

WORLD BANK GROUP

Tanzania Big Results Now in Education Program

Technical Assessment for Program for Results
Financing. March 2014

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I. PROGRAM DESCRIPTION

1. ***This Program for Results will support government's Big Results Now in Education program.*** The Government of Tanzania (GoT) signed an Education Reform Compact (ERC) with 8 development partners and launched a transformation initiative called "Big Results Now in Education" (BRNEd) in January 2013. The implementation of the BRNEd Initiative is expected to fast track the improvement in quality of basic education service delivery, which in turn is expected produce tangible improvements in learning outcomes of students. The program for results (PforR) support is aligned to the entire BRNEd program of expenditures, with the exclusion of construction activities.

2. ***The boundaries of the program are clearly defined.*** It covers the BRNEd program for 2014-2018 for all of Tanzania Mainland. This program is a part of the overall basic education program.

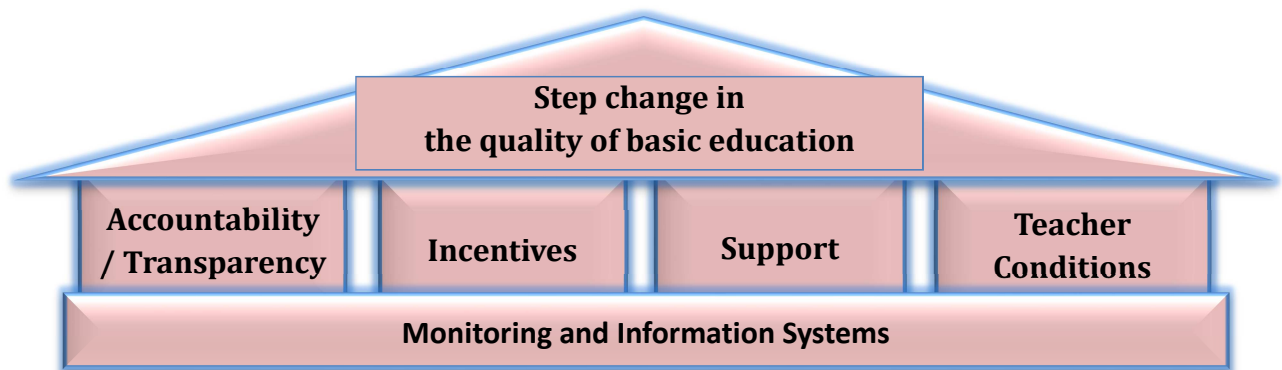
Table 1: Boundaries of the program supported by PforR

Item	Government Program	Program supported by PforR
Title	BRNEd program (a well-defined sub-set of the overall Basic Education (primary and secondary) program	BRNEd program
Objective	Improve education quality in public schools at primary and secondary level	Improve education quality in public schools at primary and secondary level
Activities	Nine activities: 1. Official School Ranking 2. National 3R Assessment 3. School Incentive Grants 4. Teacher motivation (non-financial performance incentives for teachers & clear backlog of claims) 5. School Improvement Toolkit 6. 3R Teacher Training Program 7. Student-Teacher Enrichment Program (STEP) 8. Timely Delivery of Adequate Capitation Grants 9. Construction of facilities	Same as Government Program but excluding Activity 9 - 'Construction of Facilities'
Geographic scope	Tanzania Mainland	Tanzania Mainland

3. ***The main guiding principles for BRNEd are large potential impact on learning outcomes and fast delivery.*** The latter is necessitated by the need to urgently address low and falling learning outcomes. The more long-term, system-level interventions will remain a part of the broader government agenda and the groundwork laid out by BRNEd will provide a further impetus for their implementation.

4. *In the longer term, BRNEd is expected to lay the foundation of an outcome-based performance culture in education sector in Tanzania.* The PforR instrument will be an instrumental catalyst for mainstreaming this culture.
5. *The BRNEd program has been launched to urgently address the problem of poor learning outcomes in the Tanzanian education system.* These poor learning outcomes are manifested in a number of ways; particularly low and falling pass rates in the Primary School Leaving Examination (PSLE) and Certificate of Secondary Education Examination (CSEE). These rates are widely considered to be an outcome of quality deficits in education service delivery which this initiative aims to address.
6. *BRNEd design is based on extensive analytical work and consultations undertaken by a cross-functional team of 34 members* who closely worked together to develop the solution areas. Under the leadership of the Government of Tanzania, and with technical support from the Government of Malaysia and McKinsey and Co., an education lab team of 34 members from 31 organizations was formed to intensively work as a team for 6 weeks – 6,800 collective hours – to identify the key challenges that the Tanzanian education system is facing and develop the related solution areas. The lab team reviewed information and findings from a large body of relevant studies, surveys, and policy documents; identified the most important challenges; and went through an extensive prioritization effort to determine the solution focus areas and specific interventions. The chosen interventions were filtered through a process that focused on those that would produce greatest impact in the shortest possible time.
7. **BRNEd is a prioritized transformation program built on four integrated levers to enhance quality in education:** (i) strengthen performance and improve transparency; (ii) motivate through incentives; (iii) improve teacher conditions; and (iv) provide support where needed.

