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## Policy Simulation of Educational Assistance Programs for Girls in Nigeria

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## ABBREVIATIONS AND ACRONYMS

|        |  |
|--------|--|
| BE     | Basic Education  |
| BIA    | Benefit Incidence Analysis   |
| CBA    | Cost Benefit Analysis  |
| CSEA   | Centre for the Study of Economies of Africa                            |
| DFID   | UK Department for International Development                            |
| EFA    | Education for All  |
| FCT    | Federal Capital Territory  |
| FE     | Free Education   |
| FME    | Federal Ministry of Education  |
| GDN    | Global Development Network   |
| GEP    | Girls Education Project  |
| ID     | Identification Number  |
| IDA    | International Development Association                                  |
| MDGs   | Millennium Development Goals   |
| NBS    | National Bureau of Statistics  |
| NLSS   | Nigerian Living Standard Survey  |
| PARP   | Policy Analysis and Research Project                                   |
| SIPEA  | Strengthening Institution to Improve Public Expenditure Accountability |
| SUBEB  | State Universal Basic Education Board                                  |
| UBE    | Universal Basic Education  |
| UBEC   | Universal Basic Education Commission                                   |
| UNDP   | United Nations Development Programme                                   |
| UNESCO | United Nations Educational, Scientific and Cultural Organization       |
| UNICEF | United Nations Children Fund   |
| USAID  | United States Agency for International Development                     |

## ABSTRACT

In spite of the efforts made by the government to increase access to affordable education, access to basic education and enrolment of the girl child remains poor. While this problem is very profound in developing countries, its present form in Nigeria requires even more urgent attention. It is against this backdrop that this study conducts a policy simulation exercise on two educational assistance programmes for girls: free tuition for all with stipends for girls (Policy A) and free tuition for all with transport for girls (Policy B) to boost female primary school enrolment. The study estimates the relative cost and the effectiveness measure such as life-time earnings. It compares the cost per beneficiary and the cost-benefit ratios of the policy alternatives. The cost per beneficiary shows that Policy B has a lower cost and a lower level of enrolment, while Policy A has a higher cost and a higher level of enrolment. Overall, the results of the cost-benefit analysis show that both policies are beneficial, although Policy A has a lower cost-benefit ratio.

Two funding scenarios (paying for the policy) as well as distribution scenarios (equity) were also analysed. The equity dimension of the exercise is to ensure that the policies are pro-poor and able to distribute the benefits in an equitable manner. The sensitivity analysis performed to determine the stability of these findings shows that the results are robust to parameter changes and assumptions. In sum, since both programs can be implemented (as shown by their low cost-benefit ratios), we recommend that Policy B be introduced in the urban centres where there is a likelihood or a high level of pedestrian risk, insecurity, and high rate of motor accidents that may discourage parents from sending their children (especially girls) to school. In rural areas where there is higher incidence of poverty, which often forces parents to engage their female children in economic activities, Policy B should be implemented. Finally, in semi-urban areas with less pedestrian risk and moderate poverty incidence, both policies can be implemented as complements, depending on resource availability.

## 1. INTRODUCTION AND BACKGROUND

In spite of the importance of education, female access to basic education and enrolment remain a major challenge in many developing countries, especially in Sub-Saharan Africa (SSA). According to UNICEF Nigeria (2007), the global figure for out-of-school children is estimated at 121 million, of which 65 million (53.7%) are girls. Over 80 per cent of these girls live in SSA. In Nigeria, the 2005 National School Census revealed a net average enrolment ratio of 83.71% (male, 87.01% and female, 81.39%), suggesting that a substantial proportion of Nigerian children (16%, or 5 million Nigerian children) of primary school age (6-11 years), mostly female, is not enrolled in primary schools nationwide.<sup>1</sup> Furthermore, available studies show that female drop-out and low enrolment are linked to early marriage, teenage pregnancy, and cultural and religious beliefs. Many Nigerian parents, especially in large families with limited resources, enrol male children in school while girls are often sent to work in the market or hawk wares on the streets. With this prevailing trend, providing a lasting or permanent solution that will encourage female education should be of paramount interest to Nigerian policy makers. In effect, Goal 3 of the MDGs (Promote Gender Equality and Empower Women) sets a target to eliminate gender disparity in primary and secondary education, and in particular, to achieve gender parity in primary education by 2015. In order to meet this target, the Nigerian government has adopted several strategic initiatives and programs with support from international organizations, including UNICEF, DFID, USAID and UNESCO. It has also committed itself to achieving universal basic education and gender equality in access to basic education in Nigeria (Vision 20:2020). In sum, Nigeria is committed to MDGs, the acceleration of girls' education and Education for All (EFA), which promotes basic learning needs for all children, with emphasis on girls. According to the EFA plan of action, Nigeria aims to increase the enrolment of children with disability into primary school by 50% to achieve a transition rate from primary to junior secondary school of 90%, and an 80% reduction in the percentage of working children of school-going age. According to this plan, by 2015, children, especially girls, will be able to complete a full course of primary education.

Several policies aimed at addressing some of these issues have been implemented in the past. However, most of these problems could not be resolved due primarily due to inappropriate policies and poor implementation. Policy simulation can lead to a better understanding of how policy design and implementation can help solve most of these problems by aiding public decision-making in pursuit of a more efficient and equitable educational system (Lamarra and Centeno, 2002). This study seeks to conduct a simulation exercise on two policy alternatives that the federal government can adopt in order to increase enrolment of girls in primary schools and, by extension, eliminate gender disparity. In this case, policy simulation will attempt to provide answers to the following questions:

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<sup>1</sup> Though, this may look encouraging but there are large geographical and gender disparities between the regions of Nigeria, Girls' NER in some states in the South are as high as 70% while some in the north are as low as 24% and this is partly due to underlying socio-cultural factors, United Nation Girls Education Initiatives (UNGEI) Nigeria, 2008.

- What specific policy alternatives has the government considered (or can consider)?
- What are the costs of these interventions to the government?
- What is the incremental benefit of these policy alternatives to the beneficiaries and society at large?
- What portion of the incremental benefits is directed to the poor—are the policy alternatives pro-poor or pro-rich, and how can the government achieve equity?
- Which of the policy alternatives is more cost efficient and effective in achieving the given objective?
- Considering future benefits and impacts, which of these policy alternatives is more beneficial and sustainable?
- How can the government pay for these programs?

The remainder of this report is structured as follows: Section 2 summarizes the key studies in policy simulation literature. Section 3 looks at the policy goal and alternatives proposed in the study. Section 4 presents sources of data and methodology, including description of the identified costs and benefits of policy alternatives, equity distribution and payment of alternatives. Section 5 discusses the findings of the policy simulation analysis. Section 6 concludes the analysis, while Sections 7 and 8 present policy recommendations and challenges, respectively. Finally, Section 9 presents plans for dissemination of the findings.

## **2. LITERATURE REVIEW**

Studies on policy simulation have advanced significantly and the exercise is fast becoming popular in many developing countries. This analysis has been carried out on education programs with several developmental goals, including increasing primary or secondary school enrolment, reducing the rate of repetition, and increasing school attendance, completion and transition rate.

A number of programs aimed at improving female enrolment and participation in schools have been implemented in some developing countries. For example, Bhatnagar *et al.* (2002) examined the impact of the Female Secondary School Assistance Project (FSSAP) jointly implemented by the World Bank and the government of Bangladesh in 1993. The major component of the FSSAP was the monthly stipend and tuition that covered 30 to 40% of the direct cost of schooling girl students from Grade 6 to Grade 10. An extensive campaign initiated to raise public awareness of the importance of female education and the potential social and financial benefits ensured that the project increased the female enrolment rate from 442,000 in 1994 to over 1 million in 2001. Similarly, IDA (2009) analysed the impact of the Punjab Education Sector Reform, jointly initiated and financed by the international Development Association and the government of Pakistan in 2003. The major components of the program include supply-side interventions such as upgrading schools and filling teacher vacancies, as well as demand-side measures such as providing stipends for girls. In parallel, a number of reforms in teachers' recruitment and professional development, textbook production and the examination system were implemented. The report revealed that the project effectively



increased primary school enrolment. In particular, net enrolment in primary schools in Punjab increased from 54.5 to 62% by 2007. Female primary enrolment during the same period increased from 43 to 59%, and for rural females, from 38 to 55%.

Bissell and Schiefelbein (2004) analysed several economic and education incentives programs aimed at attracting children to school. Among these is PROSAF Rural Transports Systems Program, implemented in Cote d'Ivoire. Prior to the introduction of the program, isolation and lack of transportation constituted a major setback for children in rural areas who had to walk about 14 kilometres each day to school. As this was a disincentive for parents to send their children to school, they preferred keeping them in the farm fields. This remained a problem until 1998 when the World Bank funded a pilot PROSAF project to help improve the rural transport system for females. The project involved the provision of "Small Moto" or motor bikes to convey children to school (and back) and to complete other daily tasks such as the fetching and distribution of water, and gathering of firewood. The Motos were also used by village chiefs to take census of births in order to plan for school enrolment from year to year. The study further revealed that the implementation of the program resulted in a dramatic increase in school attendance, especially among female pupils, as they were no longer needed for domestic and economic activities during school hours.

In 2011, UNDP examined recent efforts and policies of the Fiji government through the ministry of education to achieve MDG 2 by 2015. Before this, primary schools in Fiji were faced with problems of school dropouts, poor attendance and low enrolment as students had to cover long distances to school. But recently the government launched a free transport program, providing buses, boats and carriers to transport students to and from their schools. This free bus initiative is seen as a special provision for students who come from low income families. Available evidence suggests that this policy has resulted in increased school attendance and enrolment, and reduced the number of school dropouts. Given the effectiveness of this policy, Fiji anticipates achieving the MDG Goal 2, in particular, and its target to ensure that, by 2015, boys and girls alike will be able to complete primary education. The present study will draw on some of the studies discussed in this section.

### **3. POLICY GOAL AND ALTERNATIVES**

The goal of this study is to provide a possible path to achieving the targets set by MDG Goal 3 which aims to achieve parity in primary education by 2015, as well as the Nigerian Vision 20:2020 that seeks to achieve the target of gender equality in access to basic education. In conducting this policy simulation exercise, we set a goal to achieve at least 96% enrolment of girls in primary school in Nigeria (that is, enrol at least 90% of those girls not in school) over the next 8 years.

At various times the federal and state governments have adopted the policy of free education (FE) for all, especially at the primary school level. The FE program ensures that parents pay little or no tuition fees for their wards, but are expected to cater for their uniforms, textbooks, food,

transportation and other related items. Despite the FE program, there is a high dropout rate and low enrolment, especially among the female pupils. The reason for these persistent problems could be partly due to high level of poverty in Nigeria which prevents the parents from discharging their responsibilities. Following this insight, this study proposes two policy alternatives which can complement the existing FE program:

- **Free primary education for all pupils with stipend for girls (hereafter Policy A)**
- **Free primary education for all pupils with transportation for girls (hereafter Policy B)**

Policy A entails payment of a stipend of up to 60% of the cost of direct primary schooling to cover for at least four key items: school uniforms, textbooks, school bags and sandals for female students. On the other hand, Policy B entails provision of transport vouchers of a specific face value to enable female pupils to travel to and back from school. In order to ensure the effectiveness of this program, especially in the rural areas, the government can also think of implementing this through an arrangement with commercial bus drivers, motorcyclists, etc., who could take the female pupils to school and back. This will especially benefit those who have to trek long distances and those who are discouraged from going to school due to transportation costs. The program administrators will then pay the drivers for their services on the basis arranged by the two.

