Executive Summary

# Increased and improved education in Guatemala (2008 - 2021)

## How much will it cost?

USAID FROM THE AMERICAN PEOPLE

Diálogo para la inversión social en Guatemala

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ICEFI

Increased and improved education in Guatemala (2008 - 2021)

# How much will it cost?

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INCREASED AND IMPROVED EDUCATION IN GUATEMALA (2008 - 2021)
HOW MUCH WILL IT COST?

# Increased and improved education in Guatemala (2008 - 2021) How much will it cost?

## EXECUTIVE SUMMARY

Guatemala, May 2007

**Document prepared for the USAID - AED project "Dialogue for Social Investment in Guatemala" by the Central American Institute for Fiscal Studies - ICEFI**

# Introduction

The following study is in five parts. In the first part, the different proposals and goals for education have been collected, systematized and harmonized. The second part describes the methodology used to calculate resources. The third part contains comprehensive diagnosis of education and conditioning factors which have served as a basis for calculating cost. The fourth part contains interventions which will make it possible to meet the existing goals. The fifth part explores some options for funding additional spending to achieve education goals from 2008 to 2021.



# Goals for school education
## in guatemala between 2008 and 2021

## I

Based on an analysis of all the proposals for school education that have been made in recent years in Guatemala, the main objectives and goals of education for the next 15 years were identified. This was based on rearranging the goals to achieve maximum coherence for all objectives, avoiding overlaps as well as taking into account the frequency in which they appeared in the 22 proposals analyzed, specifically including the Education Reform and Education Vision at the national and international levels, the proposals that were made at the World Forum on Education Dakar 2000, and the Millennium Declaration.

Chart 1

**Goals based on the main national and international proposals**

| Objective | Universal education | Improve quality of education at all levels of teaching |
|---|---|---|
| Goals | 1.1 100% coverage rate for early child school education by 2025 (90.0% by 2021) | 2.1 100% completion rate at all levels by 2015 |
| | 1.2 100% coverage rate for primary school education by 2009 | 2.2 100% pass rate in primary school education by 2015. |
| | 1.3 100% coverage rate for basic secondary school education by 2015 | 2.3 100% coverage rate for the education quality evaluation program for schools, teachers and students and implementation of measures as a result of these by 2009 |
| | 1.4 41% coverage rate for diversified secondary school education by 2023 (38.4% by 2021) | 2.4 Annual increase in pass percentages for Education Evaluations at all levels |
| | 1.5 Literacy rate of 93% by 2023 (91.0% by 2021) | 2.5. 100% coverage of the permanent professional training and specialization program for teachers by 2009 |
| | 1.6 80% coverage rate for non school education for youths and adults (15-24 years) outside the school system by 2021 | 2.6 Labor and wage policy for teachers updated every five years from 2009 |
| | 1.7 100% coverage rate for technical or professional training for youths and adults between 18-45 by 2021 | 2.7 Incentives system applied to teachers all over the country from 2009 |
| | 1.8 100% coverage rate in food for marginal urban schools and for rural schools by 2021 | |
| | 1.9 80% coverage rate for scholarship programs and school aid for children in families living in poverty by 2021 | |

Chart 1

**Goals based on the main national and international proposals**

| Objective | Develop citizenship | Contribute to the recognition of a multiethnic, pluricultural and multilingual nation |
|---|---|---|
| Goals | 3.1. Financial decentralization program of the Ministry of Education operational from 2008 | 4.1 100% coverage rate for bilingual intercultural education by 2025 (90.0% by 2021) |
| | 3.2. New curriculum to reflect: a) citizens' rights and obligations; b) regionalization by sociolinguistic areas of education; c) community priorities taking into account linguistic, ethnic, gender, productivity, economic and socio-cultural characteristics; and d) development of democratic opportunities by 2021 | 4.2 100% of pre-primary and primary texts with an intercultural approach by 2021 |
| | 3.3. Management model agreed on and operating by 2009 | 4.3 100% teacher training coverage in Mayan, Garífuna, Xinca and Spanish languages by 2013 |
| | 3.4. Coverage of local education entities operating in the 22 departments by 2013<br>3.5. Political and social organizations receive five year compliance reports on education goals (published in 2009, 2014, 2019 and 2023) | |
| | 3.6. Education information system (with agreed goals and indicators) operational by 2009 | |
| **Objective** | **Promote gender equity in education** | |
| Goals | 5.1 Equal male and female enrollment rate at all levels of education by 2015 | |
| | 5.2 Consultative Council for Women and Girls operating in the Ministry of Education by 2009 | |
| | 5.3 100% of early child education and primary texts with a gender equity focus by 2021 | |
| | 5.4 100% of graduates from early child education, primary and secondary schools receive gender equity orientation (derived from incorporation of goal 3.2) by 2021 | |

**Source:** ICEFI (2006) Education goals for calculating costs are illustrative.

These objectives and goals are the framework for determining costs. The most important methodological elements for determining the cost of achieving these objectives and goals are described hereinafter.



# Methodology required
## for estimating the cost of meeting education goals in Guatemala between 2008 and 2021

# II

In this study, a cost-based methodology was used based on the functions of education provision in Guatemala, and then applied on the basis of public spending estimates for education in the past.

The production functions are estimated to identify the determining factors of education coverage and quality, taking into account factors related to supply and demand. The estimate of production functions makes it possible to identify interventions which, through changes in education supply and demand, will permit compliance with the education goals presented.[1] The extent to which public spending should be increased and distributed in order increase coverage in accordance with the goals established was determined by taking into account econometric estimates and the effect of factors related to supply and demand.

Once the cost of increasing coverage was established, the cost of improving the quality of education was calculated. The production functions of education which measure performance suggest that these interventions will again involve the demand for solving problems related to the drop-out and repetition rates which are partially issues related to coverage and quality.[2] However, the biggest efforts should focus on improving the quality of the education supply, especially regarding to capacity building among teachers, taking into account the ethnic-cultural diversity of Guatemala and establish new management methods. In these cases, the main challenges are not necessarily financial, since political and management decisions are necessary to promote reforms to confront interests which are contrary to these reforms. However this study´s terms of reference focused on the financial costs of this type of reform.

[1] The estimate of production functions allows to determine what conditioning factors have existed in the achievement, or not, of education goals in the past. In the future these conditions may change, which in Methodological terms means it is necessary to make some assumptions about the future which cannot be empirically demonstrated.
[2] Although in the majority of proposals they are included as quality goals.

# The current and future factors
## conditionalities for increased and improved education in Guatemala

III

### A. Education coverage

Education coverage in Guatemala has progressed significantly in recent years. The greatest progress has been in primary education, where the net schooling rate (TNE) was 93.5% in 2005 for boys and girls between the ages of 7 and 12, according to the 2005 Annual Statistics Directory of the Ministry of Education. At other levels achievements have not been as significant. Based on population estimates in the 2005 Annual Statistics Directory it has been calculated that there are about 1.2 million children and adolescents between the ages of 5 and 18 who are not in school; this is 26.5% of the population in that age group.

These average rates hide existing disparities between the different groups. Girls, indigenous people and rural families do not have the same access to education as non indigenous boys from urban households. Furthermore, there is a serious problem with older students in lower levels: almost a million children and adolescents in 2005. Late entry and the drop-out rate tend to be higher among indigenous people, and especially among indigenous girls.[3]

The low Net Completion Rate (TNF) at different levels of education can be added to these phenomena. This indicator makes it possible to understand the huge challenge faced by the school system, because in addition to the need to attract children and adolescents to the school system, a special effort should also be made to make sure they progress within the system and not drop out, because out of every 100 children who started the first grade of primary school in 2000, only 39 managed to finished it six years later in 2005.[4] The number is much higher for the three first years of secondary education (in 2005 50 out of every 100 children enrolled in 2003 completed), but access to this level of schooling continues to be very limited.

[3] As well as Edwards (2002), see K. Hallman et al (2006).
[4] Rubio and Rego/USAID (2006).





Chart 2

**Percentage of Net Completion Rate by level of schooling 2002 - 2005**

| Level | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|
| Primary School | 38.0 | 37.4 | 36.1 | 39.1 |
| Basic Secondary School | 43.3 | 47.2 | 47.0 | 50.1 |
| Diversified Secondary School*/ | 38.4 | d.u. | d.u. | d.u. |

d.u. data unavailable. */ Refers to graduation from the fifth grade of secondary school.
**Source:** Rubio and Rego/USAID (2006).

### 1. Factors which determine education coverage

Based on prior scientific studies[5] an exercise was carried out to explore the factors which determine whether families send their children to school or not. The data used are from the National Survey on Living Conditions 2000 (ENCOVI 2000). A logistic regression model was used[6] which seeks to explain the probability of a child attending school with a certain number of variables.

The effects calculated by regression indicate that:

- Extreme poverty is one of the factors which has the greatest impact on education coverage.
- Girls are less likely than boys to attend school.
- Living in a rural area does not have a strong impact on children between 7 and 12 years old. However, for children between 13 and 18 the probability of them enrolling in the system drops if they live in a rural area.
- Access to basic services has a positive impact. Access to services is also related to the decision to send girls to school because it reduces the time spent on housework.

This confirms that the family's socio-economic conditions, including poverty and the parents' education, are decisive factors in education coverage in Guatemala. These variables, which affect the demand for education, justify interventions to contribute to overcome this kind of obstacle, which is not necessarily linked to the supply of education provided by the State. In other words, an increase in public education services throughout the country is not enough to increase education coverage in Guatemala. It is particularly necessary to stimulate demand among families through policies to transfer resources to families, conditioning them to the obligation to send their children, boys and girls, to school.
This is already being done to a certain extent through scholarships, but the

[5] See Kakwani et al (2005), Bedi et al (2002) and Beltrán et al (2005).
[6] The LOGIT model is based on a non linear probability model which makes it possible to forecast a variable dichotomic response for primary school enrollment, or otherwise, of a child between the ages of 7 and 12, based on a set of explanatory quantitative or qualitative variables.

magnitude of coverage problems implies a need to increase the number and value of scholarships, or even better, to implement a cash transfer system with greater impact.

## 2. Quality of education in Guatemala

In specialized literature there is no consensus on what quality education represents. Quality can be evaluated from different viewpoints, taking into account efficiency, excellence, integral quality or total quality. In any case a common denominator in these approaches is that quality education should enable the pupil to participate in the society, in family life, the labor market and political life, allowing each individual to be a full citizen and develop his or her capacities.[7] To achieve this objective, education should develop cognitive knowledge and attitudes, but these abilities cannot be measured solely by drop-out and repeat rates, so this supports the measurement of school performance by evaluating learning, even when it is still not possible to evaluate the development of the whole range of abilities that education should contribute to develope.

At the national level performance evaluations have been made for reading and mathematics in children in the first and third grades of primary school and in recent years of graduates at each level in order to measure the quality of education. Evaluations of the system have been made by the National School Performance Evaluation Plan (PRONERE) and by the National System of Education Evaluation and Research; they indicate a low level of performance at all levels and a huge disparity between regions, areas and sexes.

