assumed that it is representative of facilities across the entire Project.

The Health Policy Initiative also collected payment data from NHIS headquarters and a participating HMO. These macro data are analyzed below, following the facilities' costing analysis, and provide insight into the Project's sustainability and overall expenditures.

## Participating Facility Costs

It is important to distinguish between actual costs supported by the Project's capitation payments and those supported by state and local governments. All participating facilities are government owned, so the facility rental costs already were covered before the Project. Most provider staff are paid by state and local governments even if their facilities have fallen into disuse, so the Project does not have to cover their full salaries and increased workload.

However, it is sometimes useful to measure salaries and comparable rents even if NHIS funding is not used to pay them. Such cost analysis can help to determine what capitation payments would be sufficient to entice the participation of private providers, who would not have the luxury of renting a building for free and employing staff with state and local funds. Oyo State, for example, allows private providers to participate in Phase One of the Project, yet the program design does not allow them higher capitation payments to cover the costs of paying rent and employing staff. This may be one reason that private providers in Oyo State have yet to participate.

### Costing Actual NHIS-Accredited Primary Facilities:

- One Urban Facility, Ibadan South East LGA, Oyo State
- One Rural Facility, Agwarra LGA, Niger State

### Macro Costing Calculations

There are two ways to approach the costing of services performed at these facilities. The simplest is to take the total cost of running each facility—including salaries, rent, consumables, utilities, etc.—and divide the total by the percentage and number of the Project patients (see Table 1).

**Table 1. Calculation of facility costs per project enrollee**

	Ibadan		Agwarra	
	Naira	US\$	Naira	US\$
Monthly Labor Costs	674,000	\$4,500	1,100,000	\$7,100
Monthly Non-Labor Costs	<u>132,000</u>	<u>\$900</u>	<u>225,000</u>	<u>\$1,500</u>
Monthly Total Facility Costs	805,000	\$5,300	1,300,000	\$8,600
% of Patients Who Are Enrollees	60%		40%	
Adjusted Monthly Facility Cost	483,000	\$3,200	523,000	\$3,500
Estimated # of Project Enrollees	2,000		1,050	
<b>Monthly Cost per Project Enrollee</b>	<b>242</b>	<b>\$1.60</b>	<b>498</b>	<b>\$3.30</b>

Source: Interviews with facility managers and HMOs.

This approach provides an estimate of costs per enrollee that is sensitive to the number of enrollees because cost per enrollee falls as excess capacity is put to use. For example, when these facilities were under-utilized and had less than half the current number of patients (as was the case earlier in 2009), the cost per enrollee was substantially higher because the labor and facility costs were roughly the same

regardless of the number of patients. For further discussion of this topic, see the section, “Explaining the Discrepancies between Costs Estimated for the Two Facilities.”

#### *Micro Costing Calculations*

Another way to analyze the cost per enrollee is to take a micro approach, adding and averaging direct and indirect costs that an average enrollee incurs. These costs include, for example, 20-minute consultations with nurses; 10 minutes with a doctor; 30-minute use of a room; 30-minute use of the facility’s electricity, divided by the number of patients at that facility; a 1,600 Naira delivery kit of supplies; and other expenses.

By adding each cost for an average pregnant woman and child, the theoretical average monthly cost of an enrollee can be ascertained. These calculations ignore the fact that many of these salary and facility costs need not be reimbursed by the Project because they are already paid by state and local governments. Also, they do not include any secondary care costs necessitated by pregnancy complications because these cases are referred to a separate secondary facility and the HMO involved reimburses that facility separately on a fee-for-service basis. Other assumptions include how many children are sick, how long births take, and how much medicine an average woman and child consume per month. The results are as follows:

**Table 2. Cost comparisons at the two facilities visited**

<b>Costing Method</b>	<b>Description</b>	<b>Ibadan facility</b>	<b>Agwarra facility</b>
Macro Costing Method	Average Cost per Enrollee per Month, Naira	242	498
Micro Costing Method	Cost per Woman per Month, Naira	534	751
	Cost per Child per Month, Naira	266	404
	Weighted Average Cost per Enrollee per Month, Naira	333	512

Source: Health Policy Initiative calculations based on data provided by facility managers and HMOs in October 2009 and January 2010.