However, for either program to be successful, serious commitment is required on the part of parents and school administrators, and it is assumed that the government will get the requisite support from them. Parents are expected to encourage and allow their female children to be punctual, attend school regularly, and ensure that they are not engaged in any economic activities during school hours. The program will be designed in such a way that schools are duly registered for this program and have the responsibility to help create public awareness and encourage girl-child enrolment. The schools will also assign a unique ID number to each beneficiary student and maintain a register to record their names, accept and distribute transport vouchers or stipends to female students, maintain a high level of transparency and accountability, and provide proper guidance and counselling to female students. The choice of these two policy alternatives is motivated by their effectiveness and success in other countries (see the literature review section for details). This study considers these program alternatives as effective tools for achieving the stated policy objective, and both interventions are expected to be coordinated by competent committees or government staff—including the teachers who will provide administrative support. Both programs offer incentives to parents, with the aim of reducing the burden of direct cost of education and enrolment. The idea is that this will encourage parents to keep their girls in school. There are several other interesting economic or education policy alternatives that this policy simulation exercise has not considered. These include: improved teacher training, support for school administrators, interactive learning modules, partial income substitution in cash or kind, food subsidies, school feeding and scholarships among others.<sup>2</sup> Although there is no previous literature or findings suggesting that these policies alternatives have been ineffective in achieving the desired goals, we believe that

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<sup>2</sup> For a compressive list of education policy alternatives, see, for example, Bissell and Schiefelbein (2002).

the chosen policies are adequate to address the present problems in the system. They can nonetheless be examined by future studies.

## **4. METHODOLOGY**

This section summarizes the step-by-step plan for completing the policy simulations, dealing with issues such as sources and methods of data collection, the underlying simulation assumptions, measurement of effectiveness, benefits and costs of the alternatives, measurement of equity in the alternatives, paying for the alternatives, as well as sensitivity analysis.

### **4.1 Data sources**

The major source of data for this analysis is the National Bureau of Statistics (NBS). Other sources include World Development Indicators, Federal Ministry of Education, Universal Basic Education Commission, and the Nigeria Social Indicators. The NBS data are from the Annual Abstract of Statistics (2009) and Social Statistics (2009). In a few cases, some data, including average growth/changes, were derived through computations.

### **4.2 Assumptions**

This report makes the following assumptions:

- Provisions for classrooms are a capital project that is provided by a separate institution Universal Basic Education Commission (UBEC) under a different funding arrangement. Hence, this study assumes that additional classrooms required to cater to increased enrolment will be made available by the institution whose mandate it is to create more classrooms and other infrastructure.
- Zero inflation rate.
- Population growth rate of 3%, female primary school age population as a percentage of total population (9.02%), and growth in female national enrolment in primary school (1.97%) remain constant.
- Average wage of teachers and administrative staff are to remain constant.
- Male enrolment is constant.
- Constant Gross Domestic Product (GDP) growth.
- Sustained increase in girls enrolment in the upper quintiles.
- Average cost of existing free tuition fee program of NGN 3662.70 to remain constant.
- Average cost of uniforms, school bags, sandals, textbooks and transport fare remain constant.
- Average incremental income of first school-leaving certificate holder is constant with a maximum of 35 years in active service.

### 4.3 Analysis Approach

This analysis first derives the relative effectiveness of the policy alternatives, and then calculates the relative benefits based on the underlying relative effectiveness measure. More so, the detailed cost of relative programs is estimated by considering all the necessary cost components. Relying on the costs and benefits estimates, a cost-benefit ratio (CBR) is calculated for both policies to determine which is more efficient and beneficial. Additionally, a sensitivity analysis is conducted to highlight the impact of changes in the relative effectiveness measure on the results. Equity considerations in the distribution of benefits are then examined by grouping the beneficiaries into five quintiles, and ensuring that the poor are adequately taken care of, with little or no tradeoff from the rich (i.e., ensuring the analysis is pro-poor). Finally, the study analyses how the alternative policies can be paid for. Two scenarios of reallocation with additional cost are: reallocate with additional 15% and reallocate with additional 60% for both policy alternatives. The details of this approach are presented below.

#### 4.3.1 Relative Effectiveness

As stated earlier, Policies A and B are programs meant to boost female enrolment in primary school. Both policies have been previously implemented in a few developing countries as World Bank assisted programs, for example, the *Bangladesh female student stipend* (FSS) program and *Cote d'Ivoire PROSAF Rural Transport Systems* program to encourage female enrolment. There is evidence of the positive effect of both programs from the results of the impact evaluation reported in the literature. For example, Bhatnagar *et al.* (2002) reported that the Bangladesh FSS program increased female enrolment rate by more than 100%, from 442,000 in 1994 to over 1,000,000 in 2001 (i.e., 8 years) when it came to an end. For Policy A, the present simulation will rely on the estimate of effectiveness measure from Bhatnagar *et al.* Based on that, it is reasonable to assume that Policy A will achieve the stated target of 96% (additional 35%) female enrolment by 2020 (8 years). For Policy B, this study has not found a specific estimate for the effectiveness measure in previous literature. However, we assume that Policy B is almost as effective as Policy A (at least capable of achieving about 80% of what Policy A can achieve); therefore, Policy B will achieve a target of 89.1% (additional 28.0%) female enrolment by 2020 (8 years). At least in one instance Policy A covers or provides more educational incentives (direct cost of schooling) than Policy B. To ensure that these measures are well suited for the present situation, specific assumptions and adjustments will be made where necessary, and adequate sensitivity analysis conducted in order to determine the robustness of the results.

#### 4.3.2 Relative Benefits

The expected benefits of each policy intervention will be estimated based on the underlying relative effectiveness measure (that is, increased enrolment of girls) and the primary school completion rate. The study estimates the incremental life-time earnings of the female pupils who will complete primary school in the next 8 years. This will be considered alongside the

existing primary school completion rate. It is important to note that estimations of the benefits will be based on the assumptions presented in section 4.2.

### **4.3.3 Relative Costs**

The total cost of Policy A will be determined by estimating the total value of the stipend, the cost of program monitoring and evaluation (M&E), cost of maintaining additional teachers and school administrative cost. Similarly, the cost of Policy B will entail the estimation of the total value of the transport voucher, school administrative cost, cost of M&E, as well as the cost of additional teachers required. However, the overall cost for each policy will vary with the number of females enrolled over the life-time of the policies. More specifically, the analysis will rely on the information presented in Table 1A of the Appendix.

### **4.3.4 Cost-Benefit Analysis**

The estimated costs and benefits are projected over 8 years (the life-span of the intervention) for both policy alternatives. Thereafter, the values are discounted to the present values using a discount rate of 3%. The Net Present Value (NPV) and the Cost-Benefit Ratio (CBR) are then employed to evaluate the relative usefulness (attractiveness) of the policies.

### **4.3.5 Sensitivity Analysis**

This study will conduct a one-way and multi-way sensitivity analysis on the parameters of the effectiveness measure, some cost components and potential benefits. For example, a sensitivity analysis will be conducted to see how effective the less preferred policy would have to be in order to encourage female school enrolment and so become the preferred policy. The overall objective is to ensure that the assumptions guiding the analysis are sound and valid.

### **4.3.6 Measurement of Equity**

The 2004 NLSS report shows that the majority of pupils in public primary schools are from poor homes, while those from rich households attend private schools (both primary and secondary). Given these facts, the policy alternatives will be implemented in public primary schools. To further address the equity component of the analysis, the pupils will be grouped into quintiles (five at most), from the most poor to the richest. Afterwards, resources are re-allocated in such a way that more beneficiaries and increased enrolment come from the poor- income families. This study will rely on the 2004 NLSS and Benefit Incidence Analysis report prepared by CSEA to derive female enrolment for various quintiles.

#### **4.2.7 Paying for the Alternative**

Finally, to pay for the alternatives, this study considers two possible scenarios for each policy. The first is to reallocate and slightly raise the existing budget by 15%, and also make it pro-poor by reducing the eligibility of the rich. The second is to reallocate and raise the exiting budget by 60% (some growth for all quintiles but more for the poor). The choice of these two payment scenarios is greatly determined by the number of targeted beneficiaries and the cost of policy alternatives. Further, the percentage increment in female enrolment will be paid for on a sequenced basis. For both scenarios, data on existing budget allocation to primary education, total government spending and Nigeria's GDP are utilized.

### **5. RESULTS AND DISCUSSION**

This section presents the costs of the policy alternatives, estimated benefits, benefit-cost ratio, results of the proposed payment scenarios, and finally, the distribution of benefits across the different income groups. The results of the simulation show that Policy A will achieve 90% additional enrolment of out-of-school females. In addition, it will lead to gross female primary school enrolment of around 96% by the end of 2020 (8 years). Similarly, Policy B will achieve around 72% additional enrolment of girls who are out of school, and gross female primary school enrolment of 89% by the end of 2020. Therefore, the difference of 7% in gross enrolment is a reflection of relative effectiveness of the policy alternatives (see details in Tables 1 and 2). However, this does not necessarily imply that Policy A is better than Policy B. In this case, the associated benefits and costs must be considered.

