GLOBAL PARTNERSHIP for EDUCATION

Estimates and Projections of Unmet Financial Needs
A Methodological Notes and Results

A. INTRODUCTION AND OBJECTIVES

1. **Introduction**. The Global Partnership for Education (the Global Partnership or GPE) supports the development, implementation, and monitoring of national education policies. On the supply side, donor partners contribute funding, especially they make financial commitments during replenishment. On the demand side, developing country partners apply for funds based on indicative allocations generated from the Needs and Performance Framework[1]. In this context, a key question concerns the size and structure of the financial needs for education in general, and for primary/basic education, in particular, where GPE funding focuses.

2. **Objective**. In response to the question on the size and structure of the financial needs for the education sector, GPE Secretariat has made estimates and projections of these financial needs. This note explains the methodological approach and outlines key assumptions made. The main objective is to estimate and project the unmet financial needs for GPE developing partner countries with active grants and countries supposed to be endorsed in 2014[2]. This choice was made because at the time this work was done, the eligibility criteria were being revised under the new GPE funding model. Therefore, the list of eligible countries was not known.
3. **Scope**. Financial support from the Global Partnership covers basic education, from early childhood to lower secondary; including literary and technical and vocational education. But in this paper, only primary and lower secondary education levels were taken into account to estimate the financial needs. In order to allow for country specificities, the projections were made separately for each country on the basis of a simple simulation model per country between 2011 (or closet year) and 2020.

B. QUALITY PRIMARY EDUCATION

B.1 Financial Needs

4. ***Coverage and assumption***. This section focuses exclusively on the "***unfinished agenda***" for completing quality primary education in low-income countries. Starting from the primary Completion Rate (PCR) in the base year 2011. In terms of progress and targets, fragile and conflict affected countries are treated differently due to diminishing marginal rates of returns[3]. The methodology and assumptions made regarding key contributing factors are explained below.

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[1] Read more about the GPE Needs and Performance Framework at:
http://www.globalpartnership.org/media/Final%20NPF%20Note%20January%202012.pdf

[2] The estimate has been made for 55 countries, 50 with active grants plus Guyana, Kenya, Nigeria, Pakistan and Uzbekistan which supposed to be endorsed in 2014.

[3] The 2013 Result for Learning Report shows that fragile and conflicted affected countries don't make progress as the same rhythm as other GPE countries.

5. ***Student Flows***. The annual student flows are derived for each eligible country from the school age population[4], the assumption on the evolution of access (in first grade), the average repetition rate and the completion rate. The proportion of student enroll in private school is taken into account to calculate the number of student in public school. Below the assumption for each parameter:

   - ***Gross intake rate***: Countries with Gross Intake Rate below 100% in 2011 will increase progressively their intake rate to reach universal access at least by 2015.

   - ***Primary completion rate***: Analyses show that countries gain on average 3 percentage points (2.1 for fragile states and 3.4 for non-fragile states) per year on the PCR after joining the Global Partnership for Education[5]. In this exercise, we assume that, the non-fragile state can't do better; while in the Fragile and conflict affected countries there is room for progress. Consequently, the fragile and conflict affected countries are assumed to gain annually 2.5 percentage point on their PCR, while the other countries gain annually 3.5 percentage points.

   - ***Repetition rate***: The gradual increase of the completion goes with improvement of the system's internal efficiency; i.e. a reduction in repetition rate for countries with high value in 2011: i) for countries with proportion of repeaters lower than 10%, the value remained unchanged, ii) for countries with proportion of repeaters between 10% and 20%, the value will decrease progressively to reach 10% in 2020 and iii) for countries where the value is higher than 20%, it will be divide by 2 in 2020.

6. ***Unit costs***. Often, the fixed unit cost estimated/observed for each country is used for projections. In doing so, in countries with low unit costs due to high level of parents' contributions, there is an underestimation of the real unit cost, and as a result these countries are penalized. Conversely, in countries with high unit costs due to system inefficiencies, there is an overestimation of the unit costs and therefore of the financial needs. To correct that, the basic idea is to introduce adjustments in the form of normative factors that promote cost-effectiveness or the concept of "***Value for Money***." In addition, recurrent costs that are incurred annually are treated separately from capital investments that are depleted over many years.

6.1 ***Recurrent Unit Cost***. For recurrent costs, the largest determinant is the made of teachers' salaries and benefits; and the second component is the made of non-teacher salary that pays for administrative costs, learning materials and other quality improvement supplies. We use an approach developed in a working paper aiming to revise the needs and Performance Framework (Mingat, 2013)[6]. The recurrent unit cost for country X is defined by the following formula:

$$\mathbf{RUC = [(TS / CS) / (1\text{-}PA)] + CNSI}$$

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[4] GPE compilation on the basis of the number of number of children by age groups as computed by the United Nation Division of Population, 2012 revision.