#### *Explaining the Discrepancies between Costs Estimated for the Two Facilities Visited*

Visits to two facilities and the application of two methods of estimating their costs yield a wide range of estimated cost per person served (see Table 2). The lowest per-enrollee cost is 242 Naira per month at the Ibadan facility; the highest is 512 Naira, averaging across both women and children, at the Agwarra facility. Cost studies of HIV/AIDS clinics in several countries (Mexico, Ecuador, and India, among others) reveal equally wide ranges of per person costs, suggesting that these findings are not unusual.

Various factors are likely to have caused the estimated differences in cost per enrollee for the Agwarra and Ibadan facilities. Note that, because the costing information is based only on two facilities, it is not intended nor should it be construed as representative of all participating facilities across Nigeria. Additional research on costing facilities would be necessary to comment on whether these costs are typical; it cannot be concluded that all participating facilities follow these patterns.

This exercise does, however, provide insight into the range of factors that determine any facility's cost per patient.

- Salaries are significantly higher at the Agwarra facility than at the Ibadan facility. It may have been necessary to raise rural facility salaries to attract qualified personnel, as exemplified by the case of the main doctor, who was recruited personally by the LGA Chairman to come to Agwarra to work.
- Rural rents are less expensive than urban rents, but the cost of other non-labor inputs, such as gasoline, usually are higher in rural areas and drive up non-labor costs. The Agwarra facility, for example, uses a generator more often and requires an ambulance to transport patients.
- Both facilities are roughly the same size and employ approximately the same number of people, but the Ibadan facility sees approximately 27 percent more patients, so its cost per patient is lower.
- The Agwarra facility provides more services than does the Ibadan facility. Many of the Agwarra facility services are considered secondary care, although some complex cases still are referred to other secondary care facilities. Agwarra's greater range of services may contribute to its higher operational costs.
- Measurement error could also be a factor: The salaries, rents, and other costs are all estimations verbally communicated from memory by the facilities' managers.

## **Sustainability Analysis**

Funds provided under the HIPC agreement are limited and can extend only a few years into the future. These funds can cover only a fraction of the target population of pregnant women and children under five years old. This money constitutes a good start and will help to demonstrate how beneficial targeted maternal and child health coverage can be, but it falls well short of a full response to the need to strengthen maternal and child services.

Available data do not make clear what further steps offer the best means to sustain programs on a permanent basis. Expenditure data from NHIS headquarters and a participating HMO indicate how many women and children current obligations can cover, and for how long. Further analysis can help to determine when the current phases of the Project will run out of money, whether funding currently available matches the Project mandates, whether the Project as designed can scale up to national coverage, and what amount of funding would be required to implement goals consistent with Nigerians' reproductive health needs and the GON's broader MDG commitments.

### **When Will Phases One and Two Run Out of Money?**

The Phase One budget's 5 billion Naira allocation for six states sets a goal of enrolling 600,000 Nigerians at any one point in time. Given that the Project currently disburses 622 Naira per person per month, 600,000 Nigerians could receive services for only one year under the current project design (see Table 3).

**Table 3. Projections of Phase One project costs, assuming continuation of current capitation payment rates**

<b>Payment Component</b>	<b>Monthly Amount (Naira)</b>	<b>Annual Amount (Naira)</b>
Fixed (Capitation) Payment to Provider	550	6,600
Administrative Payment to HMO	36	432
Capitation Payment for Secondary Care	36	432
Aggregate Payment per Person	622	7,464
Persons to be Covered		600,000
Total Annual Cost		4,500,000,000
Indirect Administrative Costs Retained by NHIS		500,000,000
Total Costs, Including NHIS Admin		5,000,000,000

Source: Health Policy Initiative staff estimates based on current NHIS disbursement rates.