**Table 1: Effectiveness (Additional Female Enrolment) and Estimated Cost of Policy A**

|   | 2013               | 2014                | 2015               | 2016               | 2017               | 2018               | 2019               | 2020               |
|---|--------------------|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>A. Projection of female primary school age (5-11) population</b>   | 15,578,748         | 16,046,110          | 16,527,493         | 17,023,318         | 17,534,018         | 18,060,038         | 18,601,839         | 19,159,895         |
| <b>B. Projection of primary (female) school enrolments</b>  | 10,216,913         | 10,418,186          | 10,623,424         | 10,832,706         | 11,046,110         | 11,263,718         | 11,485,614         | 11,711,880         |
| Gross enrolment ratio   | 65.6%              | 64.9%               | 64.3%              | 63.6%              | 63.0%              | 62.4%              | 61.7%              | 61.1%              |
| <b>Projected primary school age (female) not enrolled in school</b>   | 5,361,835          | 5,627,924           | 5,904,069          | 6,190,613          | 6,487,908          | 6,796,320          | 7,116,226          | 7,448,014          |
| Policy simulation objectives (enrol 90% of the female not in school in the next 8years)                           | <b>10%</b>         | <b>30%</b>          | <b>50%</b>         | <b>65%</b>         | <b>75%</b>         | <b>80%</b>         | <b>85%</b>         | <b>90%</b>         |
| <b>Policy alternatives (effectiveness)</b>  |                    |                     |                    |                    |                    |                    |                    |                    |
| <b><i>I. FREE TUITION FEE FOR ALL PUPILS + STIPEND FOR GIRLS</i></b>  | <b>10%</b>         | <b>30%</b>          | <b>50%</b>         | <b>65%</b>         | <b>75%</b>         | <b>80%</b>         | <b>85%</b>         | <b>90%</b>         |
| Projected increment in female enrolment (Policy A)  | 536,183            | 1,688,377           | 2,952,035          | 4,023,898          | 4,865,931          | 5,437,056          | 6,048,792          | 6,703,213          |
| <b>Total primary (female) school enrolment based on Policy A</b>  | <b>10,753,096</b>  | <b>12,106,563</b>   | <b>13,575,459</b>  | <b>14,856,604</b>  | <b>15,912,041</b>  | <b>16,700,774</b>  | <b>17,534,406</b>  | <b>18,415,093</b>  |
| <b>Gross enrolment ratio</b>  | 69.0%              | 75.4%               | 82.1%              | 87.3%              | 90.7%              | 92.5%              | 94.3%              | 96.1%              |
| <b>C. Teaching and other staff</b>  |                    |                     |                    |                    |                    |                    |                    |                    |
| Number of teachers  | 810,571            | 848,668             | 888,555            | 930,317            | 974,042            | 1,019,822          | 1,067,754          | 1,117,938          |
| Pupil/teacher ratio   | 1:40               | 1:40                | 1:40               | 1:40               | 1:40               | 1:40               | 1:40               | 1:40               |
| <b>Needs in new teachers</b>  |                    |                     |                    |                    |                    |                    |                    |                    |
| Number of teachers  | 13,405             | 42,209              | 73,801             | 100,597            | 121,648            | 135,926            | 151,220            | 167,580            |
| <b>Needs in non-teaching staff to coordinate program</b>  |                    |                     |                    |                    |                    |                    |                    |                    |
| Number of admin (one admin per school)  | 72,029             | 74,046              | 76,119             | 78,251             | 80,442             | 82,694             | 85,010             | 87,390             |
| <b>Needs in program M&amp;E administrator</b>   |                    |                     |                    |                    |                    |                    |                    |                    |
| Number of M&E administrators (one per local govt.)  | 774                | 774                 | 774                | 774                | 774                | 774                | 774                | 774                |
| <b>D. Tuition fee and stipend for girls</b>   |                    |                     |                    |                    |                    |                    |                    |                    |
| Number of anticipated beneficiary of stipend  | 10,753,096         | 12,106,563          | 13,575,459         | 14,856,604         | 15,912,041         | 16,700,774         | 17,534,406         | 18,415,093         |
| Waived fee (incremental) beneficiaries  | 536,183            | 1,688,377           | 2,952,035          | 4,023,898          | 4,865,931          | 5,437,056          | 6,048,792          | 6,703,213          |
| <b>COST FROM SIMULATION</b>   | <b>NGN'million</b> | <b>NGN' million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> |
| Teacher wages (newly employed) (NCE holder @ NGN240,000 per teacher/annum)  | 3,217.1            | 10,130.3            | 17,712.2           | 24,143.4           | 29,195.6           | 32,622.3           | 36,292.8           | 40,219.3           |
| Administrative staff costs (minimum of ND holder @ NGN 180,000 per annum)   | 12,965.3           | 13,328.3            | 13,701.5           | 14,085.1           | 14,479.5           | 14,885.0           | 15,301.7           | 15,730.2           |
| M&E administrative cost ( minimum of B.Sc Holder @ NGN360,000 per annum)  | 278.6              | 278.6               | 278.6              | 278.6              | 278.6              | 278.6              | 278.6              | 278.6              |
| Stipend (60% of direct primary school cost to cover; uniform, textbooks, bags and sandals @NGN4207.64 Per pupils) | 45,245.2           | 50,940.0            | 57,120.6           | 62,511.2           | 66,952.1           | 70,270.8           | 73,778.5           | 77,484.1           |
| <b>Annual (incremental) total cost</b>  | <b>61,706.2</b>    | <b>74,677.3</b>     | <b>88,813.0</b>    | <b>101,018.4</b>   | <b>110,905.9</b>   | <b>118,056.8</b>   | <b>125,651.6</b>   | <b>133,712.1</b>   |
| Annual tuition fee @ NGN 3,662.70 per pupil   | 39,385.4           | 44,342.7            | 49,722.8           | 54,415.3           | 58,281.0           | 61,169.9           | 64,223.3           | 67,449.0           |
| <b>Annual total cost post-complementary policy</b>  | <b>101,091.5</b>   | <b>119,019.10</b>   | <b>138,535.8</b>   | <b>155,433.7</b>   | <b>169,186.9</b>   | <b>179,226.7</b>   | <b>189,874.8</b>   | <b>201,161.1</b>   |
| <b>Unit cost of program A (NGN)</b>   | <b>5,738</b>       | <b>6,168</b>        | <b>6,542</b>       | <b>6,800</b>       | <b>6,970</b>       | <b>7,069</b>       | <b>7,166</b>       | <b>7,261</b>       |

**Table 2: Effectiveness (Additional Female Enrolment) and Estimated Cost of Policy B**

| YEAR  | 2013               | 2014               | 2015               | 2016               | 2017               | 2018               | 2019               | 2020               |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>A. Projection of primary (female) school age (5-11) population</b>                     | <b>15,578,748</b>  | <b>16,046,110</b>  | <b>16,527,493</b>  | <b>17,023,318</b>  | <b>17,534,018</b>  | <b>18,060,038</b>  | <b>18,601,839</b>  | <b>19,159,895</b>  |
| <b>B. Projection of primary (female) school enrolments</b>                                | <b>10,216,913</b>  | <b>10,418,186</b>  | <b>10,623,424</b>  | <b>10,832,706</b>  | <b>11,046,110</b>  | <b>11,263,718</b>  | <b>11,485,614</b>  | <b>11,711,880</b>  |
| Gross enrolment ratio   | 65.6%              | 64.9%              | 64.3%              | 63.6%              | 63.0%              | 62.4%              | 61.7%              | 61.1%              |
| <b>Projected primary school age (female) not enrolled in school</b>                       | <b>5,361,835</b>   | <b>5,627,924</b>   | <b>5,904,069</b>   | <b>6,190,613</b>   | <b>6,487,908</b>   | <b>6,796,320</b>   | <b>7,116,226</b>   | <b>7,448,014</b>   |
| Policy simulation objectives (enrol 90% of the females not in school in the next 8 years) | <b>10%</b>         | <b>30%</b>         | <b>50%</b>         | <b>65%</b>         | <b>75%</b>         | <b>80%</b>         | <b>85%</b>         | <b>90%</b>         |
| <b>Policy alternatives (effectiveness)</b>  |                    |                    |                    |                    |                    |                    |                    |                    |
| <b>II. FREE TUITION FEE FOR ALL PUPILS + TRANSPORT FOR GIRLS</b>                          | <b>8%</b>          | <b>24%</b>         | <b>40%</b>         | <b>52%</b>         | <b>60%</b>         | <b>64%</b>         | <b>68%</b>         | <b>72%</b>         |
| Projected increment in female enrolment (Policy B)  | 428,947            | 1,350,702          | 2,361,628          | 3,219,119          | 3,892,745          | 4,349,645          | 4,839,034          | 5,362,570          |
| <b>Total Primary (female) school enrolment based on Policy B</b>                          | <b>10,645,860</b>  | <b>11,768,888</b>  | <b>12,985,052</b>  | <b>14,051,824</b>  | <b>14,938,855</b>  | <b>15,613,363</b>  | <b>16,324,647</b>  | <b>17,074,451</b>  |
| <b>Gross enrolment ratio</b>  | <b>68.3%</b>       | <b>73.3%</b>       | <b>78.6%</b>       | <b>82.5%</b>       | <b>85.2%</b>       | <b>86.5%</b>       | <b>87.8%</b>       | <b>89.1%</b>       |
| <b>C. Teaching and other staff</b>  | <b>810,571</b>     | <b>848,668</b>     | <b>888,555</b>     | <b>930,317</b>     | <b>974,042</b>     | <b>1,019,822</b>   | <b>1,067,754</b>   | <b>1,117,938</b>   |
| Number of teachers  |                    |                    |                    |                    |                    |                    |                    |                    |
| Pupil/teacher ratio   | 1:40               | 1:40               | 1:40               | 1:40               | 1:40               | 1:40               | 1:40               | 1:40               |
| <b>Needs in new teachers</b>  |                    |                    |                    |                    |                    |                    |                    |                    |
| Number of teachers  | 10,724             | 33,768             | 59,041             | 80,478             | 97,319             | 108,741            | 120,976            | 134,064            |
| <b>Needs in non-teaching staff to coordinate program</b>                                  |                    |                    |                    |                    |                    |                    |                    |                    |
| Number of admin (one admin per school)  | 72,029             | 74,046             | 76,119             | 78,251             | 80,442             | 82,694             | 85,010             | 87,390             |
| <b>Needs in program M&amp;E administrator</b>   |                    |                    |                    |                    |                    |                    |                    |                    |
| Number of M&E administrators (one per Local Govt.)  | 774                | 774                | 774                | 774                | 774                | 774                | 774                | 774                |
| <b>D. Tuition fee and stipend for girls</b>   |                    |                    |                    |                    |                    |                    |                    |                    |
| Number of anticipated beneficiary of stipend  | 10,645,860         | 11,768,888         | 12,985,052         | 14,051,824         | 14,938,855         | 15,613,363         | 16,324,647         | 17,074,451         |
| Waived fee (incremental) beneficiaries  | 428,947            | 1,350,702          | 2,361,628          | 3,219,119          | 3,892,745          | 4,349,645          | 4,839,034          | 5,362,570          |
| <b>COST FROM SIMULATION</b>   | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> | <b>NGN'million</b> |
| Teacher wages (newly employed) (NCE holder @ NGN240,000 per teacher/annum)                | 2,573.7            | 8,104.2            | 14,169.8           | 19,314.7           | 23,356.5           | 26,097.9           | 29,034.2           | 32,175.4           |
| Administrative staff costs (minimum of ND holder @ NGN 180,000 per annum)                 | 12,965.3           | 13,328.3           | 13,701.5           | 14,085.1           | 14,479.5           | 14,884.9           | 15,301.7           | 15,730.2           |
| M&E administrative cost ( minimum of B.Sc Holder @ NGN360,000 per annum)                  | 278.6              | 278.6              | 278.6              | 278.6              | 278.6              | 278.6              | 278.6              | 278.6              |
| Free bus fare (transport voucher @ NGN3,500.00 per pupil)                                 | 37,260.5           | 41,191.1           | 45,447.7           | 49,181.4           | 52,285.0           | 54,646.8           | 57,136.3           | 59,760.6           |
| <b>Annual (incremental) total cost</b>  | <b>53,078.1</b>    | <b>62,902.3</b>    | <b>73,597.6</b>    | <b>82,859.9</b>    | <b>90,400.6</b>    | <b>95,908.2</b>    | <b>101,750.8</b>   | <b>107,944.8</b>   |
| Annual tuition fee @ NGN 3,662.70 per pupil   | 38,992.6           | 43,105.9           | 47,560.3           | 51,467.6           | 54,716.5           | 57,187.1           | 59,792.3           | 62,538.6           |
| <b>Annual total cost post-complementary policy</b>  | <b>92,070.7</b>    | <b>106,008.2</b>   | <b>121,157.9</b>   | <b>134,327.5</b>   | <b>145,117.2</b>   | <b>153,095.3</b>   | <b>161,543.1</b>   | <b>170,483.4</b>   |
| <b>Unit cost of program B (NGN)</b>   | <b>4,985.80</b>    | <b>5,344.79</b>    | <b>5,667.87</b>    | <b>5,896.73</b>    | <b>6,051.38</b>    | <b>6,142.70</b>    | <b>6,232.96</b>    | <b>6,322.01</b>    |



Before the introduction of these policies, the average teacher-pupil ratio in Nigeria is estimated to have been 1:40. To maintain this ratio and also ensure that the standard of education is not lowered with increased female enrolment, additional teachers and administrative staff will be employed.