Chart 3

**Results of evaluations of Guatemalan students from several different years**

Figures are in percentages

| Level | Language | | Mathematics | |
|---|---|---|---|---|
| | Failed / Must improve / Unsatisfactor | Passed / Satisfactorv | Failed / Must improve / Unsatisfactory | Passed / Satisfactory |
| 1st grade of Primary School a/ | 52.0 | 48.0 | 72.5 | 27.5 |
| 3rd grade of Primary School b/ | 61.1 | 39.0 | 83.8 | 16.2 |
| 6th grade of Primary School b/ | 78.3 | 21.7 | 56.9 | 43.1 |
| Graduates of secondary school c/ | 84.5 | 15.5 | 83.0 | 17.0 |

a/ USAID (2005). Performance evaluation of reading and mathematics in students from first grade of public primary schools in Guatemala.
b/ PRONERE (2001). Report of results of the National School Performance Evaluation Program for the year 2001. Data correspond to pupils that answered correctly 62.5% of the questions.
c/ National System of Education Evaluation and Research (2005). Report of the Evaluation of Students Graduating in 2005. Ministry of Education.
**Source:** Prepared using reports of evaluation results.

[7] Seibold (2000).





The USAID evaluation of first grade pupils in 2004 indicated that only 48.0% of the children were capable of reading and understanding a simple sentence with five words containing adequate lexical content, 45.3% were at the required level for addition, 38.6% for subtraction and 27.5% in overall mathematical criteria, with significant variations between the different departments. Indigenous pupils scored 7 points less than non indigenous children in reading and 2 points less in mathematics, and rural children scored 16 points less in reading and 10 points less in mathematics than urban children. Differences between sexes were not significant. The evaluation of children who graduated in 2005 indicated the same level of inequalities and low levels of performance.

## 3. Factors which determine the quality of education

The results of estimates of education production functions to analyze factors which determine the quality of education, quality being understood as the children´s performance in evaluations as well as the efficiency of schools, are presented below.

The regression analysis suggests the following:

- Boys and girls from urban areas have an advantage compared to children from rural areas. Indigenous boys and girls achieve lower results than other children in all areas and at all levels.
- When parents have a higher level of education the results of the evaluations are also higher.
- The teacher's experience has a greater positive impact in first grade. In third grade the relation between experience and results is weaker, but it continues to have a positive impact.
- School resources indicate that when the school has better access to basic services, the learning environment will be better and the results will also be better. Furthermore schools which receive some kind of supervision obtain better results and those which have multigrade classes have significantly lower results.

The socio-economic conditions of households, deficiencies in education, limitations of teachers, and management problems are all problems which have a negative impact on the quality of education in Guatemala. To evaluate to what extent more public spending can contribute to solving these problems requires a more thorough analysis, which is presented hereinafter.

## 4. Characteristics of key factors which determine the quality of education

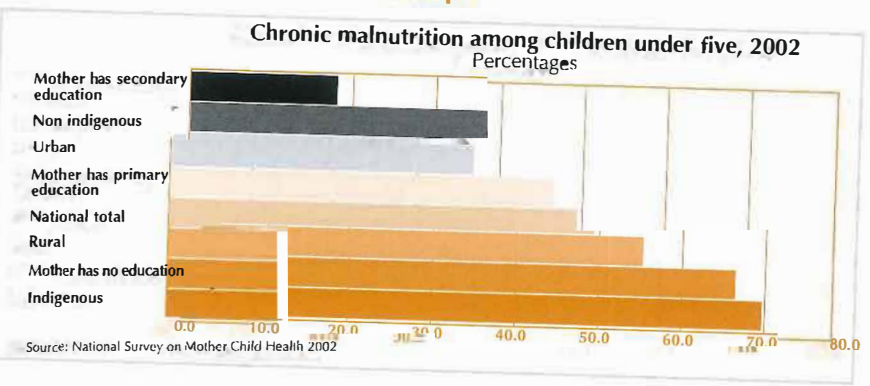
### a. Malnutrition as a condition that affects quality of education

There is evidence available of the negative effect of chronic malnutrition on school performance in Guatemala and other countries. According to Jukes et al (2002) delayed growth (chronic malnutrition), even in slight or moderate cases, is associated with a substantial reduction of mental ability and with deficient school performance. School health and nutrition programs help boys and girls to improve school performance. However, because of the shortage of interventions at an earlier age, very often when children start school they are already suffering the accumulative effect of years of malnutrition.

Graph 1

**Chronic malnutrition among children under five, 2002**

Percentages




Source: National Survey on Mother Child Health 2002

The National Survey on Maternal and Children´s Health 2002 reveals that 49.3% of children under five years old suffer from chronic malnutrition, whereas anemia affects 39.7% of under five and 22.1% of pregnant women. According to a study by ICEFI, the socio-economic factors which lead to chronic malnutrition among children include maternal health, income levels, the educational level of parents, access to health services and belonging to an ethnic group (Maya, Xinca or Garífuna).[8] These findings highlight the importance of providing nutrition programs, especially for the poor and for groups which are discriminated against.

### b. Ethnic inequality in education and the situation of bilingual and intercultural education in Guatemala

The negative relation between belonging to the indigenous population and school attendance, and the low results of indigenous children in performance

[8] ICEFI (2007).





evaluations reflect interethnic gaps in education that exist in Guatemala. Interethnic gaps have been diminishing very slowly.

The Ministry of Education reported that in 2005 only 62% of indigenous children and adolescents in school age attended school.[9] An analysis of the Ministry's statistics also shows that the majority of indigenous children go to public schools and that less than 5.0% go to private schools.[10] In this context the successes and failures of the management of the sector have direct repercussions on the learning and training of the indigenous population.

Chart 4

**Indigenous students enrolled in the school system in 2005**

| | Public | | Private | | Cooperative | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Enrolled | % | Enrolled | % | Enrolled | % | Enrolled | % |
| Early child education school | 132,199 | 37.5 | 5,350 | 6.4 | - | - | 137,549 | 31.5 |
| •Kindergarten | 57,572 | 20.9 | 3,925 | 4.8 | - | - | 61,497 | 17.2 |
| •Bilingual early child education school | 74,627 | 96.6 | 1,425 | 94.8 | - | - | 76,052 | 96.6 |
| Primary school | 807,727 | 38.9 | 31,268 | 11.7 | - | - | 838,995 | 35.8 |
| Basic secondary school | 25,044 | 17.2 | 28,743 | 12.4 | 41,101 | 31.3 | 94,888 | 18.7 |
| Diversified secondary school | 10,790 | 20.8 | 18,449 | 10.0 | 2,523 | 22.4 | 31,762 | 12.9 |
| **Total** | **957,760** | **37.1** | **83,810** | **10.9** | **43,624** | **30.6** | **1,103,194** | **31.2** |

Source: 2005 Annual Statistics Directory of the Ministry of Education.

In performance evaluations on average the indigenous population obtains 5.3 points less than the non indigenous population. Only 43.0% of the indigenous population in first grade achieved an appropriate level in the reading-writing test in Spanish, compared to 50.0% of non indigenous students.[11]

### c. Bilingual intercultural education in Guatemala

At present bilingual education is given in 14 Mayan languages and in Garífuna. In 2005 there were 4,114 bilingual schools, 6,470 bilingual teachers and 206,300 pupils in bilingual education. During the same year the Strategic Framework to Revitalize Bilingual Intercultural Education in Guatemala was defined in order to increase efficiency and institutionalize bilingual intercultural education.[12] An effort has been made to expand the service through certified bilingual teacher training for early child education school and the first grade of primary school and an attempt has been made to expand bilingual education to the final grades of primary school, but with limited success so far.

[9] Ministry of Education (2006a).
[10] CNPRE (2006).
[11] PRONERE (2005).
[12] On this subject see Ministry of Education (2006b).

Schools that offer Bilingual Intercultural Education are more efficient than other schools in the same geographical and linguistic areas.[13] This higher level of efficiency is measured through better pass rates and lower drop-out and repetition rates.

### d. Teacher´s employment situation

Teachers are one of the fundamental pillars for providing high quality education. The different quality measurement exercises coincide in pointing to the teacher's ability, professionalism and experience as factors which determine performance.

According to the 2005 Annual Statistics Directory of the Ministry of Education, teachers in the public sector of Guatemala represent 59.9% of the total number of teachers working in the education system. Most of these teachers work in primary schools (74.5% of the total number) and early child education schools (15.3%). The two remaining levels represent a low number of teachers (10.2%) as a consequence of the limited participation of the public sector in secondary education.

Furthermore, the Ministry of Education reported a total of approximately ten thousand multigrade schools,[14] of which 69.3% were the Selfmanagement for Education Development National Program (PRONADE) schools and together they attend 13.4% of all students enrolled in the public sector at this level. An analysis of the production function of education confirms that multigrade classrooms are associated with a lower quality of education.

Moreover, compared to people involved in other economic activities but with a similar level of training, the education sector fails to offer competitive salaries. For people with secondary education, the education sector offers lower salaries than the rest of the public sector, such as the electricity and water sectors, communications and transport and financial service industries. For people with university degrees the education sector is even less attractive since it pays the lowest salaries. In other words, unlike other countries, teachers' salaries fail to represent an attractive incentive for people with secondary or higher education.[15]

Finally, the existence of fewer incentives for areas with more needs (rural areas) results in teachers with greater experience preferring urban areas. Specifically, teaching in remote areas, with few basic services and far from urban centers is negatively rated (perceived as a punishment), which explains some of the differences in the quality of education between rural and urban areas.

[13] Rubio (2004).
[14] The figure of ten thousand in the Directory suggests that it is not a very reliable figure. See page 12 of Ministry of Education (2006a).
[15] Lindert (2004).





Chart 5

**Average experience of teachers of first and third grades of primary school 2004** - Average by area

| | First grade | | Third grade | |
|---|---|---|---|---|
| | Rural | Urban | Rural | Urban |
| Number of years teaching | 7.26 | 13.33 | 8.35 | 15.20 |
| Number of years teaching in first/third grade of primary school | 3.46 | 5.31 | 2.49 | 3.39 |
| Number of years teaching in this school | 4.33 | 7.06 | 4.82 | 8.31 |

Source: prepared with PRONERE information (2005).

The results of reading and mathematics tests applied in 2004 to teachers in public schools located in 21 departments of the country are particularly important.[16] First, teachers in this study have an average experience of ten years, and the most experienced teachers work in urban areas. Second, the average ability of teachers is low in reading (in Spanish) and very low in mathematics, with wide variations between departments. Third, a positive and significant correlation was found between the results of teachers' reading tests and the students' results, suggesting that the reading ability of the teacher is important for improving students' academic achievements. Fourth, teachers who performed the best in tests are not planning to continue working as primary school teachers in the future, and teachers with the highest performance are not planning to continue teaching, although they plan to continue working in education.

The implications of this evaluation include the need to implement teacher improvement and development programs to improve teachers' abilities in reading and mathematics; a review of the incentives system, both for keeping the best teachers as well as sending the most capable teachers to schools where they are needed; improvement of the teacher training curriculum in the areas evaluated; and the implementation of selection processes for teaching candidates.[17] It would also be a good idea to continue with teacher evaluation processes.