According to NHIS officials, 500 million Naira have been allocated for NHIS administration of the Project. NHIS data indicate that even more—up to 750 million Naira—already have been disbursed to the Project’s in-house account.

Phase One began in October 2008 and was intended to run through 2015. There is clearly a gap between its intended seven-year and 600,000-enrollee mandate and its five billion-Naira budget ceiling. However, as of late 2009, the Project had not exhausted its budget ceiling because enrollment has stayed well below the 600,000-enrollee goal; approximately 152,000 Nigerians were enrolled in Phase One as of September 2009, according to NHIS capitation payment data.

NHIS payment records and forecasts predict that 1 billion Naira will have been disbursed to HMOs and providers by the end of 2009. This is probably a conservative estimate because it assumes that enrollment fell during the last three months of 2009. Adding this figure to the 750 million Naira of disbursements for NHIS administration of the Project, nearly 2 billion Naira will have been disbursed by year’s end. At this rate, Phase One will have reached its budget ceiling after slightly more than four years of operation—in early 2013. If enrollment gains momentum during the coming months and years, Phase One probably will deplete its currently allocated operational funds before 2012.

Phase Two of the Project has less funding—4 billion Naira—to cover the same number of people. Because Phase Two implementation is just beginning, it is not clear whether any of the funds have yet been allocated toward NHIS administration. Furthermore, the funding for this phase must be re-approved each year. Assuming that re-approval occurs indefinitely, the following generalizations can be made:

- Enrollment in Phase Two may happen at a faster pace than in Phase One because more LGAs per state are allowed to participate;
- The first year of Phase Two expenditures may surpass 1 billion Naira so that Phase Two is almost certain to exhaust its funding before 2014, and possibly as early as 2012, if enrollment proceeds at a faster pace; and
- Funding is likely to last longer than one year because enrollment targets are difficult to achieve quickly.



Given these findings, it is clear that the GON should anticipate a shift from funding associated with HIPC debt relief to using other government monies to finance this Project. State and local governments may need to shoulder a growing share of Project costs to maintain and strengthen maternal and child healthcare services.

### **What Would Nationwide Maternal and Child Health Coverage Cost?**

When we consider that Nigeria has 36 states and that Phases One and Two aim to cover 100,000 women and children per state at any given time, we may conclude that the current Project could cover 3.6 million Nigerians when it has implemented six phases. It is useful at this point to put into perspective the annual cost of such a nationwide project and how close it would come to universal coverage for pregnant women and children under five.

Assuming that a total fertility rate (TFR) of 5.2 children per woman in 2009 would gradually fall to 4.6 by 2015, we estimate that the number of pregnant women in Nigeria at any one point in time will reach 4.2 million during this time period. Even though the TFR is projected to fall during this period, the number of pregnant women probably will not drop very much because the lower TFR will be more than offset by the rising number of women of childbearing age. Using the same TFR assumptions, the United Nations projects the total population under age five to be 25.3 million in 2009 and 27.5 million by 2015. If the current capitation rate of 622 Naira per person per month were applied to all pregnant women and children in Nigeria, annual Project costs would reach 237 billion Naira (roughly US\$1.6 billion) by 2015.

The cost of targeting 100,000 pregnant women and children per state is approximately 11 percent of the cost of covering the entire population of pregnant women and children under age five. At current capitation rates, it would cost roughly 27 billion Naira (US\$179 million) annually to cover the 3.6 million women and children who could be included in nationwide replication of the Project's first two phases. This does not include NHIS administration, which in Phase One cost at least 10 percent of total costs—a percentage that presumably would fall as the Project attains efficiencies of scale.