An additional 13,405 teachers will be needed in 2013 under Policy A, and this number will increase to 167,580 by 2020. While ensuring proper implementation of the program, additional administrative staff and M&E team will be needed. Based on an estimated average of one additional administrative staff per school, about 72,029 staff will be employed by 2013 while this number will be increased to 87,390 by 2020. Similarly, with an average of one M&E administrator per local government, only 774 staff will be needed over the intervening period (see Table 1 for details). In contrast, only 134,064 additional teachers will be employed by the end of 2020 under Policy B. Like Policy A, Policy B will require the same number of additional administrative staff and M&E administrator by the end of 2020 (see Table 2 for details).

With average annual income of NGN240, 000 million per teacher, the additional teachers required for Policy A creates additional cost of NGN3, 217.1 million by 2013, and this value will increase to NGN40, 219.3 million by 2020. Policy A will further result in additional administrative cost of NGN180, 000 million per annum per staff, while M&E will cost NGN300, 000 million per annum per staff. However, the major cost component of Policy A is the stipend for female pupils. This will cover 60% of direct primary school cost, i.e., uniforms, bags, sandals and textbooks, and it is estimated at NGN4, 207.64 per pupil per annum. In total, the incremental cost of Policy A will be NGN61, 706.2 million by 2013, and will increase to NGN133, 712.1 million by 2020. For Policy B, the administrative and M&E staff costs will be the same as in Policy A, while the cost of additional teachers will be NGN2,573.7 million by 2013. This will further increase to NGN32,175.4 million by 2020. Free bus travel (transport voucher) per female pupil is estimated at NGN3, 500 per annum. Again, the incremental cost of Policy B will be NGN53, 078.1 million by 2013, increasing to NGN107, 944.8 million by 2020. Therefore, excluding the existing free tuition fee program of NGN3, 662.70 per pupil, the additional unit cost to be incurred by 2013 as a result of the new policy alternatives will amount to NGN5, 738 per pupil, and NGN4, 986 per pupil for Policy A and B, respectively. This cost will further increase to NGN7, 261 per pupil and NGN6, 322 per pupil for Policy A and Policy B, respectively, by 2020, and as enrolment of females increases. Overall, Policy B has the least cost, though with a lower enrolment rate.

By the end of 2020, it is projected that additional female enrolment of 32,255,485 for Policy A or 25,804,388 for Policy B will be achieved. With the prevailing primary school completion rate of 13%, it is estimated that an additional 4,193,213 female pupils (with Policy A) or 3,354,570 (with Policy B) will complete primary school education by the end of 2020. Based on this, the incremental earnings of the female primary school-leaving certificate holder measuring the relative benefit are estimated. With an average of NGN101, 000 additional earnings per annum, and the maximum 35 years of service, the total life-time incremental earnings (benefits) for the beneficiaries will amount to NGN14, 823.0 billion and NGN11, 858.2 billion for Policy A and B, respectively. Clearly, it shows that Policy A, which has higher female enrolment, has more benefits (see details in Table 3).

### Cost-Benefit Ratio

The cost-benefit ratios show that Policy A is more sustainable and beneficial than Policy B. Tables 4 and 5 present the total benefits, the cost of each policy alternative, the net present value (NPV), as well as the cost-benefit ratio for Policy A and Policy B, respectively. The associated costs of the policy alternatives and the life-time incremental earnings (benefits) are discounted at 3%.

**Table 3: Relative Benefit of Policy A and B**

|          |                                   | 2013    | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      | 2020      | Total      |
|----------|-----------------------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| Policy A | New enrolment                     | 536,183 | 1,688,377 | 2,952,035 | 4,023,898 | 4,865,931 | 5,437,056 | 6,048,792 | 6,703,213 | 32,255,485 |
|          | Completion                        | 69,704  | 219,489   | 383,764   | 523,107   | 632,571   | 706,817   | 786,343   | 871,418   | 4,193,213  |
|          | Life-time earnings (NGN' billion) | 246.4   | 775.9     | 1,356.6   | 1,849.2   | 2,236.1   | 2,498.6   | 2,779.7   | 3,080.5   | 14,823.0   |
|          |                                   |         |           |           |           |           |           |           |           |            |
| Policy B | New enrolment                     | 428,947 | 1,350,702 | 2,361,628 | 3,219,119 | 3,892,745 | 4,349,645 | 4,839,034 | 5,362,570 | 25,804,388 |
|          | Completion                        | 55,763  | 175,591   | 307,012   | 418,485   | 506,057   | 565,454   | 629,074   | 697,134   | 3,354,570  |
|          | Life-time earnings (NGN' billion) | 197.1   | 620.7     | 1,085.3   | 1,479.3   | 1,788.9   | 1,998.9   | 2,223.8   | 2,464.4   | 11,858.5   |
|          |                                   |         |           |           |           |           |           |           |           |            |

**Table 4: Cost-Benefit Ratio of Policy A**

| Year         | (Total benefits)<br>Lifetime earnings<br>@NGN101,000/<br>annum (NGN'<br>billion) | Total cost of<br>program and<br>other primary<br>education<br>cost incurred<br>(NGN' billion) | Discount<br>factor<br>@3% | Discounted<br>total benefits<br>(NGN' billion) | Discounted<br>total cost<br>(NGN' billion) | Net present<br>value (NGN'<br>billion) |
|--------------|--|---|---------------------------|--|--|--|
| 2013         | 246.4  | 110.7   | 1.00                      | 246.4  | 110.7                                      | 135.7                                  |
| 2014         | 775.9  | 149.4   | 0.97                      | 753.3  | 145.1                                      | 608.2                                  |
| 2015         | 1,356.6  | 191.7   | 0.94                      | 1,278.7  | 180.7                                      | 1,098.0                                |
| 2016         | 1,849.2  | 227.9   | 0.92                      | 1,692.3  | 208.6                                      | 1,483.7                                |
| 2017         | 2,236.1  | 256.8   | 0.89                      | 1,986.8  | 228.2                                      | 1,758.6                                |
| 2018         | 2,498.6  | 277.1   | 0.86                      | 2,155.3  | 239.1                                      | 1,916.3                                |
| 2019         | 2,779.7  | 298.8   | 0.84                      | 2,3287.0                                       | 250.2                                      | 2,077.7                                |
| 2020         | 3,080.5  | 321.8   | 0.81                      | 2,504.7  | 261.7                                      | 2,243.0                                |
| <b>Total</b> | <b>14,823.0</b>  | <b>1,834.4</b>  |                           | <b>12,945.5</b>                                | <b>1,624.3</b>                             | <b>11,321.2</b>                        |
|              |  |   |                           |  | <b>Benefit-Cost Ratio</b>                  | <b>7.97</b>                            |
|              |  |   |                           |  | <b>Cost-Benefit Ratio</b>                  | <b>0.125</b>                           |

The results presented in Table 4 show that by the end of 2020, the life-time incremental earnings of female primary-school leaving certificate holders (incremental benefits based on the maximum 35 years of service allowed) will amount to NGN12, 954.5 billion. The NPV of Policy A, which is about NGN11321.2 billion, is derived by subtracting the total discounted projected cost from the discounted total benefits. The results show that Policy A has a cost-benefit ratio of 0.125.

**Table 5: Cost-Benefit Ratio of Policy B**

| Year         | (Total benefits)<br>Lifetime earnings<br>@NGN101,000<br>/annum (NGN'<br>billion) | Total cost of<br>program and other<br>primary education<br>cost incurred (NGN'<br>billion) | Discount<br>factor<br>@3% | Discounted<br>total benefits<br>(NGN' billion) | Discounted<br>total cost<br>(NGN' Billion) | Net present<br>value (NGN'<br>billion) |
|--------------|--|--|---------------------------|--|--|--|
| 2013         | 197.1  | 99.8   | 1.00                      | 197.1  | 99.8                                       | 97.3                                   |
| 2014         | 620.7  | 130.3  | 0.97                      | 602.6  | 126.5                                      | 476.1                                  |
| 2015         | 1,085.3  | 163.7  | 0.94                      | 1,023.0  | 154.3                                      | 868.7                                  |
| 2016         | 1,479.3  | 192.3  | 0.92                      | 1,353.8  | 176.0                                      | 1,177.8                                |
| 2017         | 1,788.9  | 215.2  | 0.89                      | 1,589.4  | 191.2                                      | 1,398.2                                |
| 2018         | 1,998.9  | 231.4  | 0.86                      | 1,724.3  | 199.6                                      | 1,524.6                                |
| 2019         | 2,223.8  | 248.7  | 0.84                      | 1,862.4  | 208.3                                      | 1,654.1                                |
| 2020         | 2,464.4  | 267.1  | 0.81                      | 2,003.8  | 217.1                                      | 1,786.6                                |
| <b>Total</b> | <b>11,858.5</b>  | <b>1,548.5</b>   |                           | <b>10,356.4</b>                                | <b>1,372.9</b>                             | <b>8,983.5</b>                         |
|              |  |  |                           | <b>Benefit-Cost Ratio</b>                      |  | <b>7.54</b>                            |
|              |  |  |                           | <b>Cost-Benefit Ratio</b>                      |  | <b>0.133</b>                           |

The results presented in Table 5 show that the total life-time incremental earnings of female primary-school leaving certificate holders is NGN11, 858.5 billion. On the other hand, the total present cost of Policy B is NGN1, 548.5 billion. Discounting these values at 3%, we get a figure of NGN10, 356.4 billion and NGN1, 372.9 billion for benefits and costs, respectively. The NPV is NGN8, 983.5 billion, while the cost-benefit ratio is 0.133. Overall, Policy A and Policy B are both beneficial, with high monetary returns and positive benefit-cost ratios that are greater than unity. However, it is worth noting that Policy A costs more than Policy B because it covers more educational attractions (direct cost) or assistance that increases female enrolment. Nevertheless, combining both costs and benefits, we find that Policy A has a higher benefit-cost ratio and is preferable to Policy B.