[5] See chapter on education results in GPE developing partner country in the 2014's Result For Learning Report.

[6] A. Mingat (2013). Technical perspectives towards revision of the GPE country allocation pattern. Working Paper, GPE Secretariat.

With: TS: Teacher Salary, CS: Class Size, PA as percentage of teacher salary cost for administrative and support staff, CNSI amount for consumables and non-salary items.

To conduct the normative analysis, the value for CNSI is fixed at USD 20 per student and PA at 15 percent of teacher salary. At country level, TS depends on the level of economic development. Empirical analysis helped determine the relation between teachers' salary and the level of economic development by country using per capita GDP and average teacher salary data for 55 low and middle income countries. This relation is as follows:

TS (as unit of PcGDP) = **28.622 * exp (-0.312 * ln (PcGDP)**

The Recurrent Unit cost for a country X

RUC = [(28.622 * exp (-0.312 * ln (PcGDP))*PcGDP) / 40] / (1 - 0.15) + 20

6.2 ***Capital Unit Cost***. For capital investment, the computation is more complex. These occur on a non-predictable fashion depending upon the status and quality of the physical infrastructures and events/actions that took place the previous years. For this exercise, the option chosen is to use an average cost for an equipped classroom per country. The assumption used is USD 15000 for an equipped classroom to accommodate 40 students.

7. ***Gross Financial Needs***. Once both the student flows and the unit costs are computed per country, aggregated needs are easily derived by multiplying the two components. These aggregates are termed "***Gross Financial Needs***" because they don't take into account three adjusting factors: (i) domestic funding; (ii) external aid (ODA); and (iii) countries' implementation capacity or absorptive capacity. For many low-income countries, experience shows that capacity constraints are often impediments for accelerated progress towards universal primary completion.

B.2 Availabilities of Resources

8. ***Methodology and Assumptions***

8.1 ***Domestic Resources***. The starting point is the percentage share of its national income (as measured by the gross domestic product or GDP) that each country allocates to education. The second parameter is the expenditure in primary education as share of total education expenditure.

- ***Education expenditures as share of GDP:*** The average value for GPE country partners is 4.8. For countries below the average: (i) a growth rate of 1.5% per annum is used for fragile states; and (ii) a growth rate of 2% is applied to other non-fragile states below the average. The value remains unchanged for the country above the average throughout the projections.
- ***Expenditure in primary education as share of total education expenditure***. (i) Countries with a PCR lower than 85% and a share of primary expenditure lower than 50%: the expenditure ratio is gradually increased to reach 50%; otherwise it is maintained; and (ii) Countries with a PCR higher than 85% and the expenditure share higher than 50%: the value is gradually decreased to reach 50%; otherwise it is maintained at the current level.

8.2 ***External Resources (ODA) for primary education***. ODA for primary education is calculated as the total of three types of spending: Sector allocable to primary education, 25 percent of sector

allocable aid to education with level unspecified and 5 percent of budget general support[7]. The 2011 value is used as reference for the entire period of the projection

B.3 Financing Gaps

9. ***Estimated Absorption Capacity (EAC)***. For the 46 developing country partners with previous GPE grants, past performance was used to calculate net financial flows that can be absorbed effectively. Obviously, these calculations are sensitive to grant modalities being used and to the fact that the capacity built during the implementation of past grants cannot yet be factored in. Thus, there are clear limitations to the exercise. However, the different estimations made did not allow us to conclude that there would be a substantial absorption capacity issue for the countries considered. This issue is relevant for few countries, but it does not affect the result of the global estimate made here.

10. ***Net/Unmet Financing Gaps***. These are derived by subtracting domestic financing and external financing to the gross financing needs estimated for each eligible country earlier. Finally, the aggregated gross and net financial needs over the projections period are derived for all countries analyzed. The results of the simulation are summarized in Table 1 below.

Table 1:
Estimates and Projections of Gross Financial Needs and Net Financing Gaps
Quality Primary Education (In millions of USD dollar)

	2015	2016	2017	2018	Annual average	Total
Gross Financing Needs (A)	29873	31486	33387	35421	32542	130166
Domestic Financing (B)	23801	26607	28868	31449	27681	110726
External Financing (ODA) (C)	1786	1710	1638	1432	1642	6566
Net Financing Gaps D=A-(B+C)*	**4285**	**3169**	**2881**	**2540**	**3219**	**12874**

Sources: GPE Secretariat's estimates and projections.
*In the Case for Investment document, the annual estimates values were replaced by the annual average

C. EXPANSION TO LOWER SECONDARY EDUCATION

C1. Student Flows Hypothesis

11. **The lower secondary student flow projections** are based on the number of pupils who will complete primary education based on the assumption made for primary education, the transition rate from primary education to lower secondary, the survival rate, the repetition rate and the proportion of student enroll in private school.