### **The Potential Impact of Matching State Funds**

The GON has implemented the NHIS/MDG pilot Project with the hope of eventually leveraging state and other funding to expand it. Although leveraging state funding is an urgent priority, Nigerian states traditionally buy into federal programs only after they can see that the federal programs are functional—a condition that often takes years to achieve. The Project design therefore encourages state participation but does not yet require state funding. However, the potential for state involvement exists. The Niger State government, for example, originally offered to contribute 1.7 billion Naira for Phase One of the Project, but state officials blame the difficult economic environment for the state's failure to deliver on this promise, according to one NHIS official.

The above data show that the pilot phases of the Project can cover only a fraction of Nigeria's population of pregnant women and children under age five. The Project's "required" matching state contribution of 50 percent of federally disbursed funding would expand the number of enrollees by roughly 50 percent or could be used to expand the length of the existing Project. Furthermore, buy-in from the states could facilitate the Project's integration into the states' network of primary healthcare providers, given that all participating facilities to date are state owned and providers' salaries are paid primarily by states.

### **Benefits Analysis**

Phase One of the Project already has produced significant benefits to its target population and the communities in which they live. Estimating these benefits in monetary terms can be useful in determining the cost-effectiveness of the roughly 2 billion Naira disbursed during the first 15 months of the Project.

Phase One provided services to roughly 69,000 pregnant women and 175,000 children between its inception in October 2008 and the drafting of this report in December 2009. One can quantify the life-saving effects of the Project's services on these people after considering the following relationships between service provision and life expectancy.

Because enrollees are generally from the poorest communities in the poorest states in Nigeria, it can be assumed that enrollees' chances of survival without these services would have been on par with the average mortality rates in poor-performing states. The following assumptions were used to calculate what mortality rates would have been without the Project's intervention:

- 1,500 women's deaths per 100,000 live births. This is based on a 2007 report (Tide Online, 2007) and 2005 WHO data (WHO et al., 2007) which estimates maternal mortality rates for the poorest Nigerian states.
- 200.7 children's deaths per 1,000 children during the first 5 years of life. This is above the current national average, which is 157 (2008 NDHS) and is equal to the national average that Nigeria experienced in 2003 (2003 NHDS).

Based on these mortality rates, the Health Policy Initiative estimates that approximately 590 female and 3,500 child enrollees would have died without Project services. Furthermore, some 12,000 women would have suffered serious pregnancy-related complications and health problems.

Assuming that the Project helped enrollees to experience lower mortality rates<sup>1</sup>, roughly 470 women's lives and 1,070 children's lives may have been saved during the first 15 months of Phase One. These calculations make the following assumptions about the extent to which the Project improved mortality rates:

- For the purposes of the calculations, it was assumed that women enrolled in the Project experienced mortality rates roughly equal to the prevailing rate in most southern Nigerian states, which is 300 deaths per 100,000 live births (Ogun State Ministry of Health, 2005) (HERFON, 2006)<sup>2</sup>, and is below the current national average MMR of 545 (2008 NDHS).
- It was also assumed that children under age 5 enrolled in the Project experienced a mortality rate equal to the national average Nigeria experienced in 1999, which is 140 deaths per 1,000 live births (Statcompiler Website), and is below the current national average under 5 mortality rate of 157 (2008 NDHS). (It would be useful to study data on the mortality rates actually experienced by Project enrollees to determine whether these assumptions are accurate.)

Using international standard estimates of the value of lives saved (Nordhaus, 2002) discounted to the present, the Project has produced US\$18.8 million in women's benefits and US\$66.7 million in children's benefits—a total of US\$85.5 million in enrollee life-saving benefits—with a US\$13.3 million investment. This estimated 640 percent return on investment is conservative because it has not taken into account the benefits of averted morbidity, which also are significant. (For every maternal death, 20 other women suffer serious and often permanent pregnancy-related complications and health problems [UNFPA, 2008].) These benefits and costs are summarized in Table 4, along with the projected benefits of completing Phases One and Two of the Project.