### Sensitivity Analysis

This sub-section presents the results of the sensitivity analysis. The analysis focuses on the adjustment of the effectiveness measure and some cost components, and indicates how effective or cheap Policy B would have to be to encourage greater female enrolment and become more preferable than Policy A. This exercise entails re-estimating the cost-benefit ratio and the total NPV of both policies by either increasing or reducing the values of the parameters. The results are presented in Table 6. The analysis is conducted for the following changes:

1. Sensitivity of Policy B to an increase in the effectiveness value and/or sensitivity of Policy A to a decrease in the effectiveness value.
2. Sensitivity of Policy B to decrease in transport fare cost and/or sensitivity of Policy A to increase in stipend.

3. Sensitivity of Policy B to an increase in the effectiveness value and a decrease in transport fare, or sensitivity of Policy A to a decrease in effectiveness value and an increase in stipend.

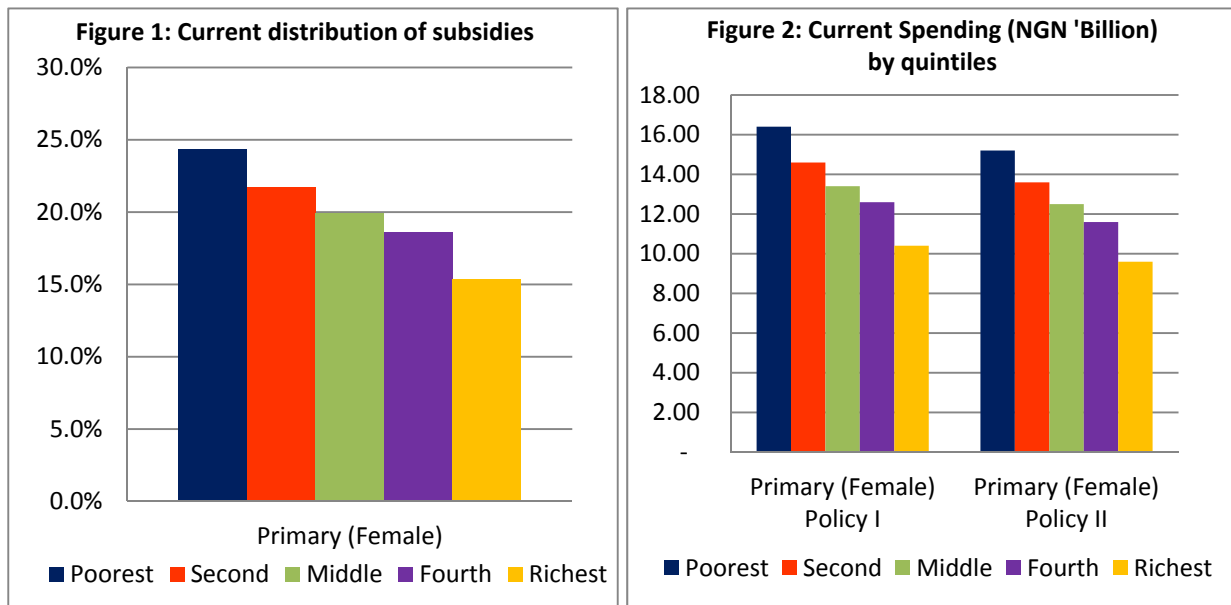
**Table 6: One-way and Multi-way Sensitivity Analysis: 1, 2 & 3**

|                                | Policy A   |                 |                 | Policy B   |                 |                  |
|--------------------------------|--|-----------------|-----------------|--|-----------------|------------------|
|                                | Sensitivity on effectiveness   |                 |                 |  |                 |                  |
| One way                        | Decrease in effectiveness  |                 |                 | Increase in effectiveness  |                 |                  |
|                                | Base case  | 10%             | 20%             | Base case  | 10%             | 20%              |
|                                | NGN' billion   | NGN' billion    | NGN' billion    | NGN' billion   | NGN' billion    | NGN' billion     |
| Certificate holders (Female)   | 4,193,213  | 3,773,892       | 3,354,570       | 3,354,570  | 3,773,892       | <b>4,193,213</b> |
| Discounted total benefit       | 12,945.5   | 11,650.9        | 10,356.4        | 10,356.4   | 11,650.9        | 12,945.5         |
| Discounted total cost          | 1,624.3  | 1,534.5         | 1,444.7         | 1,372.9  | 1,460.7         | 1,548.5          |
| <b>Total net present value</b> | <b>11,321.2</b>  | <b>10,116.5</b> | <b>8,911.7</b>  | <b>8,983.5</b>   | <b>10,190.3</b> | <b>11,397.0</b>  |
| <b>Cost- benefits ratio</b>    | <b>0.125</b>   | <b>0.132</b>    | <b>0.139</b>    | <b>0.133</b>   | <b>0.125</b>    | <b>0.120</b>     |
|                                | Sensitivity on the cost components   |                 |                 |  |                 |                  |
| One way                        | Increase in direct cost of schooling (stipend)                               |                 |                 | Decrease in the cost of transport fare (voucher)                   |                 |                  |
|                                | Base case  | 5%              | 10%             | Base case  | 5%              | 10%              |
|                                | NGN' billion   | NGN' billion    | NGN' billion    | NGN' billion   | NGN' billion    | NGN' billion     |
| Cost of stipend/transport fare | 483.9  | 529.4           | 554.7           | 396.9  | 377.1           | 357.2            |
| Discounted total cost          | 1,624.3  | 1,646.7         | 1,669.3         | 1,372.9  | 1,355.1         | 1,337.3          |
| Discounted total benefits      | 12,945.5   | 12,945.5        | 12,945.5        | 10,356.4   | 10,356.4        | 10,356.4         |
| <b>Total net present value</b> | <b>11,321.2</b>  | <b>11,298.7</b> | <b>11,276.1</b> | <b>8,983.5</b>   | <b>9,001.3</b>  | <b>9,019.0</b>   |
| <b>Cost- benefits ratio</b>    | <b>0.125</b>   | <b>0.127</b>    | <b>0.129</b>    | <b>0.133</b>   | <b>0.131</b>    | <b>0.129</b>     |
|                                | Sensitivity on effectiveness and cost components                             |                 |                 |  |                 |                  |
| Multi-way                      | Decrease in effectiveness and increase in direct cost of schooling (stipend) |                 |                 | Increase in effectiveness and decrease in transport fare (voucher) |                 |                  |
|                                | Base case  | (10%) and 5%    | (20%) and 10%   | Base case  | (10%) and 5%    | (20%) and 10%    |
|                                | NGN' billion   | NGN' billion    | NGN' billion    | NGN' billion   | NGN' billion    | NGN' billion     |
| Certificate holders (female)   | 4,193,213  | 3,773,892       | 3,354,570.47    | 3,354,570  | 3,773,892       | 4,193,213        |
| cost of transport fare/stipend | 483.9  | 515.2           | 524.9           | 396.9  | 387.8           | 377.5            |
| Discounted total cost          | 1,624.3  | 1,556.3         | 1,487.3         | 1,372.9  | 1,442.4         | 1,511.0          |
| Discounted total benefits      | 12,945.5   | 11,650.9        | 10,356.4        | 10,356.4   | 11,650.9        | 12,945.5         |
| <b>Total net present value</b> | <b>11,321.2</b>  | <b>10,094.6</b> | <b>8,869.0</b>  | <b>8,983.5</b>   | 10,208.5        | 11,434.5         |
| <b>Cost- benefits ratio</b>    | <b>0.125</b>   | <b>0.134</b>    | <b>0.144</b>    | <b>0.133</b>   | <b>0.124</b>    | <b>0.117</b>     |

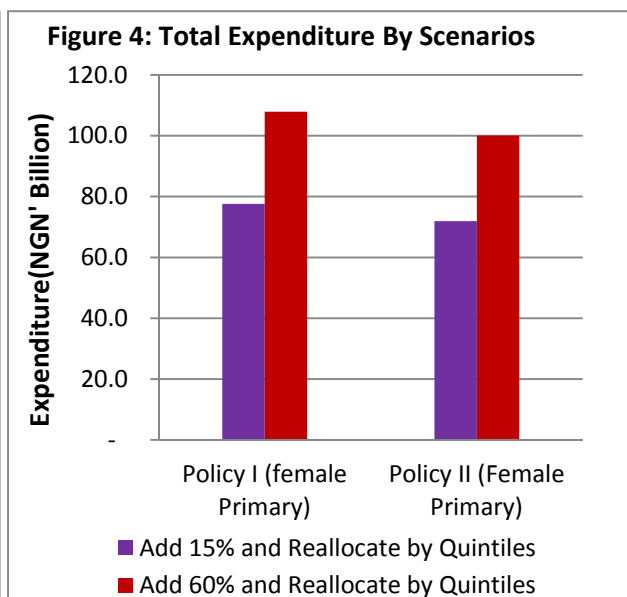
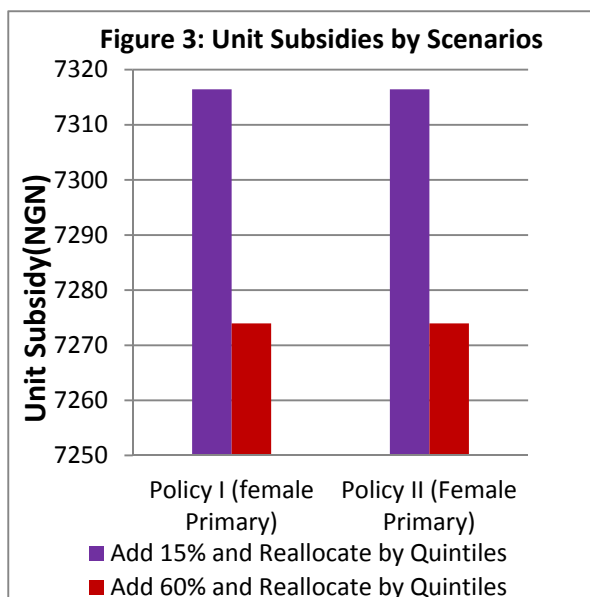
In terms of the changes in the cost components, the results favour the implementation of Policy A. What this means is that Policy A has to deteriorate to such an extent as to make Policy B the preferred choice. In terms of effectiveness, a 10% increase in the effectiveness value of Policy B (i.e., to achieve 90% of what Policy A is able to achieve in terms of enrolment) will give an equal cost-benefit ratio for both policies, while a 20% increase in effectiveness value of Policy B (i.e., to achieve 100% of what Policy A is able to achieve in terms of enrolment) will make Policy B better, with equal female enrolment and lower cost. However, taking changes in cost and effectiveness together favours the implementation of Policy B. This implies that with 10% or 20% increase in effectiveness of Policy B and 5% or 10% decrease in transport cost, Policy B is preferable to Policy A.