[7] This calculation derives from the calculation which is usually made for basic education. The ODA for basic education is usually calculated as the total of three type of spending: sector allocable aid to basic education, 50 percent of sector allocable to education with level unspecified and 10 percent of general budget support. In the calculation of ODA, Basic education is defined as covering early childhood education, primary education and basic life skills for youth and adults. We assume that, half of the two other type of spending added to basic education goes to primary education.

- ***Transition rate:*** The trend observed in the last fourth year is maintained for the period of the projection. i), a growth rate of 2% per annum is used for non-fragile and conflict affected countries and ii) a growth rate of 1.5% for fragile and conflict affected countries.

- ***Survival rate***: Progressive increase in survival rate to 80% in 2020 for countries below that value in 2011 and progressive increase to reach 100% in 2020 for countries where the value is higher than 80%.

- ***Repetition rate***: As for primary education, the increase of the retention in the lower secondary education means an improvement of the system's internal efficiency; i.e. a reduction in repetition rate for countries with high value in 2011: i) for countries with proportion of repeaters lower than 10%, the value remained unchanged, ii) for countries with proportion of repeaters between 10% and 20%, the value will decrease progressively to reach 10% in 2020 and iii) for countries where the value is higher than 20%, it will be divide by 2 in 2020.

- ***Proportion of student enrolls in private school***: the 2011's value remained unchanged during the period of projection.

12. Unit cost

- ***Recurrent unit cost:*** As for primary education, we introduce here too adjustment factors that promote cost-effectiveness." Therefore, the recurrent cost for lower secondary education derives from the recurrent unit cost computed for primary education using the assumption that, student in lower secondary costs on average 1.8 times the cost of student in primary school[8]

- ***Capital unit cost:*** The assumption used is USD 17500 for an equipped classroom to accommodate 45 students.

13. Resources

i) ***Expenditure in lower secondary education as share of total education expenditure:*** As for primary education, there is no benchmark on the share of the education budget a country should allocate to lower secondary education. Following the assumptions used in this exercise, we linked the share of the education budget allocated to lower secondary education to a) the duration of lower secondary cycle (which ranges from 2 to 5 years of schooling in GPE countries) and b) the level of development of primary education which partly drives the coverage of lower secondary educational. Countries are grouped as follows:

   - For countries where the duration of lower secondary is 2 years, we assumed that the sum of the share of primary education and lower secondary education expenditure cannot exceed 60% of the total education expenditure;

   - For countries where the duration is 3 years, we assumed that the sum of the share of primary education and lower secondary education expenditure cannot exceed 65%;

   - And for countries where the duration is more than 3 years, we took 70%. Based on these assumptions, the share of lower secondary expenditure is estimated as the

[8] World Bank (2010) Developing Post-Primary Education in Sub-Saharan Africa: Assessing the Financial Sustainability of Alternative Pathways

maximum value between the current observed value of the share of lower secondary and the difference between the benchmark (60, 65 or 70% depending on the duration of lower secondary education) and the estimated share of primary education, as explained earlier.

- ***External Resources (ODA) for lower secondary education:*** ODA for lower secondary education is estimated as 2/3 of the total ODA for secondary education. ODA for secondary education (lower and upper) is calculated as the total of three types of spending: Sector allocable to secondary education, 25 percent of sector allocable aid to education with level unspecified and 5 percent of budget general support. The 2011 value is used as reference for the entire projection period. The results of the simulation are summarized in Table 2 below.

Table 2:
Estimates and Projections of Gross Financial Needs and Net Financing Gaps Expansion to Lower Secondary Education (In millions of USD dollar)

	2015	**2016**	**2017**	**2018**	**Annual average**	**Total**
Gross Financing Needs (A)	17162	18695	20394	22155	19602	78406
Domestic Financing (B)	11286	12672	14241	15940	13535	54138
External Financing (ODA) (C)	628	635	639	633	633	2534
Net Financing Gaps D=A-(B+C)*	5248	5388	5515	5583	5434	21734

Sources: GPE Secretariat's estimates and projections
*In the Case for Investment document, the annual estimates values were replaced by the annual average

- The Global Partnership's developing partner countries currently face an estimates **34.6 billion** in unmet funding needs as illustrated in the table 3 below.

Table 3:
Unmet Funding Needs for 2015 to 2018 among GPE Developing Partner Countries (In millions of USD dollar)

	2015	2016	2017	2018	**Annual average**	**Total**
Primary	4285	3169	2881	2540	3219	12874
Lower Secondary	5248	5388	5515	5583	5434	21734
Total	**9533**	**8557**	**8396**	**8122**	**8652**	**34609**

Sources: GPE Secretariat's estimates and projections