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**The affordability of the Sustainable Development Goals:  
A myth or reality?**

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# The Affordability of the Sustainable Development Goals A myth or reality?

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## Abstract

Global governance in various forms has emerged as a salient means of setting and driving common development goals that are of interest to the world's functioning at large. However, literature is divided on the attribution of achievements to the global social governance efforts. The experience of the Millennium Development Goals (MDGs) showed the importance of setting indicators at an early stage to support a sound monitoring system. If the world is to start implementing the Sustainable Development Goals (SDGs) in 2016, we cannot afford a lag of several years before putting monitoring tools in place and measuring progress towards achieving these goals.

To answer the question on the level of resources required to fulfil the SDGs target by country and income category, five low and lower middle income countries were selected from Asia, Africa, and Latin America based on availability of data and their classification as low and lower-middle income countries: Cambodia, El Salvador, Ethiopia, Indonesia, and Senegal. The required data for the assessment is sourced from the World Bank Development Indicators Databank (WDID).

The estimation of the resource requirement to adhere to the poverty, health and education targets of the SDGs involves computing three indices for each dimension. For the income gap index, two poverty lines underlie the composite resource gap as percentage of the GDP to meet the SDGs targets on poverty. The education gap is constructed by normalising seven indices that either directly capture or proxy the governance and outcome targets on education in the SDGs. Thirdly, this research employed a three-step approach in estimating the normative public health expenditure gap; the staff expenditure gap; and the resource allocation expenditure gap. To conclude, the viability of closing the cumulative resource gap is assessed in light of a country's tax revenue.

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## Table of Contents

Abstract .....	2
1 – Introduction .....	4
2 - Methodology .....	5
2.1 Background .....	5
2.2 Sample Selection.....	5
2.3 Data Selection .....	6
2.4 Technique Monitoring Framework .....	6
2.4.1 Income poverty.....	6
2.4.2 Education .....	7
2.4.3 Health .....	9
2.4.4 Combining.....	12
2.5 Technique Fiscal Stress.....	12
3 - Results .....	13
3.1 Resource Gap .....	13
3.1.1 Cambodia .....	14
3.1.2 El Salvador .....	15
3.1.3 Ethiopia.....	15
3.1.4 Indonesia .....	16
3.1.5 Senegal.....	17
3.2 Fiscal Stress .....	18
4 – Conclusion .....	19
References .....	21
Annex 1 - Social development related SDGs and targets.....	23
Annex 2 – Matrix.....	27
Annex 3 - Targets and Indicators.....	28
Annex 4 – Fiscal capacity .....	29
Annex 5 – Education: country score and expenditure.....	30

## 1 – Introduction

As the world becomes more and more interdependent, there have been concerted efforts towards setting and achieving common development goals that are of interest to the world's functioning at large. Global governance in various forms has emerged as a salient means of setting and driving the development agenda of the world. The Millennium Development Goals (MDGs), though not the pioneer in the global goals setting history as this started with the 1995 Copenhagen Summit on Social Development, represents a culmination of these efforts (Friedman, 2013). With a set of eight goals and corresponding indicators, specific objectives for the world to accomplish were declared in September 2000. Adopted by leaders of 193 countries, international organisations and civil society organisations, these goals were intended to shape a path towards achieving specific development milestones by 2015.

Assessing whether there has been acceleration in development indicators following the MDGs' declaration, Friedman (2013), empirically observes no significant changes, with the exception of goal 8B (Total Debt Service). In a similar vein, Muttaqien et al. (2015) and Bongestabs (2015) found that improvement in social realities took place even before the introduction of MDGs. However, literature has shown a divided opinion with regards to impacts attribution (Fukuda-Parr et al., 2013), to the extent that some felt that discounting the impact of MDGs was unfair, considering the limitation of the impact evaluation methods (Melamed & Samman, 2013). To summarise, the debate on the extent to which the MDGs have influenced the development outcomes they set out to improve, is still inconclusive.

That, notwithstanding, a new set of global goals has been rolled out that builds on the MDGs. Succeeding the MDGs, the Sustainable Development Goals (SDGs) were accepted by the UN General Assembly in September 2015. The SDGs consist of 17 goals and 169 targets to be achieved by 2030. The challenges and schisms of attribution that surrounded the MDGs are unresolved to date and still loom over the SDGs. However, Muttaqien et al. (2015) indicate that an attempt to answer this question is a fool's paradise which diverts the debate from more relevant factors regarding the ideals of global governance and how to address its implicit challenges.

Muttaqien et al. (2015) point to the need for regional and local policy context. Particularly, budget prioritisation and fiscal capacity remain key challenges to implement social development. Bongestabs (2014) found that it is only in the richer countries that the correlation between MDGs and social expenditure is significant, indicating that setting global goals alone might not be enough for real change to occur. The importance of resource gaps and fiscal stress cannot be underestimated.

It is important to understand the fiscal capacity that underlies any potential mechanism to implement the social agenda of the SDGs, particularly if the international community wants to hold governments accountable for its implementation. This paper contributes to this debate by developing a monitoring instrument that assesses 1) the resource requirements or

gaps needed for the implementation of the SDGs and 2) the capacity to address this gap by constructing a comparable fiscal space instrument that allows to assess the 'SDG related fiscal stress' on the national social budgeting and financial planning.

## 2 - Methodology

### 2.1 Background

The experience of the MDGs showed the importance of setting indicators at the earliest stages to support a sound monitoring system. If the world is to start implementing the SDGs in 2016, we cannot afford a lag of several years before establishing monitoring tools and measuring progress towards achieving these goals. Hence, indicators are the core of any monitoring progress towards the SDGs at multiple levels; local, national, regional, and global.

A sound indicator framework will turn the SDGs into a development instrument to help countries develop strategies in terms of policies and programmes, and to allocate resources for their implementation. Moreover, the indicators will ensure traceability because once you know what it would cost to implement a goal, you can trace the progress by matching this with actual expenditure. Thus, they provide a monitoring tool that can be used by civil society actors to hold governments accountable in their efforts to implement the SDGs. Therefore, time is of the essence in developing indicators to monitor progress towards SDGs and to estimate the levels of investment required to implement them.