## Equity Distribution

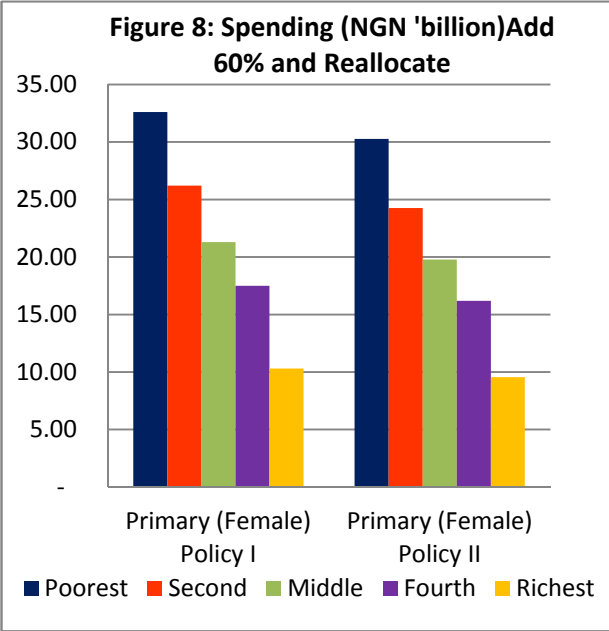
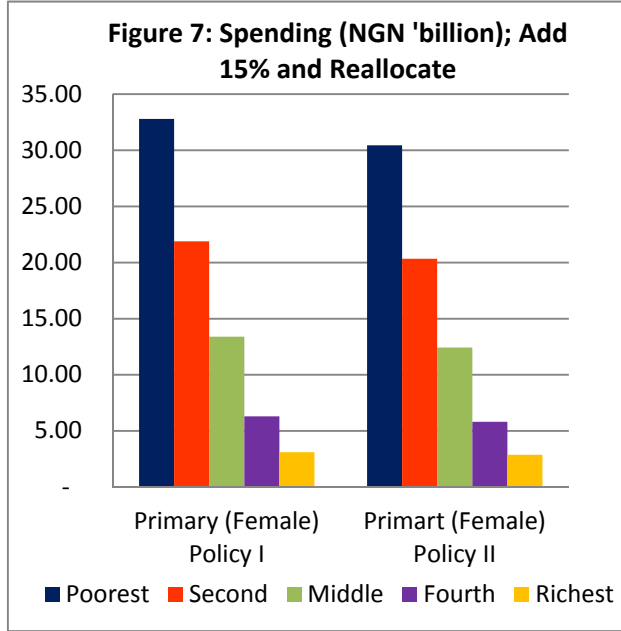
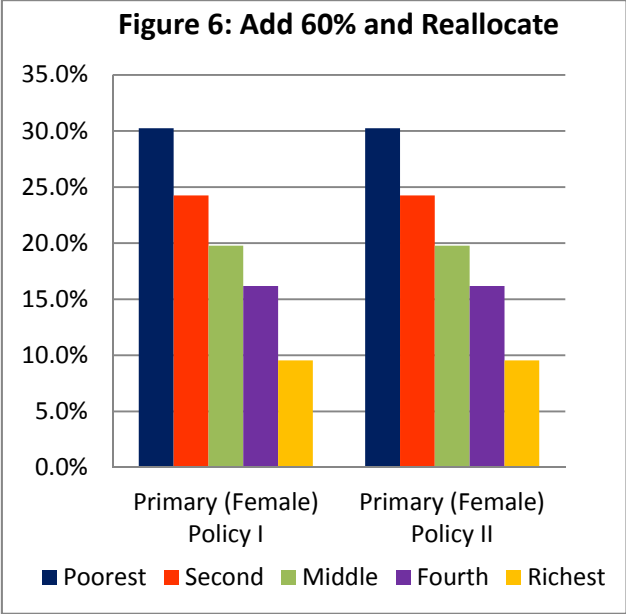
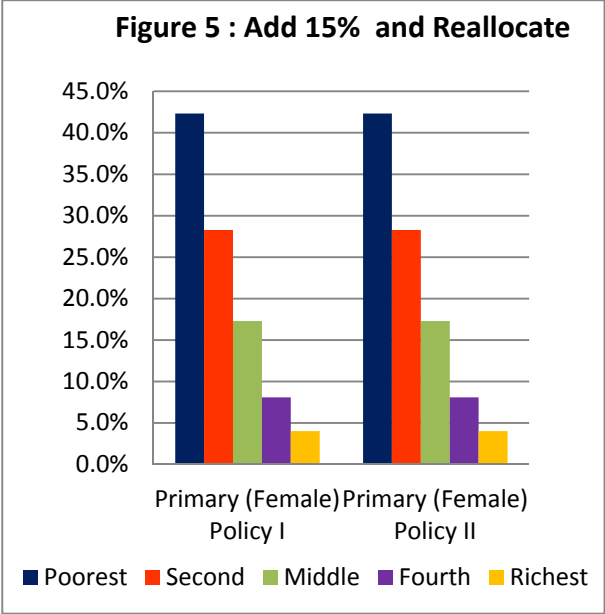
We follow the 2004 NLSS and CSEA’s BIA report (2010) to categorize primary school enrolment in Nigeria based on five income quintiles, from the poorest to the richest. The classification shows that 25.6% of primary school enrolment is from the poorest households, while 14.9% is from the richest households. The middle income group retained 19.9%, while the second richest and poorest households maintained 14.9% and 21.3%, respectively. This allocation reflects the distribution of the existing aggregate subsidy to each quintile. Additional details are presented in Table 1B in the Appendix. With the existing policy (free tuition), the unit subsidy to the beneficiaries is NGN3, 662.70.



Applying the gender primary school index (GPI) to the five income quintiles, this study derived female primary school enrolment for the five income groups as 24.4% (poorest), 21.7% (second poorest), 19.9% (middle income), 18.6% (second richest) and 15.4% (richest). The results are shown in Figures 1 and 2, and in Table 1B in the Appendix. In this case, of the 18,415,093 and 17,074,451 total female enrolments to be achieved by 2020 with Policy A and B, respectively, 4,487,618 (with Policy A) and 4,160,914 (with Policy B) will come from the poorest households (see Table 1C in the Appendix for details).



As stated earlier, this study proposes two additional funding scenarios: to add 15% or 60% to existing funds and redistribute the unit subsidy for the beneficiaries, such that it is more pro-poor or encourages more enrolment from the poorest households. To add 15% with redistribution, this study ensures that the poorest households get 100% subsidy, the second poorest get 75%, while the richest get 15%. Unit subsidy for Policies A and B now stand at NGN7, 316.43, million while the new percentage distribution of benefits stand at 42.3% (poorest) and 4% (richest) (see Figures 3 and 5). In the second scenario, which is to add 60% with the redistribution, the study ensures that no group is worse off in the distribution of the total subsidy. For example, the poorest quintile will receive 100% subsidy and the richest quintile will receive 50% subsidy (see details in Table 1D in the Appendix). This then leaves the new unit subsidy for Policies A and B at NGN7, 273.97, million with the new percentage distribution of benefits amounting to 30.2% for the poorest and 9.6% for the richest. These results are given in figures 3 and 6.



Figures 7 and 8 show that for both Policies A and B, the additional funds will increase absolute spending on various groups, except for the richest group where spending slightly decreased in the first scenario (15% new funds). Nonetheless, it is worth noting that both funding scenarios are based on the assumption that with the new unit subsidies, the rich households will still have the financial capacity to enrol their female children to school, such that the overall female enrolment target is achieved by 2020.

Another interesting part of this policy simulation is the analysis of how the cost of each alternative is covered, the results of which are clearly presented in Tables 7 and 8. In the first funding scenario, the reallocated funds will be NGN77, 566.3 million for Policy A and NGN71,



919.4 million for Policy B by 2020. The new funding requirement will be NGN10, 067.3 million for Policy A and NGN9, 380.8 million for Policy B. In the second funding scenario, the reallocated funds will be NGN107, 913.3 million for Policy A and NGN100, 061.7 million for Policy B by 2020. Similarly, the new funding requirement will be NGN40, 413.3 million for Policy A and NGN37, 523.2 million for Policy B. Additionally, this exercise suggests how the government can sequence the payment for the programs, which is meant to reflect the gradual increment in female enrolment. In the first funding scenario, only 6% (Policy A) or 5% (Policy B) of the additional payment is required by 2013, while 15% (Policies A and B) increment will be required by 2020. In the second funding scenario, only 16% (Policy A) or 14% (Policy B) additional payment is required by 2013, while 60% (Policies A and B) increment will be incurred by 2020. Overall, in the first funding scenario, about 111% (Policy A) and 96% (Policy B) increment of what the government spent on education in 2012 would have been spent by 2020, while about 194% (Policy A) and 173% (Policy B) would have been paid for by 2020 in the case of the second scenario (see Tables 7 and 8 for details).