### e. Education management and the role of directors

The education production function and education performance in Guatemala described above demonstrates the impact of supervision: better results being achieved in schools that received some kind of supervision in comparison with schools that received no supervision at all.

[16] Rubio and Salanic/USAID (2005).
[17] Rubio and Salanic (2005).

The evidence available for Guatemala makes it possible to identify weak supervision processes in schools. Specifically, there seem to be four clearly identified problems: the existence of part time directors, the absence of a person whose functions are solely related to directing an undetermined number of multigrade schools, low salaries for directors, and insufficient training in accordance with their functions.

This analysis suggests that guaranteeing adequate appointment of directors to schools, reducing the importance of multigrade schools or teachers, paying decent salaries to directors and training them, while simultaneously modifying teacher recruitment requirements in the future, are some of the measures required to increase the quality of education in Guatemala.



# The cost of achieving education goals

# IV

In this chapter the researchers determine the cost of achieving the goals of education coverage and quality, including achievement of goals related to bilingual and intercultural education, gender equity and citizenship. This budgetary cost estimate exercise starts with an analysis of current trends in coverage in order to determine to what extent the goals proposed would be achieved if present trends are maintained, including the costs this would involve, based on previously defined estimates of cost per pupil, or if it would be necessary to make an additional effort. Since maintaining trends is not sufficient, additional actions are identified to achieve coverage goals, including conditional cash transfers for the poorest households.

In order to move forward with estimating the costs it is useful to observe the main difference when comparing the costs of each level stems from wage differences among teachers. Since one can assume that at higher levels of education more qualified teachers are required, this type of difference is understandable. Differences in other costs, especially a higher amount for basic and diversified secondary education compared to primary and early child education, seem to reflect certain scale economies in primary education (or diseconomies or inefficiencies in basic and diversified secondary education) which suggest that if the number of students at higher levels increases, and if the authorities make an effort to reduce costs, non wage related expenses per pupil could be reduced for secondary schools. This would justify a spending adjustment for secondary education, reducing it so that it can reflect the same non-wage related cost as in primary education. There is evidence that inefficiency in secondary education is significantly greater than inefficiency in primary education.[18]

The researchers used calculations from 2005 to estimate the cost of education in the future. These costs have been converted into US dollars for the same year and a forecast has been prepared of inflation in the United States from 2006 to 2021, assuming that this will make it possible to predict a more stable scenario than if it were based on projections of Guatemalan inflation.

[18] See Herrera and Pang (2005), table B.1.

In order to estimate education costs as a proportion of the GDP it is necessary to make an estimate of expected GDP growth trends. Since future economic growth estimates are somewhat random, two probable scenarios will be presented: an optimistic scenario in which the annual growth goal of 6.0% proposed in the Peace Accords would be reached, and an intermediate scenario of around 3.2% based on past growth trends.

## A. The cost of extending coverage

### 1. Problems with coverage goals: primary and secondary school enrollment and completion rates

In recent years there has been a significant increase in coverage as well as important reductions in the drop-out rate, so it is valid to consider whether maintenance of these trends will lead to achievement of the education goals.

The resulting simulation which combines changes in coverage and drop-out trends with demographic trends, presented in the following chart, indicates that by 2021 the Net Schooling Rate (TNE by its acronym in spanish) for early child education school will be 74.4%, in contrast with the goal of 89.2%. In primary education the country would be close to achieving the goal. With regard to basic secondary education coverage would be 53.6% by 2021, far below the goal of 100%, and in diversified secondary education the rate would be 36.4%, not very distant from the goal of 38.2% for that year.

Chart 6

**Coverage goals and results based on trends, in percentages**

| Level | Results based on trends | | Goal | |
|---|---|---|---|---|
| | 2015 | 2021 | 2015 | 2021 |
| Early child education | 66.0 | 74.4 | 82.6 | 89.2 |
| Primary education | 96.6 | 96.7 | 100.0 | 100.0 |
| Basic secondary education | 46.7 | 53.6 | 100.0 | 100.0 |
| Diversified secondary education | 27.4 | 36.4 | 27.4 | 38.2 |

Source: Based on estimates.

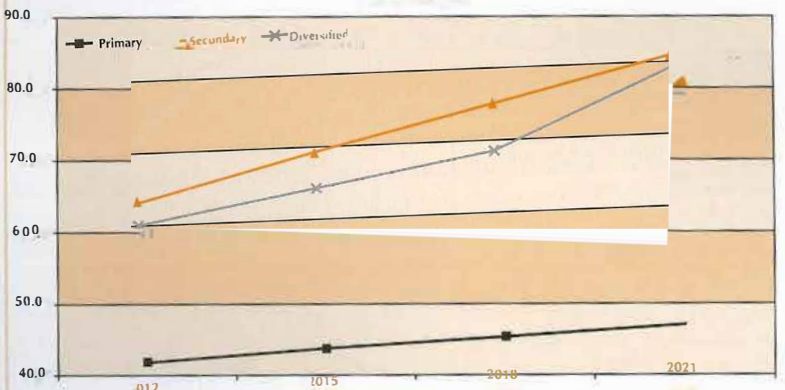
The low Net Completion Rates (TNF by its acronym in spanish) based on trends reveal the problems faced by the current school system and the limitations of restricting the analysis and goals to school attendance rates. In accordance with recent years trends, the TNF for primary school will be between 42% in 2012 and 48% in 2021, whereas for subsequent levels of schooling rates will be in the region of 60% and 80% for the same years.





Graph 2

**Net Completion Rates in Primary, Secundary and Diversified School, 2005**
**Percentages**




Source: Prepared based on population projections and education indication.

In brief, if current trends are maintained, enrollment goals for early child education school, basic and diversified secondary school will not be achieved, but the enrollment goal for primary school will be reached. However, the high enrollment for primary school fails to take into account the high drop-out rate, late enrollment and grade repetition, which result in overage students. Persistent school drop-out and overage rates will continue to lead to low net completion rates in primary school, which becomes a barrier to increase coverage in following levels.

Additional interventions can be justified to increase coverage in pre-primary, and basic and diversified secondary school, as well as other interventions to reduce the drop-out and repeat rates, especially in primary school. It is clear that the resources estimated as necessary to maintain trends would be insufficient for achieving basic coverage goals.

### i. How much will it cost to maintain trends?

With regard to costs, changes in coverage and drop-out rates would lead to an average increase of 3.1% a year in the number of students enrolled for the period from 2008 to 2021. This increase in students would have an impact on total spending as a proportion of the GDP, based on previously established cost estimates per pupil. In the high growth projection the total cost would be between 1.3% and 1.8% of the GDP, depending on the year, whereas in the case of medium growth, based on past rates, the cost would be greater and would remain at around 2.0% of the GDP.

Chart 7

**Total expenditure of the school system by level of education In millions of US dollars by year and as a percentage of the GDP estimated by trend, 2010, 2015 and 2021**

| Year / Concept | | Level | | | | |
|---|---|---|---|---|---|---|
| | | Early child education | Primary | Basic Secundary | Diversified secondary | Total |
| | Millions of US dollars | 67.7 | 567.1 | 60.4 | 16.8 | 711.9 |
| 2010 | GDP according to Peace Accords a/ | 0.2 | 1.4 | 0.2 | 0.0 | 1.8 |
| | GDP according to trend b/ | 0.2 | 1.6 | 0.2 | 0.0 | 2.0 |
| | Millions of US dollars | 90.0 | 689.0 | 88.6 | 28.2 | 895.8 |
| 2015 | GDP according to Peace Accords a/ | 0.2 | 1.2 | 0.2 | 0.0 | 1.6 |
| | GDP according to trend b/ | 0.2 | 1.5 | 0.2 | 0.1 | 2.0 |
| | Millions of US dollars | 117.9 | 859.2 | 138.4 | 51.9 | 1,167.5 |
| 2021 | GDP according to Peace Accords a/ | 0.1 | 1.0 | 0.2 | 0.1 | 1.3 |
| | GDP according to trend b/ | 0.2 | 1.4 | 0.2 | 0.1 | 1.9 |

a/ Agreement on socioeconomic aspects and the land situation.
b/ For this trend the variation of the GDP was calculated based on the trend observed since 1995.
**Source:** Based on population projections and cost estimates.

## ii. Conditional Cash Transfers: Background

As demonstrated in the previous section, if (growing) coverage trends are maintained, goals will not be met and progress in primary school particularly and in secondary school will be insufficient. Additional policies are required to modify current trends, intervening in demand, a fundamental factor which determines coverage. According to the evidence available, Conditional Cash Transfers (CCT) are the most efficient way to do this.[19]

Through the CCT program cash is given to households under the condition that they will comply with certain specific activities, such as sending boys and girls to school regularly or attending a health center and following a nutritional program; this contributes to family income and to the development of human capital. The program seeks to stimulate families` demands facilitating access of their members to health, education and nutrition. There is a growing recognition of the fact that this type of program can contribute decisively to increase school attendance and improve nutrition and health. Evidence in several countries in Latin America demonstrates that CCT can have a decisive impact on coverage or an increase in enrollment and a reduction of the drop-out rate, apart from other effects, such as reducing poverty.[20]

[19] The most thorough evaluations of this type of program have probably been made by the International Food Policy Research Institute.
[20] See Olinto, Pedro (2004), Skoufias, Emmanuel (2005) and Schady, Norbert (2006).





## iii. The cost of a CCT program in Guatemala

Taking into account the importance of factors that condition the demand for education, based on the Poverty Map,[21] on municipal statistics on education (taken from the Annual Statistics Directory of the Ministry of Education) and on population projections, a CCT program is proposed for families in extreme poverty, conditioning program beneficiaries to school attendance. The objective of implementing this program is to achieve education coverage goals. However, these programs can also contribute to improve the quality of education to the extent that they contribute to reduce the probability of students dropping out, thus improving the internal efficiency of the school system.

Gradual implementation of this program has been planned starting in 2008 to provide coverage for children living in extreme poverty so that they enroll or continue in early child education school and primary school, and continue progressing through the other levels of schooling. Children who live in extreme poverty are the least likely children to enter the school system, as shown by different studies on this subject. The number of girls and female adolescents who benefit will not be less than 51.0% of the total number of beneficiaries, in order to achieve goals related to gender equity.

The amount for each grade depends on two elements: first, the cost of the study opportunity instead of working or helping in the home, and secondly, the cost for the household of having a member enrolled in the school system.

## iv. Cost of the CCT and other complementary measures

Program costs include conditional cash transfers and administrative costs, estimated as 25.0% of the total cost, based on observations of similar programs which have already been implemented. As a result of execution, it is anticipated that the Ministry of Education would have to broaden its offer because children who were not previously in the school system will enroll as beneficiaries of the CCT, and the drop-out rate will start to go down. The fact that more children and adolescents will be in school represents an additional cost.[22] The cost of the program, as well as the cost of extending the offer to satisfy additional demand, will go up from US$ 128.5 million in 2010 to US$ 591.2 million in 2021. In accordance with historical GDP trends, this will be equal to a growth to 0.4% and 1.0%, for the years specified.