Previous efforts have shown that designing a monitoring framework for global commitments is not an impossible task. To exemplify, Bierbaum et al. (2015) adopted a methodology of estimating the potential costs to close social protection gaps (Cichon and Cichon, 2015) to assess the degree of implementation of national Social Protection Floors (SPFs) as adopted under Recommendation 202. They developed a Social Protection Floor Index (SPFI) to detect protection gaps along income and health dimensions. This estimates the magnitude of financial resources needed to guarantee access to essential health care and a basic income in relation to a country's economic capacity. A similar estimation for the SDGs would require a careful examination of the types of targets to assess SDG adherence and to establish a monitoring tool to estimate potential fiscal stress.

### 2.2 Sample Selection

The 2030 agenda is a broad and universal policy agenda that seeks sustainable development where no one will be left behind, making poverty one of the biggest challenges (UNGA, 2015). Considering the current state of development, the most vulnerable countries are located in the Global South. These countries face the largest challenges in achieving the objectives of 2030 compared to other countries. Moreover, middle-income countries also face specific challenges that need to be addressed (in *ibid.*). As implementation of the SDGs

requires fiscal commitments, an understanding of the potential fiscal stress that adhering to the SDGs might bring is crucial in any advocacy.

To answer the question to what extent countries are able to implement the SDGs, it is important to choose a representative sample from the countries in the Global South. This paper looks in detail at five low and lower middle-income countries in respectively Latin America, Africa and Asia: Cambodia, El Salvador, Ethiopia, Indonesia, and Senegal.<sup>6</sup> The countries are selected on basis of data availability and income level. Reference countries are selected from high-performing countries within the same region and income level.

## 2.3 Data Selection

The targets selected contribute to social development. They comprise 11 goals and 28 targets - see annex 1 for an overview of the selected SDGs and targets. These targets can be divided in *governance* and *outcome* targets (Cichon, 2016). Outcome targets indicate the desired state at 2030 whereas governance targets refer to concrete forms of government action. In the proposed framework the outcome targets tend to inform the governance targets. This paper focuses on three main categories: income poverty, health and education.<sup>7</sup>

As the concept behind the monitoring tool for estimating policy implementation and fiscal stress is accountability of governments that can be assessed by civil society, data selection is dependent upon publicly available sources. The data in this paper is sourced from the World Bank Development Indicators Databank (WDID).

## 2.4 Technique Monitoring Framework

Income poverty, education and health are drivers of most of the social agenda (Cichon, 2016) as is also implied in the construction of the index. The gap for each category is estimated via the following technique before being collated into one overarching resource gap. This allows for comparison and a better understanding of a country's performance on the social development indicators of the SDGs.

### 2.4.1 Income poverty

Within income poverty, three main targets have been identified (1.1, 1.2, and 1.3). The *governance* target 1.3 on nationally appropriate social protection floor aims at the poor and vulnerable and the ultimate objective to bring this group out of poverty. Therefore, the resource requirement is covered under the *outcome* targets on poverty reduction (1.1 and 1.2) to avoid double counting (see annex 3 – table 3).

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<sup>6</sup> While Haiti is a low income country in Latin America, it could not be included in our estimations due to data limitations. As it is the only low income country in the region, no other country could serve as substitute.

<sup>7</sup> The interaction between these targets is captured in the matrix in annex 2.



This research estimates the income poverty gap requirement by first measuring the resource gap to eradicate extreme poverty for all people:

$$IG_{1i} = PGR_i * 1.90 * 365 * N \quad (1)$$

Where  $PGR_i = \frac{1}{N} \sum_{i=1}^N (\frac{g_{j,i}}{z})$

$$\text{with } g_i = \begin{cases} z - y_{j,i} & \text{if } y_{j,i} < z \\ 0 & \text{if } y_{j,i} \geq z \end{cases}$$

$IG_1$  = resource gap to close the 1.90 USD a day poverty line for country i

$PGR_i$  = daily poverty gap ratio for country i

$N$  = total number of population

$z$  = extreme poverty line (1.90 USD a day)

$y_j$  = income of individual j in country i

$g_j$  = gap between income and extreme poverty line for individual j in country i

Secondly, a national poverty line for each of the five countries is retrieved from its domestic database (in 2011 PPP USD). A new poverty gap ratio is then estimated after closing the 1.90 USD PPP gap provided that their national poverty line is above 1.90 USD a day:

$$New PGR_i = \begin{cases} PGR_{natpov,i} - PGR_{1.9 USD,i} & \text{if } PGR_{natpov,i} > PGR_{1.9 USD,i} \\ 0 & \text{if } PGR_{natpov,i} \leq PGR_{1.9 USD,i} \end{cases} \quad (2)$$

Next, in line with target 1.2, the resource gap is measured by reducing the poverty gap by half the proportion of people living under the national poverty line assuming that halving the resource gap results in a halving of the poverty headcount:

$$IG_{2i} = \frac{New PGR_i * 3.10 * 365 * N}{2} \quad (3)$$

Where,

$IG_{2i}$  = resource gap to reduce the population living under the national poverty line by half for country i

Lastly, to estimate an overall indicator of the income poverty gap as percentage of GDP, the total resource gap is summed up and converted into a percentage of GDP:

$$IG_i = \frac{IG_{1i} + IG_{2i}}{GDP} \quad (4)$$

Where,

$IG_i$  = resource gap as percentage of GDP for poverty for country i

#### 2.4.2 Education

The next stage of monitoring framework concerns education. In 2005, the High Level Group on Education for All (EFA) estimated that approximately 4 to 6 per cent of GDP should be on education (UNESCO 2005). To understand the extent of investment that countries will

need to make to accomplish a similar level, it is important to estimate the education gap ( $EG_j$ ).

Overall, there are three main governance targets (4.1, 4.2 and 4.5) that can be measured by (proxy) indicators (see annex 3 – table 3). First and foremost, all boys and girls should complete primary and secondary education, which is measured directly (target 4.1). Further, teacher-student ratio for both primary and secondary is adopted as the proxy for quality education (target 4.2) as research highlights that reductions in class size is one of the policy options that may be pursued to improve student learning (Ehrenberg et al., 2001). Lastly, a gender parity index at the tertiary other than primary and secondary is adopted as the highest level of educational attainment (target 4.5).