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<sup>1</sup> The assumption that the Project helped enrollees to experience lower mortality rates needs to be confirmed by further research. It is a reasonable assumption based on the Health Policy Initiative's firsthand observations of facilities and based on interviews with Project administrators.

<sup>2</sup> Ogun State recorded a maternal mortality ratio (MMR) of 178 maternal deaths per 100,000 live births in 2004 and 173 maternal deaths per 100,000 live births in 2005 (Ogun State Ministry of Health, 2005).

**Table 4: Benefit-cost analysis of the Project (US\$)**

	Project Scope	
	First 15 Months of Phase One	Implementation of Phases One and Two (Exhausting Current Funding by March 2012)
Women's Lives Saved	470	1050
Present Value of Women's Lives	\$18.8 million	\$42 million
Children's Lives Saved	1,070	10,000
Present Value of Children's Lives Saved	\$66.7 million	\$624 million
Total Lives Saved	1,540	11,050
Present Value of Total Lives Saved	\$85.5 million	\$666 million
Cost of Project	\$13.3 million	\$60 million
Benefit-Cost Ratio	6.4	11

Sources: Health Policy Initiative calculations were based on NHIS data, maternal and child mortality data, and Nordhaus's (2002) estimate of the dollar value of a life saved.

Extending the Project to all Nigerian states would produce similar returns on investment. It would be difficult to imagine a national program that could offer equally impressive benefits relative to modest costs.

### **III. POLICY RECOMMENDATIONS AND FINDINGS**

The Health Policy Initiative, at the request of the GON's NHIS, presents the following policy ideas for consideration.

#### **Study the Quality and Comparative Benefit of the Project's Services**

Although it is clear that the Project is having a positive effect on pregnant women, children, and facilities, it would be helpful to perform a comparative analysis of whether the Project is having a greater positive impact than would other interventions.

- Systematically measuring the quality of services provided by the Project would be the first step in this analytic process.
- Mortality data on Project enrollees would provide one measure of the Project's actual effectiveness and could be compared with other interventions' effects on women and child mortality.
- Comparative analysis with other countries' experiences in addressing maternal and child health challenges would be useful in formulating Nigeria's strategies to combat the same issues.

#### **Increase the Financial Sustainability of the Project**

The Project can contribute to the MDG targets of the GON, and the benefits many times outweigh the costs. The Project already is saving lives and is improving the functioning of under-utilized public facilities.

More detailed analysis in coming months of actual achievements in providing healthcare services to pregnant women and children under age five would help to assure MDG authorities in the Office of the Presidency and NHIS management that the proposed programs are yielding the projected and presumed feasible results.

The cost and sustainability analyses demonstrate that, in its current form and at current funding levels, the Project will require additional funds well before 2015 and, if applied nationally, will reach a maximum of 11 percent of the targeted population. The GON must leverage more funding and discover additional funding sources if it wishes to expand the reach and duration of the Project. Next steps toward accomplishing this objective include the following:

- Ascertain whether MDG funds can be expanded to cover all 36 states or supplemented with money allocated to the NHIS in the new Health Bill, or whether the federal government can effectively induce state and local governments to co-finance and strengthen maternal and child health programs; and
- Adjust the Project capitation rates, procedures, and design to enhance efficiency as explained in the suggestions below.

#### **Improve Efficiency by Adjusting Project Design**

These design suggestions can contribute to achieving greater Project impact, improving financial sustainability, and promoting more effective cooperation with HMOs, providers, state and local governments, and potential private providers.