## v. Compliance with all coverage goals, including completion of study cycles

With the implementation of the CCT program as described above -together with the complementary increase in educational offer which, would have to

[21] SEGEPLAN (2005).
[22] The CCT program could extend to other support components for the parents' productive activity, but this would increase cost and management complexity. For this study only the cost of opportunity mentioned in the previous section will be taken into account.

satisfy the increase in demand- the level of schooling received by five to 18 year olds would rise significantly. For five and six year olds specifically, who would be in **early child education** school, the proposed goal would be reached, but without any intervention targeting demand this would be quite unlikely.

The level of schooling for seven to 12 year olds would also increase, to almost 100% in 2012. The most important achievement that the CCT program would have at this level would be to increase the probability of children completing **primary** school and continuing at the next level of education. The TNF, which in 2005 was 39.1% at this level, would go up from 61.0% in 2012 to 70.6% in 2021, much higher than if the program were not to exist (41.8% in 2012 and 47.0% in 2021). This achievement would include significant improvements in internal efficiency (lower repetition and drop-out rates) and, specifically, a significant reduction in overage students. These improvements in the completion rate, rather than in coverage rates, would be the main achievement of the CCT.

For **basic secondary,** education the goal proposed in the National Long Term Education Plan 2004-2023 for 2023 is 55.0% coverage. With the implementation of the CCT, schooling at this level would go up to almost 62.0% in 2021, achieving this goal.[23] The TNF would go up to 88.0% in 2021, which would reflect a significant increase in the probability of graduating at this level. Finally, **diversified secondary** education for adolescents between 16 and 18 years of age would also increase significantly to almost 47% in 2021.

Chart 8

**Coverage goals and results according to trends and the CCT program in 2015 and 2021 in percentages**

| Level | Results according to trends | | Results with CCT | | Goal | |
|---|---|---|---|---|---|---|
| | 2015 | 2021 | 2015 | 2021 | 2015 | 2021 |
| Early child education | 66.0 | 74.4 | 80.9 | 88.9 | 82.6 | 89.2 |
| Primary | 96.6 | 96.7 | 99.5 | 99.7 | 100.0 | 100.0 |
| Basic secondary */ | 46.7 | 53.6 | 52.5 | 61.7 | 100.0 | 100.0 |
| Diversified secondary | 27.4 | 36.4 | 29.4 | 46.9 | 27.4 | 36.4 |

*/ Goals for this level are those presented in the National Long Term Education Plan 2004 -2023.
**Source:** Based on estimates.

## B. The cost of increasing the quality of school education

### 1. The relation between coverage and quality

In the previous section the CCT program was identified as a policy which

[23] The achievement of coverage goals for basic and diversified secondary schools is limited by the low completion rate in primary schools in previous years.





would stimulate the demand for education and improve the system's internal efficiency by improving the drop-out and pass rates. However, goals related to quality, bilingual and intercultural education, gender equity and citizenship must be met, and these depend to some extent on policies which have an impact on the demand for school education.

### i. Cost of nutrition programs

With the extremely high rate of malnutrition in Guatemala, one of the highest in the world, an ambitious set of specific interventions related to the demand has been recommended which could range from conditional cash transfers to changes in nutritional behavior and monitoring, which could be channeled through different types of health centers.[24] Based on a better understanding of the link between health, nutrition, and education,[25] there are two kinds of programs, one for school age children (School Food Programs -SFP) and one for the survival, growth, development, and learning of children from birth to school age (Early Childhood Attention and Education Programs -PAEPI).

Presently in Guatemala there is no PAEPI program for early childhood, but only dispersed efforts by different governmental institutions, including particularly the Ministry of Public Health and the Secretariat of Social Works of the First Lady. Since 2004 the latter organization has been coordinating a program called "Growing Well," which responds to the national policy on Food and Nutritional Security (FNS). This program is based on a community management model to improve the nutritional status of mothers, and their children and families.[26] In 2006 this program was implemented in 79 municipalities. A total of 71,828 women in reproductive age participated in the training, and 75,053 children under the age of five were attended with an average cost per beneficiary of approximately Q195.70 (US$25.70). The objectives of the program are to designate 18,000 women as health and nutrition monitors, train 540,000 women and treat 810,000 children under the age of 5 in 250 municipalities.[27]

#### a. Nutritional care for pregnant women and children from birth to four years.

This program would consist of providing small amounts of cash, vitamin supplements and education. A condition of the program would be to keep appointments for visits and check-ups at the closest health center both for pregnant mothers as well as for children after birth. The program would focus on anemia prevention and control, taking into accounts three of the four most common strategies for achieving this objective:[28] food diversification, pharmaceutical supplements, measures related to environmental hygiene and control of certain diseases.

[24] World Bank (2004), page 151.
[25] UNESCO (2006b).
[26] Secretariat of Social Works of the First Lady (2006a).
[27] Secretariat of Social Works of the First Lady (2006b).
[28] Nutrition and Food Hygiene Institute (1998).

Volunteers in each community will collaborate using the existing platform of the "Growing Well" program. After practical training process, the volunteers will be responsible for control and follow-up of clinical check-ups for beneficiaries, as well as organizing, programming and giving different talks. This will be done under the supervision of the health center responsible for the area.[29]

For 2010 the cost of the program will be US$ 95.7 million, which in terms of the GDP, assuming that it grows in accordance with the current trend, would be 0.27%. For 2015 and 2021, the cost will be about US$94.9 and US$87.8 million, which represents 0.21% and 0.15% of the GDP estimated on the basis of current trends.

#### b. Cost of the universal school snack program in early child education and primary school

The objective of this program would be to complement the diet of children attending early child education and primary school in all public schools throughout the country. The assumption is that the program will be universal and will contribute with the 20.0% of basic dietary requirements. However, with the existence of more and better information (provided through the Education Information System which will be described below) it would be possible to find effective mechanisms to target the most vulnerable children, while maintaining the above assumption, and taking into account variables such as the percentage of daily dietary needs that should be provided in relation to the level of malnutrition, the size of schoolchildren, and repetition rates.

In 2008 it is estimated that the program would provide 589.0 million rations at a cost of US$ 83.1 million, which in terms of the GDP, assuming a similar growth trend to recent years, will be 0.26%. For 2015 the expectation is for 721.3 million rations to be provided at a cost of US$123.5 million, 0.27% of the GDP. In the following years population growth will start to decelerate, a fact which will result in a lower increase of program beneficiaries, who would be 4.4 million by 2021. The cost of the program that year has been estimated at US$159.6 million, approximately 0.26% of the GDP.

### ii. Incentives and training for teachers

#### a. Collective bonds based on results and the training program

Despite limited information about the conditions and abilities of teachers in Guatemala, estimates and the diagnosis of their situation clearly indicate that they play a fundamental role in determining the quality of education. In

[29] In Honduras impact evaluations of the program Integral Childhood Care in the Community (AIN-C) demonstrate that when managed by women volunteers, the communities feel that they own the program, and it becomes an institution with roots in the life of the community, so the work itself has provided an intrinsic incentive. For more information see Villalobos et al (2000) and Griffiths, Marcia and Judith S. McGuire (2005).





practice the teachers' employment system in Guatemala is based on job stability and a wage system based on seniority.This system could result in an incentive plan that fails to contribute to educational quality, because there is no system of remuneration which depends on teacher performance or a system that is able to sanction irresponsibility in the workplace.

In order to create incentives which promote an improvement in the quality of teachers, this study proposes a system of collective bonds for schools, based on results. To establish this system it is essential to effectively measure the performance of teachers. The most viable alternative is to implement universal tests of knowledge at the end of each study cycle (third grade, sixth grade, ninth grade and the final year), awarding the teaching team with a qualification based on student performance. This system of collective rewards is the one which adapts best to the characteristics of the education process.[30]

The amount of the collective bond would vary depending on the number of teachers working in each school. For the collective bond results-based system to be really attractive and easy to apply it is proposed that each teacher be awarded with an amount equal to the 14 month salary bonus, which would be one additional average monthly salary (US$ 686.9). For schools whose pupils satisfactorily meet evaluation criteria the collective bond would be given in cash, whereas if pupils fail the evaluation, teachers would have to attend training courses to improve their abilities, at a cost for each school equal to the value of the collective bond.

The total amount of resources for the program would be calculated based on the total number of teachers multiplied by the amount of the 14 month bonus, regardless of whether this is given as a cash bond to the school or as training resources. The cost of this program would represent between 0.3% and 0.4% of the GDP, depending on its historical trend.

#### b. Bonds for teachers in disadvantaged areas: rural bonds

In Guatemala, student performance is better in classrooms with teachers who have more experience. This supports the implementation of policies to ensure that experienced teachers are also working in rural areas.

Since there are more challenges in rural areas and they are less attractive as places to work, it is necessary to create an explicit incentive to attract the best teachers to these areas. Again, the easiest mechanism is to offer additional bonds which will not create financial liabilities for severance pay. Using an average base salary as the equivalent of the annual bond, and based on an estimate of teachers needed for rural areas, the cost would vary between 0.15% of the GDP for the first years to a maximum of 0.11% of the GDP for

[30] See Mizala and Romaguera (2002a).

2021 (if the growth goal of the Peace Accords is achieved) or 0.16% if growth continues on its present trend.

### c. Replacement of multigrade teachers in the first grade of primary school

Since the first grade of primary school is so important, this grade requires the best trained and most experienced teachers in order to ensure that appropriate pedagogical strategies are used increasing the pass rate and reducing the repetition and drop-out rates for the first year. At the same time it will be possible to significantly increase the percentage of achievement of minimum curricular contents. One of the main limitations to reading-writing education is the multigrade classroom, which is very common in Guatemala. In principle the multigrade modality could be viable if the teacher had only a few students or possessed the pedagogical tools necessary for teaching them. However, in practice, having separate teachers for each grade is associated with better student performance.

To eliminate a multigrade system in the first grade of primary school requires changing about 6,500 teachers who have children from several grades in their classrooms into teachers of single grade classes. This would be the equivalent of a 6.8% increase of school teachers in the public sector. This increase in the payroll for teachers hired as permanent staff with projections for salary scale increases, inflation and the growth of the economy would require an increase in resources of about US$ 26.7 million, or 0.07% of the GDP for 2008 to approximately US$ 71.5 million, or between 0.08% and 0.12% of the GDP by 2021, according to growth trend estimates.

#### i. Improvements in education management through strengthening the role of directors

One factor that has an impact on the quality of education in Guatemala is the generally weak supervision mechanisms and education management mechanisms. Education management should be aimed at achieving high quality results, addressing the basic needs of pupils, parents, teachers and the community. In order to produce changes and innovations in schools, in addition to external support bodies, it is essential to have an internal engine to stimulate and facilitate these changes.[31] Directors are the internal engine and key figures for gaining the collaboration of all the members of the educational community.

Therefore, improvement of education management should be addressed taking into account that the director plays the most important role. Action needs to be taken on each of these problems that are related to a lack of

[31] Dalin, P. and Rust, V. D. (1990) (1996).





clarity on functions, schools without directors (because they are multigrade schools with one or very few teachers), low salaries, and insufficient training.