The selected indicators are measured via varying indices. To have a comparable index to estimate an education gap, the indices of the respective indicators are normalised to a common measure ranging from 0 - 100. These are then aggregated in an overall education score:

$$ES_i = \frac{CRP_{mi} + CRP_{fi} + CRS_{mi} + CRS_{fi} + TP_i + TS_i + GPT_i}{7} \quad (5)$$

Where,

$ES_i$  = education score for country i

$CRP_{mi}$  = completion rate at the primary level for males for country i

$CRP_{fi}$  = completion rate at the primary level for females for country i

$CRS_{mi}$  = completion rate at the lower secondary level for males for country i

$CRS_{fi}$  = completion rate at the lower secondary level for females for country i

$TP_i$  = teacher-student ratio at the primary level for country i

$TS_i$  = teacher-student ratio at the lower secondary level for country i

$GPT_i$  = gender parity at tertiary level for country i

Based on this average score, the top five performing countries<sup>8</sup> within the low and lower-middle income countries group, served as a benchmark for the average education score:

$$P_B = \frac{1}{5} \sum_{j=1}^5 ES_j \quad (6)$$

Where,

$P_B$  = benchmark average education performance score

$ES_j$  = education score for reference country j

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<sup>8</sup> The reference countries for education include: Georgia, Indonesia, Moldova, Sri Lanka, and Vietnam.

Secondly, the unweighted average expenditure on education as percentage of GDP in the reference countries has been adopted as the necessary investment required to achieve SDG 4 for each country:

$$EGDP_B = \frac{1}{5} \sum_{j=1}^5 EGDP_j \quad (7)$$

Where,

$EGDP_B$  = benchmark expenditure on education as percentage of GDP

$EGDP_j$  = expenditure on education as a percentage of GDP for reference country j

Having acquired an understanding of the required average education score for the top five performing countries and their investment, the final step is to estimate the resource gap that a country would need to invest in on top of their current expenditure as percentage of GDP on education:<sup>9</sup>

$$EG_i = \frac{P_B - ES_i}{100} \times EGDP_B \quad (8)$$

Where,

$EG_i$  = the fiscal or resource gap on education as a percentage of GDP for country i

$ES_i$  = education score for country i

Consequently, to understand where countries are lacking and what they should improve, more investigation is needed on the disaggregate education score on country level.

### 2.4.3 Health

Lastly, the category on health is based on the interaction between five targets (1.3, 3.1, 3.2, 3.7, and 3.8). In line with *governance* target 1.3, members should provide “access to a nationally defined set of goods and services, constituting essential health care, including maternity care that meets the criteria of availability, accessibility, and quality” (ILO 2012, 3) as part of their national SPF.

To capture this health dimension in the SPFI, Bierbaum et al. (2015) propose a two-stage indicator where they compare both the adequacy of the overall amount of public resources allocated to health as well as the adequacy of the allocation of these resources within the

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<sup>9</sup> The rationale behind choosing  $EGDP_B$  in equation 8 is to introduce an element of efficiency. Using  $EGDP_B$  signals to inefficient countries, i.e. countries with a high expenditure-to-score ratio that progress is likely associated with smarter spending, whereas it signals to efficient countries that progress can be made by spending more on education. The alternative is using, which assumes that the current country expenditure-to-score-ratio is optimal for that country ( $EGDP_i$ ). Plotting the country score against the education expenditure (annex 5) indicates no clear relation; however, it is observed that the average expenditure of the top five reference country is almost equal to the average of all countries. Therefore, the choice for  $EGDP_B$  is purely normative.

health care delivery system. As the SDGs go a step further and indicate several targets which they feel should be aspired, this research builds on this model and proposes a three-step approach assessing the normative public health expenditure gap; the staff expenditure gap; and the resource allocation expenditure gap.

Before estimating the three filters, the benchmarks need to be established. For each target several proxy indicators have been identified (see annex 3 – table 3). Of these, the *outcome* targets (3.1 and 3.2) on maternal mortality rate, neonatal mortality rate and under-five mortality were used to identify 11 reference countries<sup>10</sup> that have already achieved these objectives. Of these countries, the average public health expenditure ( $HE_b$ ) is 3.637 per cent of GDP based on 2014 World Bank data; they have an average of 5.0528 health staff member per 1,000 people ( $S_b$ ); and typically 96.66 per cent of all births are attended by skilled staff ( $BA_b$ ) based on the latest available data.<sup>11</sup>

Firstly, a normative public health expenditure gap is calculated for each of the individual countries. Provided that the public expenditure on health of a country is smaller than the benchmark, this results in the health expenditure gap for each individual country:

$$HG_{ei} = \begin{cases} HE_b - HE_i & \text{if } HE_i < HE_b \\ 0 & \text{if } HE_i \geq HE_b \end{cases} \quad (9)$$

Where,

$NHG_i$  = normative health gap expenditure as percentage of GDP for country i

$HE_b$  = benchmark for average public health expenditure as percentage of GDP

$HE_i$  = actual public health expenditure as percentage of GDP for country i

Secondly, staffing shortage is one of the key criteria that determine whether countries meet the capacity to provide healthcare services. According to WHO (2006), the health workforce drives on average 42.2 per cent of all governmental health expenditure globally. Hence, the number of staff members per 1,000 people indicates whether countries have the adequate staffing members in place to achieve health outcomes.

For the selected case studies, it is first determined whether the selected countries meet the average staff members of (5.0528 physicians, nurses and/or midwives per 1,000 people). If the selected countries do not meet this requirement, the difference between the two numbers is estimated as a percentage of the benchmark:

$$SG_i = \begin{cases} \frac{(S_b - S_i)}{S_b} * 100 & \text{if } S_i < S_b \\ 0 & \text{if } S_i \geq S_b \end{cases} \quad (10)$$

<sup>10</sup> These countries include: Armenia, Cabo Verde, El Salvador, Georgia, Kyrgyz Republic, Moldova, Ukraine, Samoa, Sri Lanka, Vietnam, and West Bank and Gaza.