**Table 7: Gradual Payment of Funding Scenario (Add 15% New Fund and Redistribute)**

| 15% Increment                                    | 2012         | 2013         | 2014         | 2015         | 2016         | 2017         | 2018         | 2019         | 2020         |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|  | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million |
| Total expenditure (with existing policy)         | 36,698.5     | 39,385.4     | 44,342.7     | 49,722.8     | 54,415.3     | 58,281.0     | 61,169.9     | 64,223.3     | 67,449.0     |
| Yearly growth in expenditures (existing policy)  |              | 2,686.8      | 4,957.3      | 5,380.1      | 4,692.4      | 3,865.7      | 2,888.9      | 3,053.3      | 3,225.7      |
| Percentage change in expenditure                 |              | 7.3%         | 12.6%        | 12.1%        | 9.4%         | 7.1%         | 5.0%         | 5.0%         | 5.0%         |
| Total percentage change                          | 0.0%         | 7.3%         | 20.8%        | 35.5%        | 48.3%        | 58.8%        | 66.7%        | 75.0%        | 83.8%        |
| Expenditures (with policy A)                     | 36,698.5     | 41,807.0     | 46,915.5     | 52,023.9     | 57,132.4     | 62,240.9     | 67,349.4     | 72,457.8     | 77,566.3     |
| Yearly growth in expenditure                     |              | 5,108.5      | 5,108.5      | 5,108.5      | 5,108.5      | 5,108.5      | 5,108.5      | 5,108.5      | 5,108.5      |
| Percentage change in expenditure                 |              | 14%          | 12%          | 11%          | 10%          | 9%           | 8%           | 8%           | 7%           |
| Total percentage change (with policy A)          | 0%           | 14%          | 28%          | 42%          | 56%          | 70%          | 84%          | 97%          | 111%         |
| <b>Percentage change as a result of policy A</b> | <b>0%</b>    | <b>6%</b>    | <b>6%</b>    | <b>5%</b>    | <b>5%</b>    | <b>7%</b>    | <b>10%</b>   | <b>13%</b>   | <b>15%</b>   |
| Total expenditure (with existing policy)         | 36,698.5     | 38,992.6     | 43,105.9     | 47,560.3     | 51,467.6     | 54,716.5     | 57,187.1     | 59,792.3     | 62,538.6     |
| Yearly growth in expenditures (existing policy)  |              | 2,294.1      | 4,113.3      | 4,454.4      | 3,907.3      | 3,248.9      | 2,470.5      | 2,605.2      | 2,746.3      |
| Percentage change in expenditure                 |              | 6.3%         | 10.5%        | 10.3%        | 8.2%         | 6.3%         | 4.5%         | 4.6%         | 4.6%         |
| Total percentage change                          | 0%           | 6%           | 17%          | 30%          | 40%          | 49%          | 56%          | 63%          | 70%          |
| Expenditure (with policy B)                      | 36,698.5     | 41,101.1     | 45,503.7     | 49,906.3     | 54,309.0     | 58,711.6     | 63,114.2     | 67,516.8     | 71,919.4     |
| Yearly growth in expenditure                     |              | 4,402.6      | 4,402.6      | 4,402.6      | 4,402.6      | 4,402.6      | 4,402.6      | 4,402.6      | 4,402.6      |
| Percentage change in expenditure                 |              | 12%          | 11%          | 10%          | 9%           | 8%           | 7%           | 7%           | 7%           |
| Total percentage change (with policy B)          | 0%           | 12%          | 24%          | 36%          | 48%          | 60%          | 72%          | 84%          | 96%          |
| <b>Percentage change as a result of policy B</b> | <b>0%</b>    | <b>5%</b>    | <b>6%</b>    | <b>5%</b>    | <b>6%</b>    | <b>7%</b>    | <b>10%</b>   | <b>13%</b>   | <b>15%</b>   |
| Nigeria GDP                                      | 37,155,021.9 | 41,613,624.5 | 46,607,259.5 | 52,200,130.6 | 58,464,146.3 | 65,479,843.9 | 73,337,425.1 | 82,137,916.1 | 91,994,466.1 |
| GDP growth rate                                  | 12%          |              |              |              |              |              |              |              |              |
| % GDP to government expenditure                  | 12.6%        |              |              |              |              |              |              |              |              |
| Government spending                              | 4,681,532.8  | 5,252,679.8  | 5,893,506.7  | 6,612,514.5  | 7,419,241.3  | 8,324,388.7  | 9,339,964.1  | 10,479,439.6 | 11,757,931.4 |
| Increase in government spending                  |              | 571,147.0    | 640,826.9    | 719,007.8    | 806,726.8    | 905,147.4    | 1,015,575.4  | 1,139,475.6  | 1,278,491.7  |
| <b>Notes</b>                                     |              |              |              |              |              |              |              |              |              |
| Education in GDP                                 | 1.39%        |              |              |              |              |              |              |              |              |
| Nigeria education spending                       | 516,454.8    |              |              |              |              |              |              |              |              |
| Nigeria GDP 2010                                 | 29,498,000.0 |              |              |              |              |              |              |              |              |

Source : Computed by CSEA.

**Table 8: Gradual Payment of Funding Scenario (Add 60% New Fund and Redistribute)**

| 60% Increment                                    | 2012         | 2013         | 2014         | 2015         | 2016         | 2017         | 2018         | 2019         | 2020         |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|  | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million |
| Total expenditure (with existing policy)         | 36,698.5     | 39,385.4     | 44,342.7     | 49,722.8     | 54,415.3     | 58,281.0     | 61,169.9     | 64,223.3     | 67,449.0     |
| Yearly growth in expenditures (existing policy)  |              | 2,686.8      | 4,957.3      | 5,380.1      | 4,692.4      | 3,865.7      | 2,888.9      | 3,053.3      | 3,225.7      |
| Percentage change in expenditure                 |              | 7.3%         | 12.6%        | 12.1%        | 9.4%         | 7.1%         | 5.0%         | 5.0%         | 5.0%         |
| Total percentage change                          | 0.0%         | 7.3%         | 20.8%        | 35.5%        | 48.3%        | 58.8%        | 66.7%        | 75.0%        | 83.8%        |
| Yearly expenditure (with policy A)               | 36,698.5     | 45,601.0     | 54,503.5     | 63,406.0     | 72,308.4     | 81,210.9     | 90,113.4     | 99,015.7     | 107,918.3    |
| Yearly growth in expenditure                     |              | 8,902.5      | 8,902.5      | 8,902.5      | 8,902.5      | 8,902.5      | 8,902.5      | 8,902.5      | 8,902.5      |
| Percentage change in expenditure                 |              | 24%          | 20%          | 16%          | 14%          | 12%          | 11%          | 10%          | 9%           |
| Total percentage change (with policy A)          | 0%           | 24%          | 49%          | 73%          | 97%          | 121%         | 146%         | 170%         | 194%         |
| <b>Percentage change as a result of policy A</b> | <b>0%</b>    | <b>16%</b>   | <b>23%</b>   | <b>28%</b>   | <b>33%</b>   | <b>39%</b>   | <b>47%</b>   | <b>54%</b>   | <b>60%</b>   |
| Total expenditure (with existing policy)         | 36,698.5     | 38,992.6     | 43,105.9     | 47,560.3     | 51,467.6     | 54,716.5     | 57,187.1     | 59,792.3     | 62,538.6     |
| Yearly growth in expenditures (existing policy)  |              | 2,294.1      | 4,113.3      | 4,454.4      | 3,907.3      | 3,248.9      | 2,470.5      | 2,605.2      | 2,746.3      |
| Percentage change in expenditure                 |              | 6.3%         | 10.5%        | 10.3%        | 8.2%         | 6.3%         | 4.5%         | 4.6%         | 4.6%         |
| Total percentage change                          | 0%           | 6%           | 17%          | 30%          | 40%          | 49%          | 56%          | 63%          | 70%          |
| Expenditures (with policy B)                     | 36,698.5     | 44,618.9     | 52,539.3     | 60,459.7     | 68,380.1     | 76,300.5     | 84,220.9     | 92,141.3     | 100,061.7    |
| Yearly growth in expenditure                     |              | 7,920.4      | 7,920.4      | 7,920.4      | 7,920.4      | 7,920.4      | 7,920.4      | 7,920.4      | 7,920.4      |
| Percentage change in expenditure                 |              | 22%          | 18%          | 15%          | 13%          | 12%          | 10%          | 9%           | 9%           |
| Total percentage change (with policy B)          | 0%           | 22%          | 43%          | 65%          | 86%          | 108%         | 129%         | 151%         | 173%         |
| <b>Percentage change as result of policy B</b>   | <b>0%</b>    | <b>14%</b>   | <b>22%</b>   | <b>27%</b>   | <b>33%</b>   | <b>39%</b>   | <b>47%</b>   | <b>54%</b>   | <b>60%</b>   |
| Nigeria GDP                                      | 37,155,021.9 | 41,613,624.5 | 46,607,259.5 | 52,200,130.6 | 58,464,146.3 | 65,479,843.9 | 73,337,425.1 | 82,137,916.1 | 91,994,466.1 |
| GDP growth rate                                  | 12%          |              |              |              |              |              |              |              |              |
| % GDP to government expenditure                  | 12.6%        |              |              |              |              |              |              |              |              |
| Government spending                              | 4,681,532.8  | 5,252,679.8  | 5,893,506.7  | 6,612,514.5  | 7,419,241.3  | 8,324,388.7  | 9,339,964.1  | 10,479,439.6 | 11,757,931.4 |
| Increase in government spending                  |              | 571,147.0    | 640,826.9    | 719,007.8    | 806,726.8    | 905,147.4    | 1,015,575.4  | 1,139,475.6  | 1,278,491.7  |
| <b>Notes</b>                                     |              |              |              |              |              |              |              |              |              |
| Education in GDP                                 | 1.39%        |              |              |              |              |              |              |              |              |
| Nigeria education spending                       | 516,454.8    |              |              |              |              |              |              |              |              |
| Nigeria GDP 2010                                 | 29,498,000.0 |              |              |              |              |              |              |              |              |

Source: Computed by CSEA.

## 6. CONCLUSION

This study has systematically conducted a simulation exercise for two primary school education policy alternatives. The policy goal is to achieve at least 90% primary school enrolment of girls that are out of school in Nigeria. The results of the cost analysis show that Policy B has a lower cost per pupil and lower enrolment, while Policy A is more beneficial in terms of the number of new enrolments and life-time incremental earnings of the beneficiaries. The small values of the cost-benefit ratios suggest that both policies can be implemented. However, Policy A is more beneficial and efficient since it has a lower cost-benefit ratio.

For each policy alternative, the study analyzed two possible funding scenarios and how each policy can be gradually financed. The study further addressed equity issues in the distribution of benefits across the different income groups. For each payment option considered, subsidies were redistributed in favour of the poor quintile. Overall, the results suggest that Policy A is the best option to achieve the proposed policy target. In addition, the findings provide answers to all the research questions laid out in the earlier part of this report.

## 7. POLICY RECOMMENDATIONS

There are several important policy recommendations emerging from this policy simulation exercise:

- If the government is to achieve the goal of increasing the enrolment of out-of-school girls in primary school, it may need to introduce a complementary policy of free transportation to the existing free tuition. This should necessarily target the urban centres where there is high pedestrian risk, insecurity, and high rate of motor accidents which often discourage parents from sending their children (especially girls) to school.
- The government should also consider the need to introduce a complementary policy of free stipends (for direct education—uniforms, school bags, sandals and textbooks) to the existing free tuition policy in rural areas characterized by a high incidence of poverty. The inability to provide these basic school needs have forced parents to engage their female children in economic activities rather than in school.
- In case of semi-urban areas with less pedestrian risk and moderate poverty incidence, the best option will be for the government to implement both policies as complements. However, this will depend on resource availability.
- Furthermore, if funds are available and predictable, or there are no anticipated national emergencies which may require a large financial commitment, the second funding scenario, which is to add 60% new funds, is recommended since it will substantially increase the number of beneficiaries. Where this is not possible, adding 15% new funds is recommended.
- There is a need to put in place a good monitoring and evaluation system. This will make it easier to assess whether or not the policies are being adequately implemented, and if there are improvements in performance that can be associated with such policies.

## **8. CHALLENGES TO CONDUCTING THIS WORK**

The main challenges faced in conducting this policy simulation exercise are: inadequate access to the required data and lack of effectiveness measure. Data on female population of primary school age, total unit cost of existing intervention and impact of the program were not available; therefore deriving the unit cost of the existing program was a major challenge. However, this study attempted to generate some data through several computations as well as using market estimates. For the relative effectiveness measure, the values were generated from programs discussed in the literature review.

## **9. PLANS FOR DISSEMINATION**

The findings of this policy simulation will be disseminated using various tools, including:

- The media, through press conferences, press releases, policy briefs and newspaper publications. This will help to reach out to potential stakeholders and policy makers.
- Collaboration and sharing research findings with civil society groups, community based organizations, academicians, economists and researchers working on similar projects.
- Interactive communication through seminars, workshops and conferences conducted with various representatives of civil society organizations, non-governmental organizations, policy makers and stakeholders to share results of the findings.
- The CSEA's website on which the final report will be placed to create awareness and inform different audiences of the findings and policy recommendations.