### a. Increase in salary for school directors

This intervention would improve the income of directors so the director position is more attractive when compared to other jobs that university graduates pursue.

A calculation has been made for the cost of increasing salaries for directors based on three considerations. The first one takes into account the increase in student participation as a result of interventions to increase coverage and improve quality. The second consideration is that every five multigrade schools could have one director to manage their operation. The third consideration is the assumption that in early child education schools, education management would be the responsibility of the director of the primary school closest to it.

Based on the above, it is proposed a salary increase of 28.3%[32] of the current salary (2006), so for 2008 the monthly increase (including the 14th month and Christmas bonuses) in nominal terms would be Q850.00 (US$110.00). This increase would result in financial liabilities for severance pay and would make it possible to reduce the gap which exists between the average annual salary of a university graduate and that of a school director.

In terms of the Gross Domestic Product, an increase in salary for directors would cost about 0.10% in 2008, or US$35.2 million, and would vary depending on the GDP growth trend. If the GDP continues to grow at the current historical rate, this intervention would cost 0.13% of the GDP in 2021. If the GDP grows at the rate estimated by the Peace Accords, the cost of this intervention would be approximately 0.08% in 2021.

### b. Incentive bonds for school directors and the training program

This bond would be linked to good performance in school management, measured by quantifiable indicators. These bonds seek to provide incentives for improving the quality of directors through incentives which reward achievement of goals related to education management. This type of incentive requires the establishment of management follow-up indicators which need to be evaluated systematically over time at the end of each school cycle.

The incentive bond would permit directors whose management is satisfactory according to evaluations to receive the equivalent of a 14th month bonus, approximately Q4,200.00 (US$540.00). School directors who fail to achieve

[32] This increase in salary in addition to the incentive bond (next section) will make the income of school directors equal to 75.0% of the estimated income received by university graduates in 2008.

satisfactory results would not have the right to receive this bond, and instead the resources would be spent on training programs to help them to improve their knowledge and skills.

The cost of this program would be between 0.03% of the GDP in 2008 and 0.04% of the GDP 2021, bellow current growth trends, and between 2010 and 2015 it would increase from US$11.3 million to US$16.5 million. By 2021 the cost of this intervention would be US$23.0 million.

### iii. The cost of achieving the goals of bilingual and intercultural education

The different education goals proposed require that education respond to the cultural and linguistic diversity of the country. The main demands expect an increase in bilingual intercultural education, an increase in intercultural texts in the most important languages spoken in the country and finally, training for more bilingual teachers. Theoretically bilingual intercultural education is the best system for children who do not understand the official languages and who are speakers of minority languages.[33]

#### a. Increased coverage of Bilingual Intercultural Education

Although several organizations propose a goal of 100% coverage for bilingual and intercultural education by 2025, the extent of coverage for bilingual education (Spanish and another Mayan language, such as Garífuna or Xinca) is still being debated. However, one could assume that universal coverage in Guatemala for intercultural education is a goal as established in the Design of Education Reform. Therefore, it should not be surprising that there are no definitive estimates of specifically how many children should receive bilingual education.

For bilingual education, proposals have been made with different levels of coverage for the Mayan, Garífuna and Xinca population.[34] In this report the basis used for estimating the resources necessary is bilingual intercultural education for primary schools in all the municipal districts where territorial languages prevail, and up to third grade where community or special languages prevail, in accordance with the classification of the Commission for making Mayan Indigenous Languages official in Guatemala.

Estimates emphasize the fact that implementation of EBI (Bilingual Intercultural Education by its acronym in spanish) as explained above by 2010 would require almost 33,000 bilingual teachers, over 37,000 by 2015 and approximately 40,000 in 2021. These figures, compared with the number of teachers required for 2008, mean that there is a deficit of about 19,000 bilingual teachers. The bilingual teacher training schools will have to significantly increase the number of bilingual teachers in national languages in the years to come to achieve this

33 Barnach-Calbó (1997).
34 See Rubio (2004).
35 The Ministry of Education (2006a) reported that there were 1,192 new bilingual teachers in 2005.

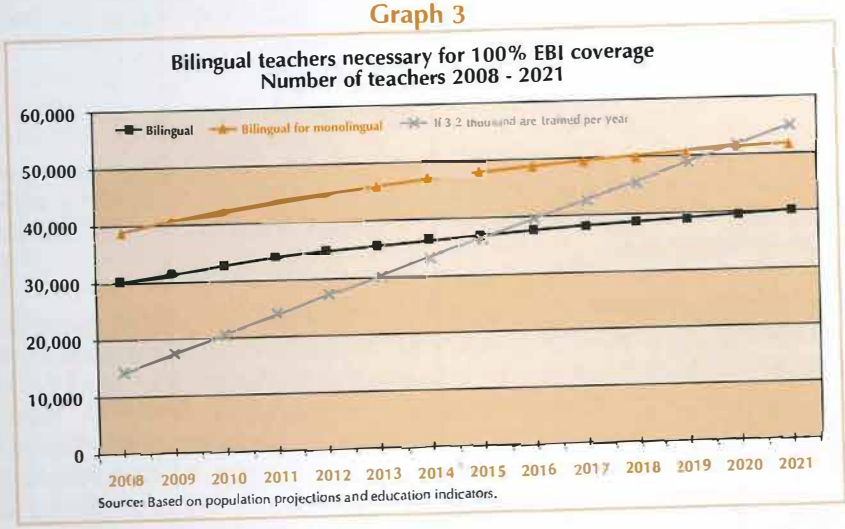




goal.[35] Therefore it would be necessary to consider a gradual increase in bilingual teacher training of 2,200 a year in the number of graduates in order to gradually meet this goal. This calculation would mean that in 2010 there would be 20,000 bilingual teachers, 36,000 by 2014 and 55,000 by 2021.

Taking into account the greater training and knowledge requirements for bilingual teachers, we propose the implementation of an incentive of an increase equal to two monthly salaries paid proportionally each month and accepting the responsibility of financial liabilities for severance pay. The increase was calculated as being US$762.20 in 2006 and each year afterwards for all teachers certified and working as bilingual teachers, including the financial liabilities for severance pay. So about US$84.0 million are needed by 2010 and over US$150.0 million by 2021 in order to extend the coverage of Bilingual Education in this form. These resources would represent an increase of between 0.2 and 0.3 percentage points of the GDP. It would not be possible to achieve this goal before 2016 when the number of bilingual teachers would be sufficient for the population that requires this type of teaching.

**Graph 3**




#### b. Texts with an intercultural focus in all Mayan, Garífuna and Xinca languages

Texts and educational materials are important tools for establishing Bilingual Intercultural Education. The increase in coverage will require the production of bilingual texts and materials for up to the sixth grade of primary school for K'iche, Q'eqchi, Mam and Kaqchikel. For the other languages bilingual texts and materials should be available up to the third grade of primary school. The cost of texts for primary school pupils is between 10.00 and 20.00 *quetzales* (US$1.30 and US$2.60).[36]

36 Porta/USAID (2006).

Using these costs as a basis, and taking into account population growth and the proposal of the Commission for Making Mayan Indigenous Languages official in Guatemala, the study estimates that the cost of producing bilingual texts for up to sixth grade of primary school for territorial languages and up to third grade of primary school for community and special languages will increase from US$ 35.6 million in 2008 to US$ 45.9 million in 2021, which would be about 0.1% of the GDP if the historical trend of economic growth continues.

### c. Training bilingual teachers

The availability of only a small number of trained bilingual teachers has forced the Ministry of Education to provide in-service training for teachers. The increase in initial training for bilingual teachers will gradually reduce the need for in-service training. However, permanent refresher training is necessary for teachers, so annual training for all bilingual teachers is estimated. Using the figure of Q.600.00 (US$77.50) for each teacher trained,[37] estimates show that in order to upgrade bilingual teacher training by 2010 will require about US$ 3.9 million, by 2015 US$ 5.1 million and by 2021 US$ 6.4 million, equal to less than 0.01% of the GDP for each year.

#### i. The cost of achieving gender equity goals

Gender equity is a cross-cutting issue implicit in all the other measures discussed. In particular there are four specific measures related to gender equity which have cost and financial management implications which should be taken into account.

First, the goals related to equal enrollment should be achieved by giving no less than 51.2% of the Conditional Cash Transfers to girls and adolescent girls. Second, the CCT should be channeled through mothers, contributing to a change in favor of women in decision making patterns at home.[38] Third, nutritional support programs should guarantee special assistance for pregnant women with anemia, as well as nutritional care or control for all pregnant women. This would contribute to improve the quality of life of children and mothers.

Finally, a revision of the education curriculum is of fundamental importance in order to contribute to gender equity. As part of this effort, the goal of setting up a Consultative Council for Women and Girls should be met. The main function of this Council would be to revise school texts, curricula and pedagogical practices to eliminate the transmission of stereotypes. This Council, as well as the other three measures proposed, would give special attention to indigenous women because of the exclusion to which they are

[37] Porta/USAID (2006).
[38] See Skoufias (2005).





subject. It would be the responsibility of the Council to promote a gender vision to allow the society to develop free of prejudice of any kind. It is suggested that the Council should be integrated by seven professionals,[39] with compensation through an expense system. The cost of maintaining the Council would be US$66,800 in 2008, US$81,100 in 2015 and US$95,300 in 2021.

#### ii. The cost of meeting goals on citizenship

The main components of goals for developing citizenship are set in the areas of management and curricular transformation so that the school system can transmit the necessary values to develop citizenship. In terms of management, the cost of strengthening the role of the director has been calculated. Two goals still need to be taken into account in this field, both related to citizenship. The first has to do with agreeing on a management model and the second with the establishment of an education information system.

The consensus reached on the management model includes political participation and action and its cost and implementation will be subject to an agreement on this issue. For this reason it is not clear how much it could cost to operate although it is evident that it will include the growing participation of parents and members of the community, taking advantage of their experience.[40]

Furthermore, the establishment of an education information system has a practical reference in the Integrated Financial Administration System (SIAF by its acronym in spanish) executed by the Ministry of Finance. This is an information system -referring not only to expenses but also to the type of indicators- which would be useful in education for decision making as well as for strengthening transparency in the sector. The education information system should standardize, update, and organize all the information produced by the Ministry of Education and other state institutions involved in the education sector. A considerable amount of important information has already been produced such as the Infrastructure Census and the Annual Statistics Directories.

To calculate the cost of implementing this measure it is assumed that the cost would be similar to that of the SIAF, which for 2006 was budgeted at Q44.0 million (US$ 5.7 million). In the years covered by this study the cost would increase from US$6.7 million in 2010 to US$9.0 million in 2021. This investment would make it possible to manage information produced by the Ministry of Education and other variables which are important for improving interventions related to educational supply and demand.

[39] It could include a sociologist who should be an expert on gender, a pedagogue, an anthropologist and four experts on linguistics, mathematics, natural sciences and interculturality.
[40] Ministry of Education (2006b).

The contribution in education to the development of citizenship probably depends largely on the curriculum. In this context, the goal referring to curricular transformation would provide for a new curriculum. This would require an integral revision of the curriculum, of teacher training and the revision of the texts used in schools.