<sup>11</sup> The most recent data was used if available between 2010 and 2015.

Where,

$SG_i$  = staff gap for country i

$S_b$  = benchmark for average number of health personnel

$S_i$  = actual staffing for country i

Next, this percentage is multiplied by actual public health expenditure assuming that investment in staff members also requires investment in additional resources. The resulting number indicates the public health staff expenditure gap ( $SHG_{ei}$ ) and forms the second filter of the health expenditure index:

$$SHG_{sei} = SG_i \times HE_b \quad (11)$$

Where,

$SHG_{ei}$  = public health staff expenditure gap as percentage of GDP for country i

Lastly, the effectiveness in terms of resource allocation in the health sector is estimated. To understand the extent to which a country allocates resources effectively, the *outcome* targets (3.1 and 3.2) are considered. If the country fails to meet one or more of these criteria, a health gap in terms of allocation of available resources is assumed.

Not only are maternal and neonatal mortality rates directly related to the percentage of births attended by skilled staff, the WHO (2016) has indicated that 45 per cent of the under-five mortality is due to neonatal mortality or causes resulting from postnatal care. Hence, the percentage of births attended by skilled staff serves as proxy for the adequate allocation of resources. In the first step, the birth attendance gap is estimated for each country:

$$BAG_i = \begin{cases} BA_b - BA_i & \text{if } BA_i < BA_b \\ 0 & \text{if } BA_i \geq BA_b \end{cases} \quad (12)$$

Where,

$BAG_i$  = birth attendance gap for country i

$BA_b$  = benchmark for percentage of births attended by skilled staff

$BA_i$  = actual percentage of births attended by skilled staff for country i

Based on the assumption that investment in staff members also requires investment in further resources, actual expenditure suffices. The health gap in terms of allocation of available resources is estimated by multiplying the birth attendance gap with the benchmark for health expenditure:

$$AHG_i = BAG_i \times HE_b \quad (13)$$

Where,

$HG_{ai}$  = resource allocation expenditure gap as percentage of GDP for country i

Lastly, of the three estimates – normative expenditure gap ( $NHG_i$ ), staff investment gap ( $SHG_i$ ), and resource allocation gap ( $AHG_i$ ) – the highest score is considered an indicator for the health resource gap that needs to be covered to achieve an adequate service and reach:

$$HG_i = \max\{NHG_i, SHG_i, AHG_i\} \quad (14)$$

Where,

$HG_i$ = public health expenditure gap for country i

#### 2.4.4 Combining

Having estimated the income poverty gap, education expenditure gap and public health expenditure gap, the three categories will be added up to come to the overall investment that a country will need to make to move towards the achievement of the SDGs:

$$RG_i = IG_i + EG_i + HG_i \quad (15)$$

Where,

$RG_i$ = SDGs resource gap for country i

### 2.5 Technique Fiscal Stress

The viability of closing this resource gap is primarily assessed in light of a country's tax revenue. While tax is just one of many possible revenue sources for governments, it is arguably the most predictable and least volatile. More importantly, tax revenue falls under control of the government whereas income from ODA, FDI or national resources are to a large extent dependent on factors outside their control (Le et al., 2012).

Though there is no rule about the optimal taxation level, there is a common understanding that tax revenues should at least finance a country's needs in infrastructure, social services, and public goods. The low level of tax revenue collection in many low- (and lower-middle) income countries pose a serious threat to a country's level of economic development (in *ibid.*), as well as their ability to meet the SDGs.

To allow for comparability, the tax revenue as percentage of GDP is used. Firstly, it is determined for all low and lower-middle income countries in the respective regions of the five countries. This average represents a tax-to-GDP ratio of comparable countries, and amount to a representative benchmark.

Secondly, the difference between the sample country's tax revenue and the regional benchmark is calculated. This tax gap indicates potential fiscal space that governments could utilise to (partially) fill the SDG resource gap, without compromising any other budget posts.

$$TG_i = \begin{cases} TR_B - TR_i & \text{if } TR_i < TR_B \\ 0 & \text{if } TR_i \geq TR_B \end{cases} \quad (16)$$

Where,

$TG_i$ = the tax gap as percentage of GDP for country i

$TR_b$ = regional benchmark for tax revenue as percentage for GDP

$TR_i$ = tax revenue as percentage of GDP for country i

Next, the absolute fiscal stress<sup>12</sup> is estimated by analysing that part of the SDG resource gap not accounted for by filling the tax gap:

$$AFS_i = RG_i - TG_i \quad (17)$$

Where,

$AFS_i$ = absolute fiscal stress as percentage of GDP for country i

As the absolute fiscal stress may punish those countries that are already doing quite well, it is important to also consider the relative fiscal stress<sup>13</sup> to understand to what extent governments are able to increase their tax revenue, or re-allocate resources:

$$RFS_i = \frac{AFS_i}{TR_i} \quad (17)$$

$RFS_i$ = relative fiscal stress as percentage of GDP for country i

The next section first discusses the resource requirements that a country should invest in to achieve the SDGS. This is followed by a discussion on the magnitude of fiscal stress alongside possible avenues to decrease this – such as reprioritisation, enlarged ODA inflows.

## 3 - Results

### 3.1 Resource Gap

In this paper, five countries were selected based on three criteria: location, World Bank classification as low or low middle income country and availability of data. Based on these two criteria, five countries were selected; Cambodia, El Salvador, Ethiopia, Indonesia, and Senegal. The estimation result of resource gap required to fulfil the SDGs target by country and category, are depicted in table 1.

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<sup>12</sup> If the absolute fiscal stress is negative this implies that a country should be able to make the necessary investments to meet the 2030 targets.

<sup>13</sup> See footnote 6, the same applies for the relative fiscal stress.