1. Include family planning (FP) consultations and services in the service package.
  - a. Other countries, such as Peru, have integrated FP counseling and services into their national health insurance schemes. These actions contribute significantly to lowering maternal and child mortality rates, as documented in Annex A of this report.
  - b. A certain percentage of women who have given birth will desire to postpone their next pregnancy (spacing) or stop having children (limiting). If the Project requires providers to facilitate access to FP services and commodities at this crucial period in a mother's life, Project effectiveness in reducing child and maternal mortality is likely to increase significantly. FP counseling or service provision would give many women the resources and information they need to avoid closely spaced pregnancies, which are associated with increased probability of complications and death for both mother and child. Mothers choosing to delay or avoid their next pregnancy would contribute significantly to the lowering of overall maternal and child mortality because their reduced exposure to pregnancy would lower or eliminate their chances of dying from pregnancy-related complications.
2. Further support HMOs in their efforts to achieve enrollment goals and service delivery.
  - a. The NHIS should pay in advance for any advertising campaigns that HMOs wish to organize to facilitate enrollment, especially during the first year. Because HMOs do not receive capitation disbursements until after enrollment has occurred, they can find it quite difficult to fund enrollment campaigns. The Dutch government has successfully implemented such a policy to help the Hygeia HMO quickly enroll thousands of Nigerians in Kwara and Lagos States under the Community Health Plan.<sup>3</sup>
  - b. The Project should count enrollment only after a provider has verified that the enrollee has actually had the first checkup. This can help to ensure that HMOs and providers have incentives to enroll those people to use the services and further, that providers and HMOs are not collecting capitation payments for enrollees who have not received instructions on how to get to the facility or information on services offered.
  - c. HMOs currently have little incentive to verify that services actually are delivered. If fee-for-service disbursements to HMOs could be tied to actual secondary service delivery, HMOs would have more appropriate incentives to approve referrals and ensure delivery of secondary services.
3. Differentiate capitation rates between women and children.
  - a. It is clear from the costing data that, from a provider's perspective, providing services to children under age five is cheaper, on average, than providing services to pregnant women.
  - b. Currently, the same capitation rate is paid for enrolled women and children, despite that costs for these groups are significantly different (see Section II of this report for the estimated cost differentials). This may create an incentive for providers to register more children than women. Some facilities have registered far more children than women, presumably in part because child enrollment is easier and more profitable. Children can remain registered for up to four full years, while pregnant women are registered for a maximum of nine months, creating further incentives for HMOs and providers to focus on registering children. Designing a capitation rate that is higher for pregnant women and lower for children would help to create more balanced incentives to register both groups and would help facilities recover actual costs incurred when serving each group. Further study would be required to determine more precisely what capitation rates would cover actual costs for each group.

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<sup>3</sup> Health Policy Initiative interviews with Hygeia managers in Lagos and Kwara States, October 2009.

- c. Separating accounts for women's and children's enrollment also would help to improve administration of the fee-for-service portion of disbursements. As explained in Section I, the NHIS currently pays HMOs a flat 36 Naira per person per month to cover secondary care for women and calls this payment "fee for service," yet often this payment also is disbursed for children and is not always linked to verification of secondary services provision. For example, one HMO that has collected these fee-for-service payments for the past year reports no cases of referral to secondary care. Fee-for-service disbursements should become conditional on use of services, so that HMOs and secondary care providers will face the appropriate incentives to deliver secondary services to pregnant women, to reduce maternal mortality and morbidity.
4. Lower provider capitation rates to public facilities after one or two years of participation.
    - a. Setting capitation rates is a complex process that involves estimating provider costs, HMO costs, profit incentives, public subsidies, and cost differences among geographic areas. Also, costing data may only partially inform the decision on how to structure capitation payments, in conjunction with economic and political priorities.
    - b. Costing data shows that public facilities do not require 550 Naira per person per month to cover the marginal costs of delivering Project services, primarily because state and local governments charge no rent and already have covered most salaries.
    - c. For example, lowering the capitation payments after one or two years would allow public facilities to benefit from an initial influx of funding to cover much needed facility improvements, and then allow more enrollees to benefit from the Project.
    - d. Lowering the capitation rates after one or two years also could create appropriate pressures on state and local governments to continue funding facilities' salaries and budgets. An over-reliance by facilities on new funding for their operations could create a perverse incentive for states and LGAs to cut pre-existing funding.
  5. Provide performance-based incentives to states.
    - a. Currently, Project funding is allocated evenly between participating states, so there is no sense of healthy competition among states for the funding. For example, as of September 2009, Bayelsa State had enrolled only 10 percent of the number of women and children that Niger State had enrolled, but instead of rewarding Niger State for producing faster results, the Project simply will allow Niger State to exhaust its funding faster. Bayelsa State, on the other hand, might not spend its 750-million Naira allocation before 2015. Project administrators should not leave states such as Niger State underfunded so that other states can protect their funding allocations. Instead, all money should be pooled among states that share the same Phase and allocated to whichever states spend it first. It would be useful to study how to create performance-based incentives to convince states to participate as soon as possible.
    - b. Once all 36 Nigerian states have had the opportunity to join the Project, this concept should be expanded to all states. However, it would be difficult to pool Phase One and Phase Two funding because currently they are authorized by different legislation and began at different times.
  6. Facilitate greater public-private partnership in the Project.
    - a. According to NHIS officials, Oyo State is the only state that allows private providers to participate, yet even Oyo State has not had any such participation to date.
    - b. The experience of the Dutch-funded Community Health Plan in Kwara State proves that, even in rural areas, private entrepreneurs are willing to open or expand their primary health facilities when given a fair opportunity to participate. The Health Policy Initiative observed