Finally, the contribution of education to competitiveness, including teaching English and subjects that would facilitate the recognition, adaptation and generation of knowledge for Guatemala to be successful in the global economy would also represent an additional cost, reflected in the use of new technologies, and are thus, impossible to forecast. Some of the resources gained through greater efficiency could possibly be used for new investment in these fields.

## B. The total cost of meeting all education goals

Adding together all the resources needed for achieving the goals of coverage and quality, it would be necessary to double the limited current budget of approximately Q 5,000 millions in 2005 to almost Q 9,300 millions in 2008, assuming that the exchange rate remains at Q.7.65 per US$1.0 from 2008 to 2021. This would be the equivalent of increasing spending on school education from 2.0% of the GDP in 2005 to between 3.6 and 3.7% of the GDP in 2008, with a gradual increase in the budget in the future.

Subsequently, spending on school education should be increased to almost Q12.5 thousand million in 2012, which would be between 3.6 and 4.1% of the GDP, a proportion which could vary depending on economic growth. This growing trend would have to continue up to 4.6% of the GDP in 2021 if the economy continues to grow at the same rate as during the last ten years, or it could be maintained at less than 3.2% of the GDP if the economy were to grow faster, at a rate of 6.0% a year, the indicative goal for economic growth in the Peace Accords. This would be less than specified in the National Law on Education, which sets a goal of 7.0% of the GDP for education, although in this case it would include non school education (especially university education and training) as well as literacy campaigns, which were not included in estimates in this study. Expressed in US dollars for each year, the budget for school education would have to increase from approximately US$ 500 millions in 2005 to US$ 1,200 millions in 2008 and then continue increasing to US$ 2,000 millions in 2015 and to US$ 2,700 millions in 2021.





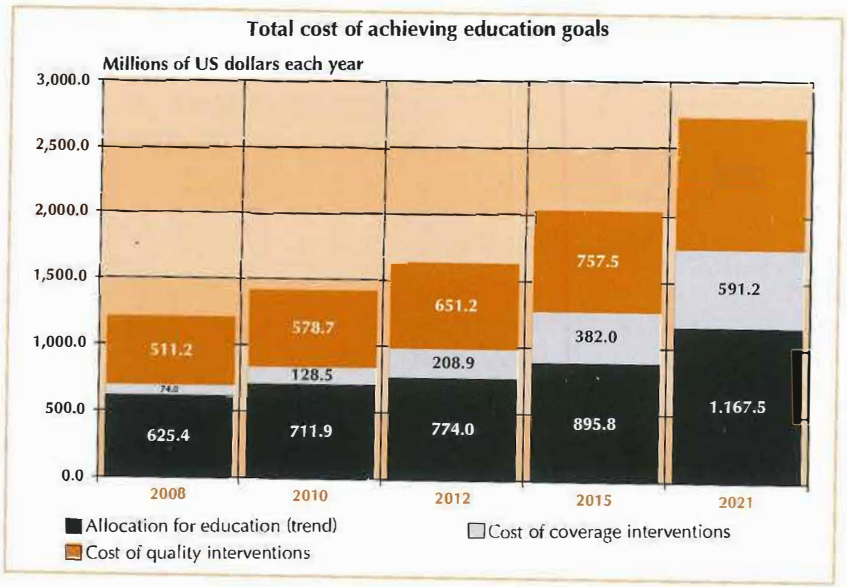
Chart 9

**Total cost of meeting education goals**

| Goals | Interventions to achieve goals | Associated cost Millions of US dollars | | | | |
|---|---|---|---|---|---|---|
| | | 2008 | 2010 | 2012 | 2015 | 2021 |
| **Coverage by trend (with no intervention)** | | **625.4** | **711.9** | **774.0** | **895.8** | **1.1675** |
| **Universal coverage** | • Extension of educational offer | 33.0 | 46.7 | 63.5 | 93.5 | 101.2 |
| | • Conditional cash transfer program | 41.0 | 81.8 | 145.4 | 288.5 | 490.0 |
| **Improve the quality of education at all levels of teaching** | • Nutrition program for pregnant women and children between 0 and 4 years | 94.0 | 95.7 | 96.0 | 94.9 | 87.8 |
| | • Universal school snack program for early child education and primary school | 83.1 | 94.6 | 106.1 | 123.5 | 159.6 |
| | • Bonds based on results and training program | 105.7 | 125.8 | 146.2 | 180.8 | 253.0 |
| | • Bonds for teachers in disadvantaged places: bonds for rural areas | 51.2 | 57.2 | 63.2 | 75.2 | 94.1 |
| | • Replacement of multigrade teachers in first grade of primary school | 25.2 | 26.7 | 35.2 | 38.1 | 71.5 |
| | • Increase in the salary of the school directors | 29.2 | 35.2 | 41.2 | 51.4 | 71.8 |
| | • Incentive bond for directors and training program | 9.4 | 11.3 | 13.2 | 16.5 | 23.0 |
| **Contribute to the recognition of a multiethnic, pluricultural and multilingual nation** | • More bilingual teachers hired | 53.2 | 61.3 | 68.6 | 79.2 | 100.3 |
| | • Extra salary for bilingual teachers | 12.0 | 18.3 | 25.2 | 36.8 | 65.7 |
| | • More training for bilingual teachers | 5.0 | 5.4 | 5.7 | 6.2 | 2.4 |
| | • Texts with an intercultural focus and in all Mayan, Garífuna and Xinca languages | 33.5 | 36.6 | 39.1 | 42 | 45.8 |
| | • Training for bilingual teachers | 3.4 | 3.9 | 4.4 | 5.1 | 6.4 |
| **Promote gender equity in teaching programs** | • Consultative Council for Women and Girls | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| | • Other interventions already included in other goals (CCT and nutrition program) | -- | -- | -- | -- | -- |
| **Develop citizenship** | • Establish an Education Information System | 6.3 | 6.7 | 7.1 | 7.7 | 9.0 |
| | **TOTAL COST** | **1,210.6** | **1,419.1** | **1,634.1** | **2,035.3** | **2,749.2** |
| | Proportion of the Gross Domestic Product | | | | | |
| | According to the Peace Accords | 3.6 | 3.6 | 3.6 | 3.5 | 3.1 |
| | According to Trends | 3.7 | 3.9 | 4.1 | 4.5 | 4.6 |
| | **Budgetary Gap** | **585.2** | **702.2** | **860.1** | **1,139.5** | **1,581.7** |
| | (Total cost minus coverage by trend) | | | | | |
| | Proportion of the Gross Domestic Product | | | | | |
| | According to growth envisaged in the Peace Accords | 1.7 | 1.8 | 1.9 | 2.0 | 1.8 |
| | According to historical growth trends | 1.8 | 2.0 | 2.2 | 2.5 | 2.6 |

This estimate of resources failed to take into account the fact that these resources, if used for education, might contribute to increase economic growth, as has been demonstrated by different studies.[41] This improvement in economic growth might reduce the cost, as a proportion of the national income, of achieving increased and improved education in Guatemala. At the same time, higher economic growth and a higher level of education could reduce extreme poverty and the cost of conditional cash transfers, as well as support programs to reduce malnutrition. Moreover, improvements in management as a result of strengthening the role of directors and improving teaching abilities could increase spending efficiency, so more resources would be saved, thus reducing the need for resources in the medium term. These positive effects of reciprocal reinforcement could have a greater impact to the extent that a greater effort is made to obtain the resources necessary in the short term.

Graph 4




[41] See Hanushek and Kimko (2000) and Neri (2001).



# Mobilization of resources
## to meet education goals by 2021

# V

## A. Financial gap in the Education Sector

The difference between the total amount of resources required in Guatemala to achieve the education goals and the value of resources that are currently allocated to education is significant but not impossible to eliminate. It represents about Q5,000 million (US$669 million) for the initial years and gradually increases in subsequent years.

The proportion of national income that would be needed to close this gap would be less if the Guatemalan economy were to achieve a more accelerated growth. For instance, if the GDP were to grow by 6% a year, as was envisaged in the Peace Accords, it would take between 1.7% and 2.0% of the GDP every year to fill the gap, whereas if growth were to continue the same as in the last ten years, it would require a larger percentage of the GDP, between 1.8% and 2.7% of the GDP each year.

Chart 10

**Budgetary gap accumulated by period */, in millions of US dollars and in GDP terms**

| Concept | 2008 | 2009-2010 | 2011-2012 | 2013-2015 | 2016-2021 | Total gap 2008-2021 |
|---|---|---|---|---|---|---|
| Millions of US dollars | 585.4 | 1,348.1 | 1,636.9 | 3,138.2 | 8,522.1 | 15,230.7 |
| According to economic growth envisaged by Peace Accords | 1.7 | 1.8 | 1.9 | 2.0 | 1.9 | 1.9 |
| According to historical economic growth | 1.8 | 1.9 | 2.1 | 2.4 | 2.6 | 2.4 |

*/ The amount in millions of US dollars is the sum of the gap of the years considered during this period. For calculating the gap in terms of economic growth the accumulated gap has been divided by the sum of the GDP for each of the years considered in this period.
Source: Prepared with estimated costs and GDP projections.

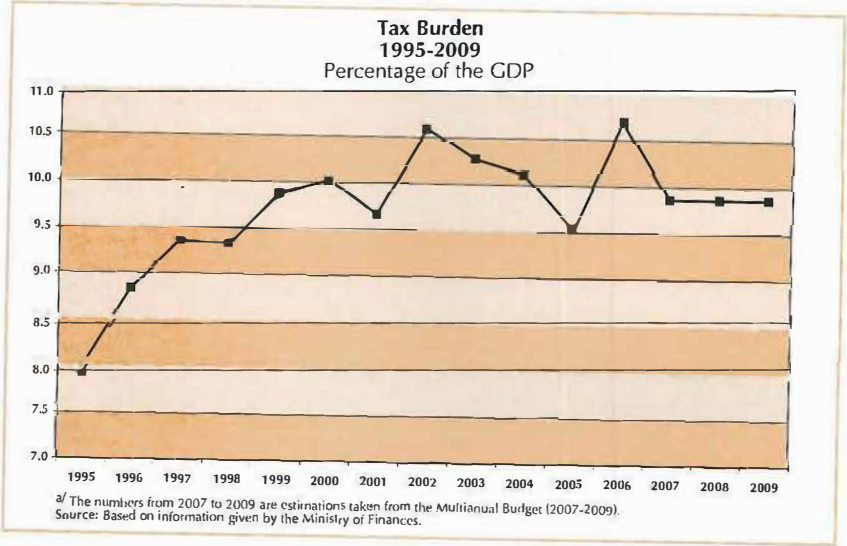
## B. Factors which condition the mobilization of resources

There is a series of factors which affect the mobilization of resources for school education. These include the low level of tax income received by the State, budget rigidity and commitments adopted as part of the Fiscal Pact and the Peace Accords, which are discussed below.