Country	Income Poverty			Health				Education	Total Gap % GDP
	\$1.90	National Poverty Line	Total	Standard <sup>14</sup>	Health Staff	Allocation	Max		
<b>Cambodia</b>	0.241	0.381	0.622	2.386	2.946	0.279	2.946	1.435	5.003
<b>El Salvador</b>	0.065	0.195	0.260	0.000	2.197	0.000	2.197	0.430	2.887
<b>Ethiopia</b>	5.829	0.341	6.170	0.767	3.451	2.675	3.451	2.629	12.250
<b>Indonesia</b>	0.237	0	0.237	2.561	2.495	0.493	2.561	0.058	2.856
<b>Senegal</b>	4.108	1.624	5.732	1.217	3.292	1.366	3.292	1.888	10.912

Table 1 Estimation Result

### 3.1.1 Cambodia

In 2012, 6.15 per cent of Cambodians were living under the extreme poverty line, 1.90 USD a day, and almost 18 per cent under the national poverty line. To lift the people above the extreme poverty line, an additional 0.24 per cent of GDP is required. Likewise, an additional 0.381 per cent of GDP is needed to bring half of the poor people to the level above the national poverty line. In total, Cambodian government need to allocate 0.62 per cent of GDP additionally to close the income poverty gap.

Furthermore, Cambodia allocates 2.60 per cent of its GDP to education. This falls below the benchmark of 4.18 per cent and thus explains its relatively average performance in the aggregated education score index (56.21 out of 90.58). To achieve the goal of quality, accessible and equitable education, Cambodia will have to commit an addition 1.44 per cent to its current GDP expenditure on education.

Lastly, the public health staff expenditure gap score is the largest of the three indexes with 2.946 per cent of GDP and it is the overall health expenditure resource gap. The results also indicate amongst others, that Cambodia should increase its expenditure on the public health sector by 2.39 per cent of GDP to reach at the normative benchmark of 3.64 per cent of GDP. Moreover, Cambodia is urged to (re)allocate 0.28 per cent of its GDP for efforts to close the resource allocation gap.

In total, Cambodia will need to invest an additional 5.03 per cent of its GDP to achieve better outcomes in all three categories. For its World Bank classification as low income country, it does fairly well compared to the other low income country, Ethiopia, and also when compared to the lower middle income country Senegal in terms of income poverty and education.

<sup>14</sup> Standard is used to indicate the normative public health expenditure benchmark.



### 3.1.2 El Salvador

In El Salvador, 3.25 per cent of total population was living under the 1.90 USD a day poverty line and the government needs an extra 0.07 per cent to close this extreme poverty gap. Regarding the poverty incidence defined by the national definition, however, the national poverty gap ratio is not available. In this case, the 3.10 PPP USD a day is used instead. Using the 3.10 USD a day line as a proxy for the national poverty line, the government needs an additional 0.20 per cent of GDP to reduce the 3.10 USD a day poverty gap by half. However, it is worth noting that the result is an underestimation considering the national poverty line, 5.12 USD a day, is much higher than 3.10 USD a day line. In total, El Salvador requires 0.26 per cent to achieve the income poverty targets.

Secondly, El Salvador ensures a comparatively better education outcome for its citizens with an 80.29 out of 90.58 aggregated education score index. It therefore needs less (0.43 per cent of GDP) additional commitments to achieve the ideal target of education by 2030.

Also in terms of health, El Salvador is performing very well on the *outcome* targets and is amongst the reference countries. The country's expenditure as a percentage of GDP on the public health sector is even greater than the benchmark. Besides, nearly all the births in the country were attended by skilled staff. Hence, the country did not face public health expenditure and resource allocation gaps. However, a gap was identified in terms of expenditure on health personnel. The country has to raise its investment on the health staff by 2.20 per cent of GDP to increase the number of the health personnel from 2 to 5.05 per 1000 people.

Overall, El Salvador does fairly well in all categories compared to the other countries. If it wants to aim for better achievements on the SDG targets, it should invest an additional 2.892 per cent of GDP.

### 3.1.3 Ethiopia

The proportion of poor people in Ethiopia defined by both 1.90 USD a day and national poverty definition is the second highest, next to Senegal, compared to the other five countries. Furthermore, due to its low level of GDP, the resource gap needed to achieve the targets is the highest amongst all five. To bring all poor people to the level above the extreme poverty line, an additional 5.83 per cent of GDP is required. To reduce the proportion of people living under the national poverty line by half, an extra 0.34 per cent of GDP must be allocated. This comprises an additional expenditure of 6.17 per cent of GDP that is required to achieve the targets on income poverty.

On the other hand, Ethiopia exceeds the benchmark needed to achieve the ideal education outcomes (4.5 per cent of GDP). Nonetheless, Ethiopia is comparatively the worst education performer based on the aggregated education score index (27.61 out of 90.58). This is driven

by the extent of equality and inclusiveness in the education system as exemplified by the low tertiary gender parity (0.43), and the low secondary completion rate for females (27.95) and males (30.78). To bridge this gap, Ethiopia will need to invest an additional 2.63 per cent of GDP to education. More importantly, government's education policies should consider reallocation in terms of their expenditure as Ethiopia already commits a substantial proportion of GDP on education.

As for health, Ethiopia has a normative public health expenditure gap of 0.77 per cent which is relatively small. Yet, Ethiopia has a staff expenditure gap and allocation gap. The gap for public health staff expenditure of the country is 3.45 per cent of GDP and the resource allocation gap is 2.68 per cent. The latter is driven by the shortage of 73 percentage points compared to the 96 per cent benchmark as only 23 per cent of births are attended by skilled staff in the country.

Ethiopia is among the worst performing countries leaving most room for improvement. The government will need to invest an additional 12.25 per cent of GDP to achieve the targets with the majority of recommended investment driven by income poverty. In its road to achieving the SDGs, Ethiopia will most likely need to prioritise among the different categories.

### 3.1.4 Indonesia

In the case of Indonesia, the estimated result shows that almost 16 per cent of the population was extremely poor in 2010. Since its national poverty line is lower than the 1.90 USD a day line, the resource gap required to eliminate all forms of extreme poverty is equal to the resource to eradicate extreme poverty or around 0.24 per cent of GDP. Therefore, in total, the Indonesian government has to allocate an additional 0.24 per cent of GDP to achieve the income poverty targets.

Next, Indonesia has the best education outcome based on the aggregated education score index (89.19 out of 90.58) among the selected countries. To achieve the ideal state which reflects the educational targets as set out in SDG 4, the government will need an additional 0.06 per cent commitment on top of its current expenditure on education.