that the Community Health Plan's commitment to public-private partnerships even led to the creation of a hybrid public-private facility in Shonga, Kwara State, that covers salaries by mixing state, LGA, and privately funded employees and helps to operate a public facility.

- c. When encouraging private providers to take part in the Project, it will be critical to structure the payments and rules in a way that allows them to recover the full cost of their operations. Private providers' cost structures will be different than those of public providers. Unless private providers are allowed to negotiate state-subsidized rents, salaries, tax breaks, or other forms of support, they may not be capable of participating alongside publicly subsidized facilities.

## ANNEX A. THE IMPACT OF FAMILY PLANNING ON MATERNAL MORTALITY

It is widely recognized that FP contributes to reducing maternal mortality by reducing the number of births and thus the number of times a woman is exposed to the risk of mortality. A study conducted by the Futures Institute and Futures Group International (Stover and Ross, 2009) examined evidence that FP also lowers the risk per birth, the maternal mortality ratio (MMR), by preventing high-risk, high-parity births. This study found that more than 1 million maternal deaths world wide were averted between 1990 and 2005 because the fertility rate in developing countries declined. Furthermore, by reducing demographically high-risk births, especially high-parity births, use of family planning reduced the MMR and thus averted additional maternal deaths indirectly, as illustrated in Table A1. If the MMR had remained constant over this 15-year period, there would have been 370,000 more maternal deaths (8.87 million minus 8.50 million). Thus, the combined effect of changes in both TFR and MMR was 1.5 million fewer maternal deaths between 1990 and 2005 (10.04 minus 8.50).