### 1. Low level of tax income and public spending

According to recent behavior and projections made by the Ministry of Finances, the tax burden is about 10% of the GDP. As can be appreciated in the Multi-annual Budget, no substantial modifications in tax collection are envisioned for 2009, which demonstrates the absence of plans to increase State income in the near future.

Graph 5




a/ The numbers from 2007 to 2009 are estimations taken from the Multianual Budget (2007-2009).
Source: Based on information given by the Ministry of Finances.

### i. Budget Rigidity

There are legal provisions in force which specify a pre-established destination for ordinary income, including constitutional contributions and VAT-Peace, which should be used for funding legislative and judicial operations and tax





administration, as well as spending on urban and rural development, the employer's contribution to the Guatemalan Social Security Institute, and the contribution to higher education. This means that with an increase in the general availability of State resources, these could not normally be used exclusively for education, unless special measures were adopted to guarantee this.

### ii. Commitments which condition the mobilization of resources

As well as the national and international obligations that should be taken into account in directing public spending and mobilizing resources for financing this expenditure, there is a series of principles and commitments in the Fiscal Pact which affects the way that additional resources should be mobilized, as follows:

a) The tax system should be globally progressive. This means that the average tax burden (ratio between net tax income/ordinary GDP) will increase to the extent that taxpayers' income is higher.

b) Stability and certainty are fundamental for reducing the risks of unexpected or arbitrary changes, allowing taxpayers to predict the amount of their tax obligations as well as progressing towards the simplification of tax laws.

c) Fiscal decentralization should be encouraged to improve the provision and quality of public services and extend access, management, maintenance, citizen control, sustainability and transparency.

## C. Proposals for mobilizing resources to cover the financial gap and achieve education goals for 2021.

### 1. The reallocation of the Central Government's public spending

Budget pre-allocations represent restrictions on the management of the central government's spending. Some studies estimate that two thirds of the tax burden already has a specific destination, thus resulting in budget rigidity.[42]

In the total amount of budget pre-allocations the most significant contributions are those which are supported by the Constitution of the Republic. These should not normally fall below 20.6% of ordinary income, but in 2005 they were only 18.0% of total income. The remaining 8.4% depends on the laws and on the specific collection of each tax, so this remaining percentage is less rigid than constitutional contributions, and could be modified in the medium term.

[42] Lavarreda et al (2005).

An analysis of the National Budget demonstrates that there are severe limitations to the reallocation of expenditures as a means of mobilizing additional resources for school education.

## 2. New resources

Facing the importance of pre-allocated resources, which would mean that with an increase in the budget for school education spending would have to simultaneously be increased in other sectors, so that additional spending on education would have to be 30% higher to cover these sectors, a proposal for discussion could be one that guarantees that the mobilization of resources for education be *specific resources* with a fixed destination in order to comply with educational goals for 2021. This proposal, which could become a reality through the establishment of a Fund for Education to include these specific resources, would contribute to reduce the financial gap by about 1% of the GDP, depending on the economic growth assumption adopted for the future.

### a. Tax expenditure

Tax expenditure between 2004 and 2006 has been 14% of the GDP, a higher percentage than the goal for tax collection (12%). However, the nuances of this should be understood in order to determine the type of privilege that could really be eliminated, resulting in more tax resources. A very conservative estimate is that between 0.8% and 1.0% of the GDP could be gained as result of reducing tax expenditure. This could be gradual fundamental support for covering the majority of resources needed for achieving education goals, especially in a scenario of high economic growth, but it would still have to be complemented with other measures to achieve the total amount of resources necessary.

The reduction or elimination of privileges would affect the interests of specific groups and therefore, from a political viewpoint, would be difficult to implement. However, they would be positive measures which would provide greater transparency to the tax system. One measure suggested by Mann and Burke to support this effort would be the centralization of franchise concessions in the Ministry of Finances to guarantee transparency in the concession of franchises which grant tax exemptions and exonerations (VAT and tariff duties).

### b. Auditing measures

The mobilization of resources to achieve education goals by 2021 should be complemented with programs to attack tax evasion, accompanied by permanent improvements in the effectiveness of the Superintendence of Tax Administration





(SAT) since an important action for mobilizing resources is the coordinated pursuit and prosecution of tax evasion.

Auditing measures taken in 2006 by SAT demonstrate an increase of 0.9% in the tax burden because of the effect of administrative and auditing control measures linked also to economic growth, without modifying the tax rate.

In the same way it is also possible to mobilize specific resources for education, so an increase in income can be calculated considering a vegetative growth of between 0.1% and 0.4% of the GDP from a conservative viewpoint and depending on economic growth.[43]

### c. Direct taxation

Greater mobility of resources through direct taxation is not necessarily achieved by an increase in taxes focusing on income tax, but through a revision of exonerations and particularly exemptions which erode the tax base of direct taxes. Furthermore, a measure which could be effective in the short term consists of a gradual increase in income tax rates applicable to gross income.

### d. Indirect taxation

Indirect taxes are somewhat rigid in their trend, having risen from 6.6% in 1996 to 7.1% of the GDP in 2005. Customs duties are on a downward trend (24% in 1995 to 11% in 2005) so tax collection has concentrated on the Value Added Tax (VAT) which went up from 3.6% in 1996 to 4.4% of the GDP in 2005.

### e. Public Debt

The different forms of mobilizing resources are based on an internal effort that could be complemented with support from international cooperation, which in 2006 for the Ministry of Education represented 6% of the total budget, 2.6% from foreign loans and 3.4% from foreign donations as well as negotiation of the internal debt.

## 3. Reallocation of spending and new resources for local government

There is a certain margin for redirecting public expenditure in the local sphere to allocate a larger proportion to spending on education. Despite education being a national priority, it has not been reflected in the allocation of resources by municipalities in this sector. In some municipalities there is no budgetary

[43] Assuming the high impact of administrative measures up to 1.0% of the GDP can be expected as a result of more effective control.

line for education. The Municipal Code expressly indicates the responsibility of municipalities to support education, so it is valid to present this as a realistic option to local governments, in compliance with this provision, urging them to adapt their budget and allocate an increasing and significant percentage of it to education.

To this, the funding of the Development Council System should be added. The relevant legislation is linked to stipulations in the Political Constitution of the Republic, different treaties and international conventions on human rights and ordinary legislation on similar subjects, especially in the Municipal Code. This legal base conveys the need to prioritize local spending on education.

## 4. Options for mobilizing resources to generate the income required for achieving education goals by 2021.

For the purpose of illustrating the options for funding education expenditure, two projections were made for the period from 2008-2021: the first is based on the assumption that economic growth will continue at its current rate (1996-2005), while the second is based on the assumption that the economy will grow as established by the Peace Accords (6% a year in real terms). In this summary we will only present the results of the first scenario.

This section was completed for the purpose of illustrating the advantages and disadvantages of the different options in relation to implementation. The effects of different policies have been simulated: a reduction of tax expenditure, an increase in income tax corresponding to gross income, an improvement in the collection of IUSI (Single Real Estate Tax) and an increase in VAT.

### a. Scenario with economic growth in accordance with recent trends

#### i. Reduction of tax expenditure (exemptions and exonerations)

Since it is impossible to automatically generate the necessary resources to achieve the education goals, the first reform option would recommend to reduce tax expenditure or fiscal privileges. It is difficult to reduce these incentives because of the existence of "acquired rights" for some companies. Assuming that the elimination of these incentives would take 10 years to achieve maximum potential, its contribution to the tax burden would generate approximately 1% of the GDP in 2014.

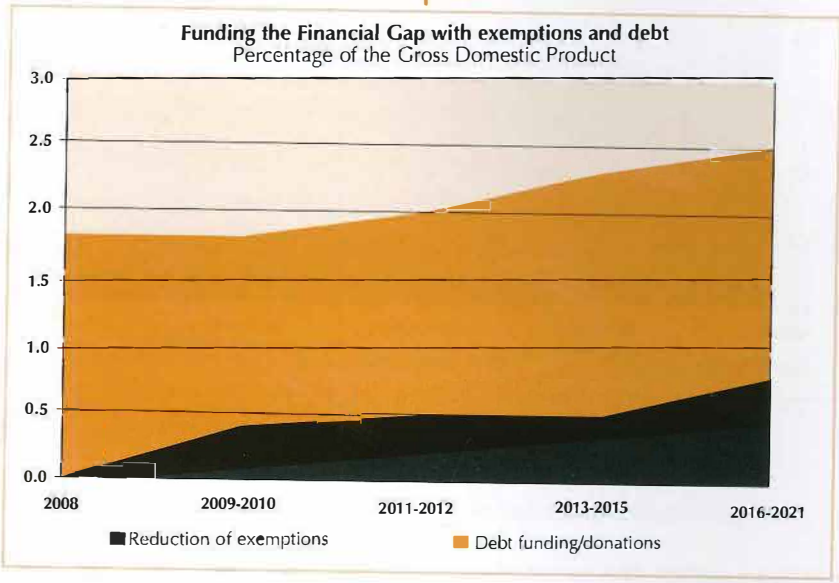
The elimination of this "tax expenditure" would make it possible to reduce the financial gap of about 1.7% of the GDP each year and would lead to an





increase in the tax burden of 1.2% of the GDP by 2021. On average the debt would be at very similar levels to the last five years, which would be a problem for future governments, since they would have a very narrow margin for taking on additional debt.

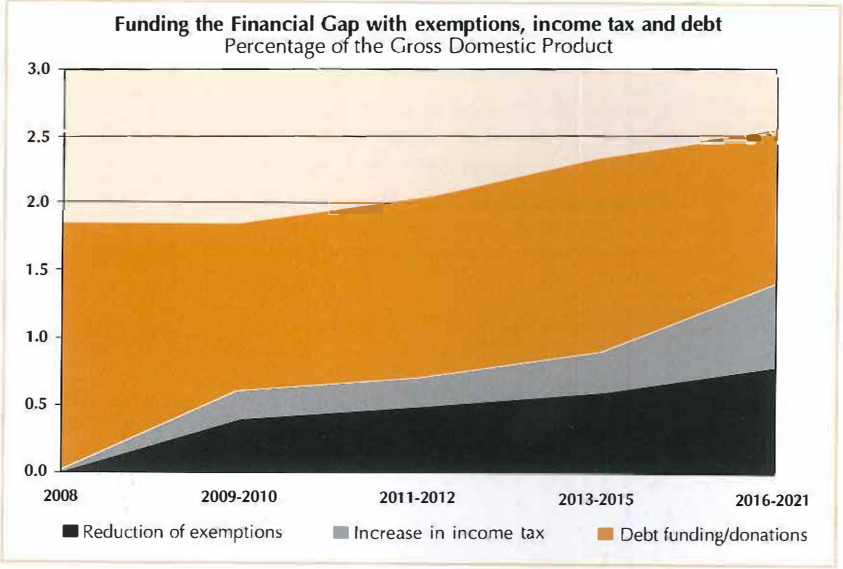
Graph 6




#### ii. Reduction of tax expenditure (exonerations and exemptions) and an increase in income tax on gross income

Income tax on gross income, applicable to 5% of the gross income of individuals and companies has not been in force for long, so projections in relation to this tax should be made with reservations. In any case, to achieve a scenario in which indebtedness would be less than 1% of the GDP, the tax rate should increase from 5% to 9%. The combination of both measures (reduction of tax expenditure and increase in income tax) would represent a significant increase in the tax burden of up to 2.4% of the GDP.