In contrast, Indonesia will need to invest substantially in health. It faces a normative health expenditure gap of 2.56 per cent of the GDP; its current expenditure on health is 1.07 per cent of GDP. In the country, the number of health staff per 1000 people was 1.59. To meet the benchmark, Indonesia is required to spend an additional expenditure of 2.50 per cent of GDP on staffing. Lastly, the country needs to (re)allocate 0.49 per cent of the GDP to cover the resource allocation gap. Overall, the biggest health investment that Indonesia needs to make is 2.56 per cent of GDP.

Indonesia already achieves relative good outcomes in terms of education and income poverty. As for health, it still has a gap to fill. Overall, the government needs to allocate an additional 2.86 per cent of GDP to move towards achieving the targets.

### 3.1.5 Senegal

Poverty incidence appears to be the most problematic in Senegal. The proportion of people living under the 1.90 USD a day poverty line is approximately 38 per cent while the proportion of people living under the national poverty line is as high as 46.7 per cent. Above all, the poverty gap ratio for both the 1.90 USD a day and the national poverty line is highest among all selected countries. This indicates that the severity of poverty problem is most prominent in Senegal. In order to close this gap, an additional 5.73 per cent of GDP must be allocated.

In terms of education, Senegal has the highest expenditure as percentage of GDP to education of all five countries (5.60). Yet, it still falls short at the level of the aggregated education score index (45.38 out of 90.58). Senegal's education performance is hence more a result of poor allocation and targeting than fiscal commitment. This is reflected in both a poor tertiary gender parity index of (0.59), and the low completion rates for both males (40.52) and females (40.06) at the lower secondary level. That notwithstanding, Senegal has a GDP gap of 1.89 per cent that should be covered in order to improve its education outcomes by 2030.

Lastly, Senegal spent about 1.22 per cent of GDP on health. As the public health staff expenditure gap is the largest among the three health gap indices. Senegal has to allocate an additional 3.29 per cent of GDP to reach the benchmark for skilled health staff. The estimations also indicate that the government should (re)allocate 1.37 per cent of the GDP to improve the allocation of resources.

Though Senegal has the highest poverty incidence and poverty gaps, they need to invest less compared to Ethiopia to close the poverty income gap. Furthermore, the results indicate that it needs to consider the allocation of budget in the case of health and education. Overall, the government should invest an additional 10.91 per cent of GDP towards achieving the social protection targets of the SDGs.

### 3.2 Fiscal Stress

Country Name	Tax Revenue	Resource Gap	Tax gap	Absolute fiscal stress	Relative fiscal stress	Avg. tax revenue in region (low & lower middle)	Avg. tax revenue in region (all)
<b>Cambodia</b>	13.39	5.00	0.00	5.00	0.37	11.42	15.79
<b>El Salvador</b>	15.40	2.89	0.00	2.89	0.19	14.10	18.29
<b>Ethiopia</b>	9.21	12.25	3.99	8.26	0.90	13.20	15.53
<b>Indonesia</b>	11.38	2.86	0.03	2.82	0.25	11.42	15.79
<b>Senegal</b>	19.18	10.91	0.00	10.91	0.57	13.20	15.53

Table 2: Tax revenue and fiscal stress (all values in % of GDP)

In general, selected countries are rather strong in collecting taxes, compared to the average low and lower middle income countries in their region (see table 2). While Cambodia, El Salvador and Senegal score comfortably above the average, Indonesia's score is almost exactly the average. Only Ethiopia seems to have space to increase its tax level by 4 percentage points when compared to similar countries in the region. That being said, regional averages for low and lower middle income countries are relatively low when compared to overall regional averages including upper middle and high income countries.<sup>15</sup> In the latter case, only Senegal manages to stay ahead of the curve.

This comparison indicates the opportunity for the sample countries to catch up (see also ESCAP, 2014). If they succeed, El Salvador and Indonesia can completely finance their resource gap, Cambodia can almost cover their gap, and Ethiopia is able to decrease its gap by roughly half. A potential caveat is the fact that all sample countries have – on average – been incurring government deficits over the last years,<sup>16</sup> making it likely that additional tax revenue will at first be used to balance the books.

Further, reaching these tax revenue levels might not be tenable in the short run; thus, leaving all sample countries to face at least some degree of fiscal stress. Some of this stress can be taken away by critically assessing the existing budget. The relative fiscal stress indicator shows that Senegal's, El Salvador's and Indonesia's troubles might be lessened by reallocation within the budget. With the exception of Senegal, all countries spend relatively less on health and education compared to the average low or lower middle income countries in their region.

<sup>15</sup> This is even more so when compared to the IMF estimates of 'fiscal capacity', which are 28.44 (El Salvador), 16.3 (Ethiopia), 21.4 (Indonesia) and 22.49 (Senegal). Cambodia was not included in the IMF study (IMF, 2011). The IMF estimates are not used in this study, because a) they are fairly difficult to replicate, and b) their tax capacity measure is an ideal figure which the countries cannot be expected to accomplish in a short time period necessary to be achieve the SDGs.

<sup>16</sup> For the government budget numbers (and subsequent numbers in this discussion, please refer to the table 4 in annex 4.

Another option to reduce fiscal stress is the generation of more government income. SDG 17 specifically calls on richer countries to implement their commitment to an ODA budget of 0.7 per cent of GDP. While Cambodia, Ethiopia and Senegal already receive a significant amount of their budget through ODA, it seems unlikely that they can meet the SDGs without a substantial increase in their revenue. Further, government (tax) revenues can indirectly increase through sustained GDP growth. In particular, Ethiopia and Cambodia have had an impressive GDP growth of over five per cent during the last fifteen years. Sustaining such a level is likely to create fiscal space in the coming years. On the other hand, GDP growth in El Salvador and Senegal has been mediocre even though they managed to stay ahead of the estimated population growth, making this a less likely route for these countries.

## 4 – Conclusion

To have a successful implementation of the Sustainable Development Goals by 2030, countries need to back up their paper commitments with real policy changes. Such policies will inevitably have a budget impact, although the magnitude of this impact is currently unclear.