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## APPENDIX

**Table 1A: Benefits and Cost Items of the Two Policy Options**

| Benefits   |   | Cost items                      |                                 |
|--|---|---------------------------------|---------------------------------|
| Policy A   | Policy B  | Policy A                        | Policy B                        |
| Average life-time income of primary 6 female graduates | Average life-time income of primary 6 female graduate | Stipend (voucher) value         | Transportation (voucher) value  |
| Average life-time income of unskilled female worker    | Average life-time income of unskilled female worker   | Program M&E administrative cost | Program M&E administrative cost |
| Additional female primary school enrolment             | Additional female primary school enrolment            | School administrative cost      | School administrative cost      |
| Average primary education completion rate              | Average primary education completion rate.            | Additional teachers cost        | Additional teachers cost        |

**Table 1B: Estimated Primary School enrolment by Quintile (Expenditure)**

| <b>2004</b>   |            |           |           |           |           |            |
|---|------------|-----------|-----------|-----------|-----------|------------|
|   | Poorest    | Second    | Middle    | Fourth    | Richest   | Total      |
|   | 1          | 2         | 3         | 4         | 5         |            |
| <b>Primary</b>  | 4,790,000  | 3,982,000 | 3,711,000 | 3,415,000 | 2,780,000 | 18,678,000 |
| Gender parity index (GPI)   | 0.85       | 0.97      | 0.94      | 0.97      | 1.00      |            |
| Female  | 2,200,811  | 1,960,680 | 1,798,113 | 1,681,497 | 1,390,000 | 9,031,102  |
| Male  | 2,589,189  | 2,021,320 | 1,912,887 | 1,733,503 | 1,390,000 | 9,646,898  |
| <b>Distribution of enrolment (%)</b>  |            |           |           |           |           |            |
|   | Poorest    | Second    | Middle    | Fourth    | Richest   | Total      |
|   | 1          | 2         | 3         | 4         | 5         |            |
| Female  | 24.4%      | 21.7%     | 19.9%     | 18.6%     | 15.4%     | 100.0%     |
| Male  | 26.8%      | 21.0%     | 19.8%     | 18.0%     | 14.4%     | 100.0%     |
| Total   | 25.6%      | 21.3%     | 19.9%     | 18.3%     | 14.9%     | 100.0%     |
| <b>2020</b>   |            |           |           |           |           |            |
| <b>Estimated (projected) female primary school enrolment by quintiles (expenditure)</b> |            |           |           |           |           |            |
| Total (projected) policy A  | 18,415,093 |           |           |           |           |            |
| Total (projected) policy B  | 17,074,451 |           |           |           |           |            |
|   | Poorest    | Second    | Middle    | Fourth    | Richest   | Total      |
|   | 1          | 2         | 3         | 4         | 5         |            |
| Female (policy A)   | 4,487,618  | 3,997,974 | 3,666,488 | 3,428,699 | 2,834,314 | 18,415,093 |
| Female (policy B)   | 4,160,914  | 3,706,916 | 3,399,563 | 3,179,086 | 2,627,972 | 17,074,451 |

Source: Computed by CSEA.

**Table 1C: Equity Distribution of Benefits (Scenario 1) across the Quintiles (Expenditure Group)**

| <b>Current Situation (Free Tuition Fee)</b>                     |   |              |              |              |              |              |                            |
|---|---|--------------|--------------|--------------|--------------|--------------|----------------------------|
| Unit cost (primary)   | <b>3,662.70</b>   |              |              |              |              |              |                            |
| <b>Projected female enrolment based on policy A or policy B</b> |   |              |              |              |              |              |                            |
|   | Poorest   | Second       | Middle       | Fourth       | Richest      | Total        |                            |
| Primary (female) policy A                                       | 4,487,618   | 3,997,974    | 3,666,488    | 3,428,699    | 2,834,314    | 18,415,093   |                            |
| Primary (female) policy B                                       | 4,160,914   | 3,706,916    | 3,399,563    | 3,179,086    | 2,627,972    | 17,074,451   |                            |
| <b>Total cost</b>   | Poorest   | Second       | Middle       | Fourth       | Richest      | Total        | <b>Add new funds (15%)</b> |
|   | NGN'million   | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN'million                |
| Primary (female) policy A                                       | 16,436.8  | 14,643.4     | 13,429.2     | 12,558.3     | 10,381.2     | 67,449.0     | 77,566.3                   |
| Primary (female) policy B                                       | 15,240.2  | 13,577.3     | 12,451.6     | 11,644.0     | 9,625.5      | 62,538.6     | 71,919.4                   |
| <b>Distribution of benefits</b>                                 | Poorest   | Second       | Middle       | Fourth       | Richest      | Total        |                            |
| Primary (female) policy A                                       | 24.4%   | 21.7%        | 19.9%        | 18.6%        | 15.4%        | 100.0%       |                            |
| Primary (female) policy B                                       | 24.4%   | 21.7%        | 19.9%        | 18.6%        | 15.4%        | 100.0%       |                            |
| <b>Reallocate</b>   | <b>100% subsidy to Q1; 75% subsidy to Q2; 50% subsidy to Q3 and lower subsidies to the two richer quintiles</b> |              |              |              |              |              |                            |
| Primary (female)  | Poorest   | Second       | Middle       | Fourth       | Richest      | Total        |                            |
| Quintiles   | 1   | 2            | 3            | 4            | 5            | Total        |                            |
| Subsidy   | 1.00  | 0.75         | 0.50         | 0.25         | 0.15         |              |                            |
| Weight of quintiles (policy A)                                  | 4,487,618   | 2,998,480    | 1,833,244    | 857,175      | 425,147      | 10,601,664   |                            |
| Weight of quintiles (policy B)                                  | 4,160,914   | 2,780,187    | 1,699,781    | 794,771      | 394,196      | 9,829,850    |                            |
| Unit subsidy (policy A) NGN                                     | <b>7316.43</b>  |              |              |              |              |              |                            |
| Unit subsidy (policy B) NGN                                     | <b>7316.43</b>  |              |              |              |              |              |                            |
| <b>Total cost</b>   | Poorest   | Second       | Middle       | Fourth       | Richest      | Total        |                            |
|   | NGN'million   | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million |                            |
| Primary (female) policy A                                       | 32,833.3  | 21,938.2     | 13,412.8     | 6,271.5      | 3,110.6      | 77,566.3     |                            |
| Primary (female) policy B                                       | 30,443.0  | 20,341.0     | 12,436.3     | 5,814.9      | 2,884.1      | 71,919.4     |                            |
| <b>Distribution of benefits</b>                                 | Poorest   | Second       | Middle       | Fourth       | Richest      | Total        |                            |
| Primary (female) policy A                                       | 42.3%   | 28.3%        | 17.3%        | 8.1%         | 4.0%         | 100.0%       |                            |
| Primary (female) policy B                                       | 42.3%   | 28.3%        | 17.3%        | 8.1%         | 4.0%         | 100.0%       |                            |

Source: Computed by CSEA.



**Table 1D: Equity Distribution of Benefits (Scenario 2) across the Quintiles (Expenditure Group)**

| <b>Current situation (free tuition)</b>                         |  |              |              |              |              |              |                     |
|---|--|--------------|--------------|--------------|--------------|--------------|---------------------|
| Unit cost (primary)   | <b>3,662.70</b>  |              |              |              |              |              |                     |
| <b>Projected female enrolment based on policy A or policy B</b> |  |              |              |              |              |              |                     |
|   | Poorest  | Second       | Middle       | Fourth       | Richest      | Total        |                     |
| Primary (female) policy A                                       | 44,87,618  | 39,97,974    | 36,66,488    | 34,28,699    | 28,34,314    | 1,84,15,093  |                     |
| Primary (female) policy B                                       | 41,60,914  | 37,06,916    | 33,99,563    | 31,79,086    | 26,27,972    | 1,70,74,451  |                     |
| Total cost  | Poorest  | Second       | Middle       | Fourth       | Richest      | Total        | Add new funds (60%) |
|   | NGN' million   | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million        |
| Primary (female) policy A                                       | 16,436.80  | 14,643.40    | 13,429.20    | 12,558.30    | 10,381.20    | 67,449.00    | <b>1,07,918.30</b>  |
| Primary (female) policy B                                       | 15,240.20  | 13,577.30    | 12,451.60    | 11,644.00    | 9,625.50     | 62,538.60    | <b>1,00,061.70</b>  |
| Distribution of benefits  | Poorest  | Second       | Middle       | Fourth       | Richest      | Total        |                     |
| Primary (female) policy A                                       | 24.40%   | 21.70%       | 19.90%       | 18.60%       | 15.40%       | 100.00%      |                     |
| Primary (female) policy B                                       | 24.40%   | 21.70%       | 19.90%       | 18.60%       | 15.40%       | 100.00%      |                     |
| Reallocate  | <b>Reallocate but add large amount of new funds so all groups become better off in the total available to them</b> |              |              |              |              |              |                     |
| Primary (female)  | Poorest  | Second       | Middle       | Fourth       | Richest      | Total        |                     |
| Quintiles   | 1  | 2            | 3            | 4            | 5            | Total        |                     |
| Subsidy   | 1  | 0.9          | 0.8          | 0.7          | 0.5          |              |                     |
| Weight of quintiles   | 44,87,618  | 35,98,176    | 29,33,190    | 24,00,089    | 14,17,157    | 1,48,36,231  |                     |
| Weight of quintiles   | 41,60,914  | 33,36,225    | 27,19,650    | 22,25,360    | 13,13,986    | 1,37,56,135  |                     |
| Unit subsidy (policy A)   | 7273.97  |              |              |              |              |              |                     |
| Unit subsidy (policy B)   | 7273.97  |              |              |              |              |              |                     |
| Total cost  | Poorest  | Second       | Middle       | Fourth       | Richest      | Total        |                     |
|   | NGN' million   | NGN' million | NGN' million | NGN' million | NGN' million | NGN' million |                     |
| Primary (female) policy A                                       | 32,642.80  | 26,173.00    | 21,335.90    | 17,458.20    | 10,308.40    | 1,07,918.30  |                     |
| Primary (female) policy B                                       | 30,266.40  | 24,267.60    | 19,782.70    | 16,187.20    | 9,557.90     | 1,00,061.70  |                     |
| Distribution of benefits  | Poorest  | Second       | Middle       | Fourth       | Richest      | Total        |                     |
| Primary (female) policy A                                       | 30.20%   | 24.30%       | 19.80%       | 16.20%       | 9.60%        | 100.00%      |                     |
| Primary (female) policy B                                       | 30.20%   | 24.30%       | 19.80%       | 16.20%       | 9.60%        | 100.00%      |                     |

Source: Computed by CSEA.