Graph 7




### iii. Reduction of tax expenditure and reform of the IUSI

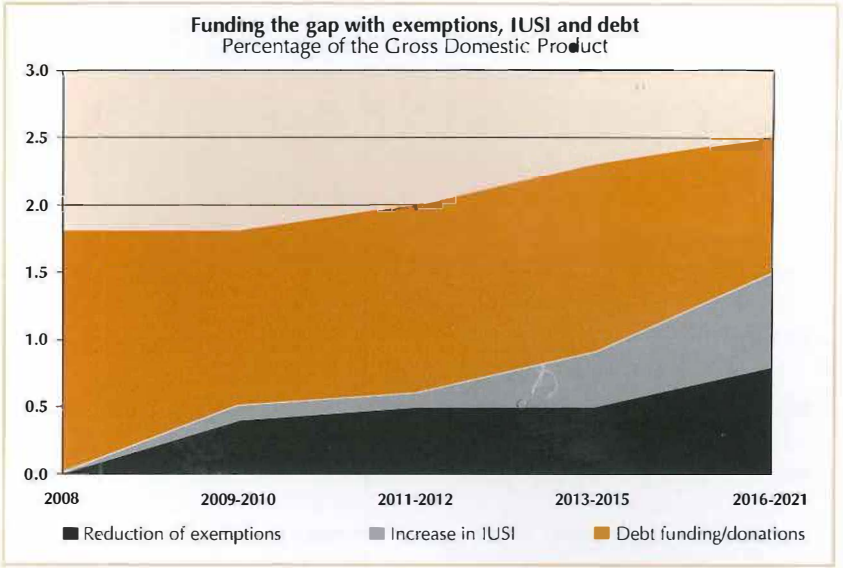
For this measure, the assumption was made that if municipal finances were strengthened it would be possible for the country to achieve an increase in collection of the IUSI similar to Paraguay's performance, a country with similar income as Guatemala´s and that is currently collecting 0.7% of the GDP.

There are several different difficulties that could emerge. First, there could be an inverse correlation between the capacity of the municipalities and funding needs for education. Secondly, there would have to be coordination mechanisms established so that school education implemented by local authorities would faithfully respond to the guidelines of the Ministry of Education.





Graph 8

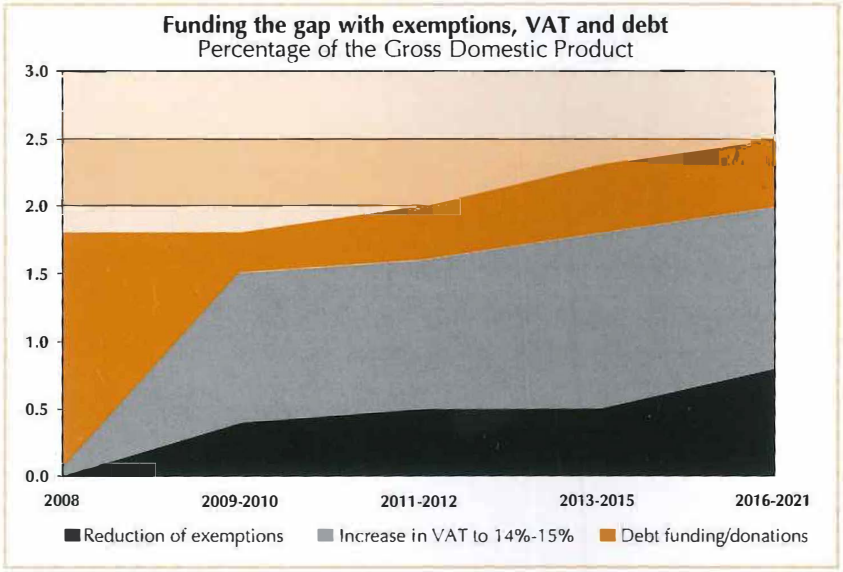



### iv. Reduction of tax expenditure and increase of VAT

Another option which exists for increasing expenditure for school education consists of increasing the VAT. According to recent trends, it would be necessary to increase VAT to 15% so that the debt required to cover the rest would be relatively small, about 0.5% of the GDP. In this case, the recommendation would be that VAT be a pre-allocated tax in the same way as VAT-PEACE since this would make it possible to increase the tax burden and use the whole amount for school education.

Although VAT is a tax policy which has potential, two aspects should be taken into account. The first is that VAT tends to be a regressive tax and this contravenes the principles of the Fiscal Pact. Secondly, an increase in VAT may not achieve the right effects if there are no adequate control systems in place, mainly with regard to fiscal credit, since with higher rates there is a greater incentive to obtain fiscal credit without qualifying for it, declaring exports that have not been made, for example.

Graph 9




### c. Summary of different scenarios

As can be observed, there are different options which exist for funding the gap in expenditure for school education. In all cases and with varying intensity in each case, funding will be possible with a combination of debt and an increase in tax collection.

In brief, although one should stress that it is not possible to sustainably fund the needs of school education in the country without increasing tax collection, it is also important to take into account that all the measures that would contribute to growth rates similar to those specified in the Peace Accords would make it possible to have a more favorable context for obtaining these resources. Nevertheless, the low educational level of the Guatemalan population is also a factor which limits the productive capacity of the country. So to the extent that tax measures are combined with an improvement in conditions for economic growth in the country and resources are allocated to school education, this could result in a virtuous circle in which economic growth will contribute to provide more resources for education and the educational achievements of the population will also help to produce a higher rate of economic growth and social development.

## Central American Institute for Fiscal Studies (ICEFI)

The Central American Institute for Fiscal Studies (ICEFI by its acronym in Spanish) develops economic research and technical analyses related to fiscal issues in Central America. Founded in 2005, the Institute is independent from any kind of political, social or governmental group. ICEFI also provides information, training and consultancy about fiscal policy to governments, parliaments, social and political organizations, and private institutions to positively influence in the creation of public policies that build thriving, fair, and democratic societies.

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## Guatemala and the Academy for Educational Development (AED).

The "Dialogue for Social Investment" project was implemented between June 2005 and July 2007 through cooperative agreement No. 520-A-00-05-00109-00 under the Education Quality Improvement Program 2 (EQUIP2), between the United States Agency for International Development (USAID)/Guatemala and the Academy for Educational Development (AED). The project gave support to USAID's Regional Strategic Objective 3 for Central America and Mexico, specifically to Intermediate Result 3.1: Increased and improved social investment, and Sub-Result 3.1.1: Increase and improve efficiency of expenditures in the Ministry of Education in Guatemala. The project sought to increase and improve social investment as part of policies and management in education through the construction of shared visions and plans, an increase in public and private funding, strengthening the legal and institutional framework in the education sector, both nationally and locally, increasing the Ministry of Education's administrative efficiency, as well as providing support to citizen functions in planning, promoting, monitoring, auditing, evaluating and advocating for adequate policies and practices, increasing media comittment to education and strengthening skills in political operators in education.

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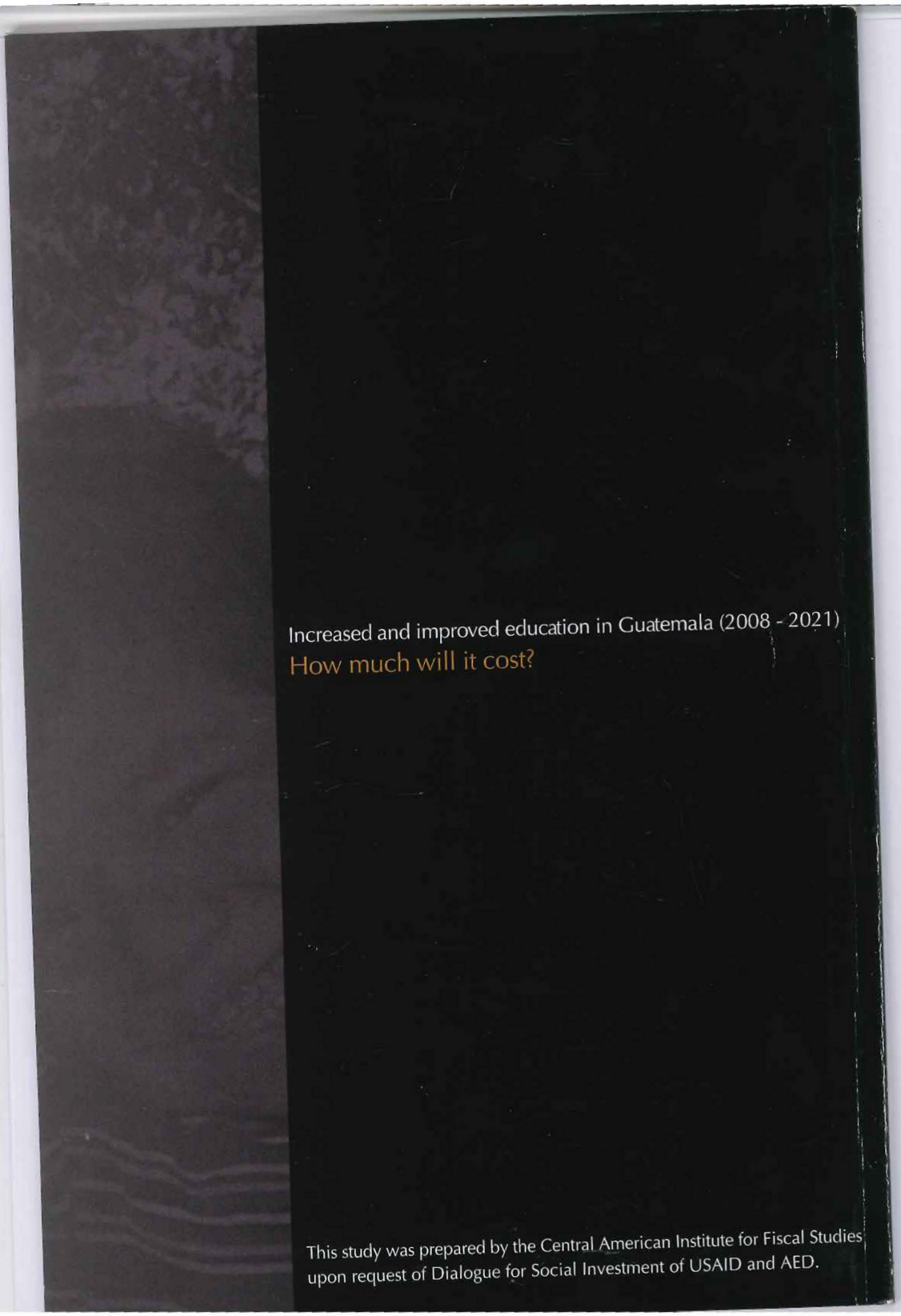

# Increased and improved education in Guatemala (2008 - 2021)

## How much will it cost?

This study was prepared by the Central American Institute for Fiscal Studies upon request of Dialogue for Social Investment of USAID and AED.