This paper discusses the budget implications for governments aiming to fulfil the social development agenda of the SDGs, focusing on the areas of income poverty, health and education. A monitoring instrument has been developed to assess 1) a country's resource requirements needed for the implementation of the SDGs and 2) a country's capacity to address this gap by constructing a comparable fiscal space instrument to assess the 'SDG related fiscal stress' on the national social budgeting and financial planning. With this tool civil society can monitor the real commitments their government made towards realising the SDGs' targets.

Comparing the current expenditure and outcomes, it is clear that high expenditure does not equal high outcomes, efficiency also plays an important role. Senegal and Ethiopia spend a relatively high percentage of their GDP on education, but achieve sub-par outcomes, with the reverse being true for El Salvador and Indonesia. Interestingly, El Salvador does not achieve the same efficiency for health. While it is a high performer, it is also one of the higher spenders. In general, countries have fairly divergent budgets for health and education.<sup>17</sup>

These differences carry through when determining spending priorities, gaps and fiscal stress. Each country has its own unique 'recipe' to achieve the SDGs. Instead of making all-encompassing statements, the main conclusions are presented per country.

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<sup>17</sup> Income poverty is not discussed here, because it does not take current expenditure into account.

Cambodia needs to spend more in all three sectors, as well as give more attention to health personnel. While the resource gap is by no means small (5.03 per cent), rethinking budget priorities and increasing tax revenues will go a long way in filling it. If the country can sustain its run of high GDP growth, fiscal stress should not be an issue.

El Salvador needs to increase mainly its health spending on staffing. Though the country is an efficient education spender, it needs to improve the quality of education offered. By increasing its tax revenue and making some minor revisions in budget allocations, El Salvador should be able to cover its total resource gap (2.89 per cent) in their aspiration to achieve the SDGs.

Ethiopia has most room for improvement, and needs to both invest more money and allocate its current budget more efficiently (particularly in the case of gender parity in education and maternal healthcare). The resource gap is a worrying 12.25 per cent of GDP. Current tax efforts are lacking, but with such a large proportion of the population in absolute poverty, higher tax revenues may not be tenable. Without a large continuous influx of other resources, achieving the SDGs seems near impossible for Ethiopia.

Indonesia needs to increase spending mainly on income poverty and in the health sector – especially with regards to maternal mortality. The country has the smallest resource gap of 2.86 per cent, and it should be able to fill this gap almost completely by reallocating resources or increasing its tax revenues, giving no cause for fiscal stress.

Lastly, Senegal needs to increase its health and income poverty spending, while making the expenditure on education more efficient. Compared to all selected countries, it has by a large resource gap (10.91 per cent) and the highest tax revenue (19.18 per cent). Rethinking budget priorities thus seems a logical first step. Unfortunately, GDP growth has been mediocre, while population growth has been high, making Senegal reliant on other sources of revenue (such as ODA) to relieve its fiscal stress.

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## Annex 1 - Social development related SDGs and targets

### **Goal 1. End poverty in all its forms everywhere**

(1) 1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day

(2) 1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions

(3) 1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable

(4) 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

(5) 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

### **Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture**

(6) 2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

(7) 2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

### **Goal 3. Ensure healthy lives and promote well-being for all at all ages**

(8) 3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

(9) 3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as

low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births

(10) 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

(11) 3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes

(12) 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

**Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

(13) 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

(14) 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

(15) 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

**Goal 5. Achieve gender equality and empower all women and girls**

(16) 5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

(17) 5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences

**Goal 6. Ensure availability and sustainable management of water and sanitation for all**

(18) 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

(19) 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

**Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all**

(20) 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services

**Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

(21) 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

**Goal 10. Reduce inequality within and among countries**

(22) 10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

(23) 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

(24) 10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality

**Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable**

(25) 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

(26) 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

(27) 11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to

global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

**Goal 13. Take urgent action to combat climate change and its impacts\***

(28) 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

## Annex 2 – Matrix

Transfer targets	Governance targets				Outcome targets										
	1.1 Eradicate extreme poverty	1.2 Half relative poverty	1.5 Reduce vulnerability to climate change	2.1 Access to nutritious food	3.1 Reduce neonatal mortality to 12/1000 and USM to 25/1000	3.2 Reduce neonatal mortality to 70/100 000	3.4 Reduce pre-nature mortality from NCDs	5.6 Universal access to sexual and reproductive rights	10.1 Income growth of the bottom 40% higher than national average	10.2 Full social, economic and political inclusion	11.5 Reduce disaster-related losses	13.1 Strengthen disaster-related resilience			
1.3 Appropriate SP systems including floors			X	X	X	X	X	X	X			X	X	X	X
1.4 Access to basic services and resources	X	X	X	X	X	X	X	X				X			X
1.8 achieve universal health coverage		X					X	X	X	X		X	X	X	
3.7 Universal access to reproductive health	X	X					X	X		X					
4.1 Complete free primary and secondary education	X	X				X					X	X			X
4.2 Access to pre-primary education	X								X			X			
4.5 Equal access to all education levels	X	X				X			X		X	X			X
5.4 Recognition of unpaid care and domestic work								X		X	X	X	X	X	X
6.1 Access to safe drinking water	X	X		X	X			X	X		X	X	X	X	X
6.2 Access to hygiene	X	X					X	X			X	X	X	X	X
7.1 Access to energy	X	X	X	X							X	X	X	X	X
8.5 Full employment and decent work	X	X		X	X				X		X	X	X	X	X
10.4 Adopt policies to reduce inequality	X	X		X	X	X	X	X	X		X	X			
11.1 Adequate housing	X	X	X						X						
11.2 Accessible transport	X	X	X	X							X	X			X

Figure 1: Matrix of *governance* and *outcome* targets (authors' adaptation based on Cichon, 2016, 34)