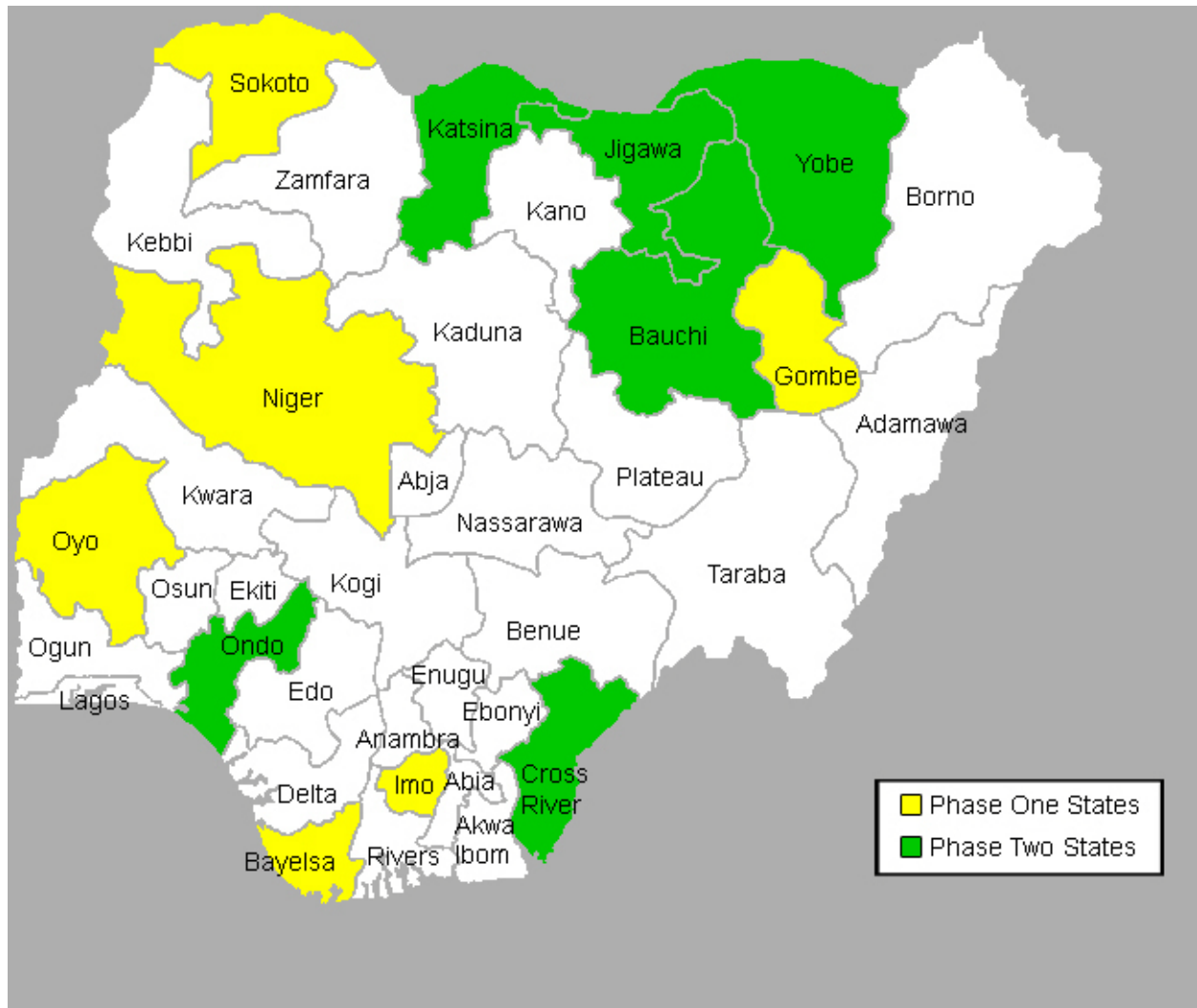
**Table A1. Estimated number of maternal deaths (in millions) in low- and middle-income countries under alternative scenarios**

	Period			
	1990–1995	1995–2000	2000–2005	1990–2005
Actual	2.91	2.83	2.76	8.50
Constant TFR	3.04	3.26	3.43	9.73
Constant MMR	2.93	2.91	2.91	8.87
Both TFR and MMR Constant	3.07	3.36	3.61	10.04

Source: Calculations by Stover and Ross, 2009.



## ANNEX B. NHIS/MDG MATERNAL AND CHILD HEALTH PROJECT, PARTICIPATING STATES



## REFERENCES

Due to the sensitive nature of the paper's subject matter, interview references have been intentionally omitted. Most of the HMOs, healthcare providers, government officials, and in-country experts have shared their data and knowledge on the condition that they remain unattributed. The major sources interviewed are listed in the Acknowledgments section of this report. Other references are listed below.

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