## Annex 3 - Targets and Indicators

Category	Target	(Proxy) Indicators
<b>Poverty</b>	1.1 Eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	<ul style="list-style-type: none"> <li>• Extreme poverty line (\$1.90 a day)<sup>18</sup></li> </ul>
	1.2 Reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions  1.3 Nationally appropriate social protection floors	<ul style="list-style-type: none"> <li>• Poverty line (\$3.10 a day)</li> </ul>
<b>Education</b>	4.1 Ensure that all girls and boys complete free, equitable and quality primary and secondary education	<ul style="list-style-type: none"> <li>• Primary completion rate (male/female)</li> <li>• Lower secondary completion rate (male/female)</li> <li>• Student-teacher ratio (primary/lower secondary)</li> </ul>
	4.3 Eliminate gender disparities in education and ensure equal access to all levels of education and vocational training	<ul style="list-style-type: none"> <li>• Tertiary education gender parity</li> </ul>
<b>Health</b>	1.3 Social protection floor for health coverage	<ul style="list-style-type: none"> <li>• Births attended by skilled health staff (% of total)</li> <li>• Physicians (per 1,000 people)</li> <li>• Nurses and midwives (per 1,000 people)</li> </ul>
	3.7 Universal access to sexual and reproductive health-care services	
	3.8 Achieve universal health coverage including financial risk, access to services and vaccines	
	3.1 Maternal mortality rate to less than 70 per 100,000 live births	<ul style="list-style-type: none"> <li>• Maternal mortality ratio (national estimate, per 100,000 live births)</li> <li>• Mortality rate, neonatal (per 1,000 live births)</li> <li>• Mortality rate, under-5 (per 1,000)</li> </ul>
	3.2 Neonatal mortality to at least as low as 12 per 1,000 live births	
	3.2 Under-five mortality to at least as low as 25 per 1,000 live births	

Table 3 Overview of *outcome* and *governance* targets and proxy indicators for each category.

<sup>18</sup> Since the publication of the SDGs the absolute poverty line of 1.25 USD a day has been re-estimated to 1.90 USD a day. In this paper, the latest guideline of 1.90 USD a day is adhered to.

## Annex 4 – Fiscal capacity

Information is based on the latest year available in the World Bank Development Indicators Database. The unit of every value is the percentage of GDP, with the exception of average population growth, which is just a percentage. Country-specific averages are based on the period 2001-2014, though it should be noted that data was not available for every year for each country.

	Country-specific						Region	Low and lower-middle income in region	
Country Name	Tax Revenue	Avg Gov't Surplus / Deficit	Avg GDP Growth	Avg Population Growth	Net ODA	Current Health & Education Spending	Avg Tax Revenue	Avg Tax Revenue	Avg Health & Education Spending
Cambodia	13.39	-2.60	7.82	1.63	4.75	8.28	15.79	11.42	9.36
El Salvador	15.40	-2.59	1.92	0.35	0.39	10.19	18.29	14.10	11.53
Ethiopia	9.21	-3.65	9.15	2.70	6.45	9.38	15.53	13.20	10.08
Indonesia	11.38	-1.20	5.37	1.32	-0.04	6.21	15.79	11.42	9.36
Senegal	19.18	-4.74	3.97	2.84	7.07	10.26	15.53	13.20	10.08

Table 4 Fiscal capacity for each country

## Annex 5 – Education: country score and expenditure

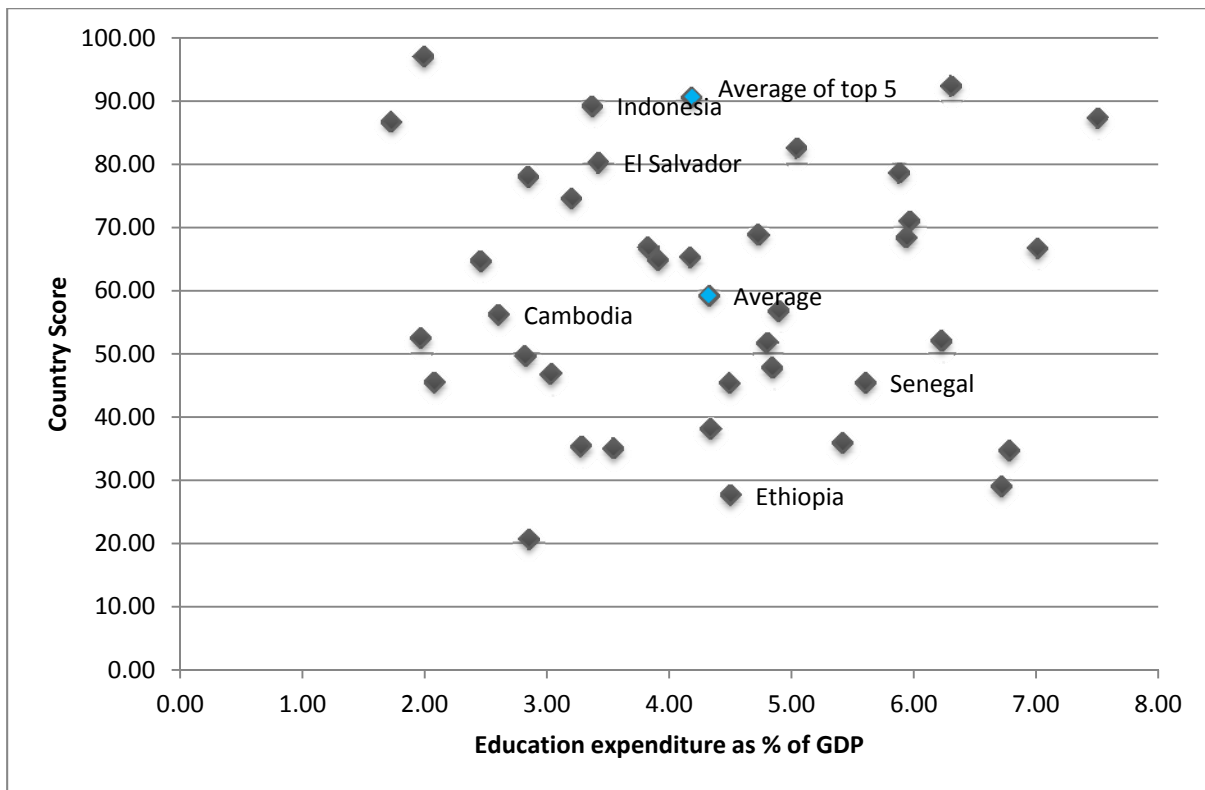


Table 5 Scatterplot of education expenditure as % of GDP and country score



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