Figure 1: BRNEd Levers of Change



8. *These levers would be activated through nine BRNEd initiatives described below:*

Strengthen Performance-Transparency

- Official School Ranking: This initiative (already launched) ranks all schools in the country by exam results every year, and makes these results publicly available

in order to raise accountability and provide better visibility for all. It is considered that this effort will also improve community engagement in education issues.

- National 3R Assessment: There is no formally accepted 3R (reading, writing, arithmetic) assessment in early grades in Tanzania. The result is that early grades lack necessary focus on learning and students move up the grades without mastering the basic 3R skills. The initiative defined is to conduct a sample based assessment in Standard II and leverage the same tool to conduct continuous assessment in all schools.

Motivate through incentives

- School Incentive Grants (SIG): Due to low levels of accountability, there is also low motivation to deliver better quality education at school level. The initiative will introduce monetary and non-monetary incentives to schools that have improved their academic achievement results most every year.

Provide Support

- School Improvement Toolkit: Lack of training and management experience prevents many head teachers/head of schools from improving quality in school. Within this initiative, a practical toolkit that includes best practices to manage a school is created and distributed to every head teacher and head of school in the country. In addition, each head teacher and head of school will be trained to drive quality improvement.
- 3R Teacher Training Program: After running the 3R assessment and determining the regions that need most support, a teacher training program for Standard I and Standard II teachers will be conducted specifically on how to teach these basic skills effectively.
- Student-Teacher Enrichment Program (STEP): This program will capacitate teachers to identify and support low performing students. There will be test exams to determine students who need most support and areas where they are lacking most knowledge. Then, teachers will be trained on these specific aspects of the curriculum and on conducting classes for low performing students.
- Timely Delivery of Adequate Capitation Grants: Sufficient books and materials do not reach schools due to process inefficiencies and budgetary constraints. BRN is ring fencing the resources for capitation grants within the budget, and implements process improvements to ensure the required grants make it to schools on time.

Improve Teacher Conditions

- Teacher Motivation: The BRN aims to kick-start a larger teacher perception transformation in Tanzania, starting with recognizing teachers through non-monetary incentives and clearing outstanding claims.

Improve Access (not included in PforR Support)

- Construction of Basic Facilities: Process updates are determined to fact track existing construction programs at the secondary level.

9. **The only BRNEd activity not included as part of the PforR support is ‘construction of facilities’.** There are two reasons for excluding this activity. First, construction of facilities relates largely to improving access and only indirectly to improving quality within the basic education sector. Given that – based on discussions with government – the PforR support is aimed at improving quality of education services, construction of facilities does not conceptually fit into the design of the PforR support. Second, construction of facilities is currently being supported under the ongoing IDA financed SEDP II program.

II. ASSESSMENT OF PROGRAM STRATEGIC RELEVANCE AND TECHNICAL SOUNDNESS

A. STRATEGIC RELEVANCE

10. ***The program aims to improve the quality of basic education in Tanzania, which is fundamental to the country’s long-term development.*** Poor education and a lack of basic skills is an on-going fundamental constraint to the development of the country as it seeks to compete in the East African and Global economic communities, as acknowledged in the national medium-term strategy: ‘*A healthy and well-educated population is a vital human resource input for long-term growth*’ (NSGRP/MKUKUTA II).

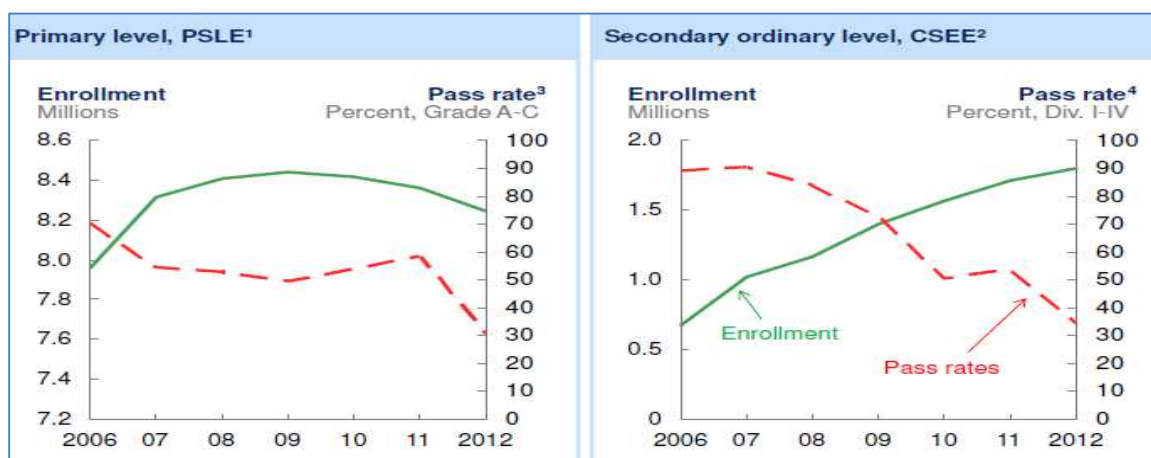
11. ***Human capital development is critical for setting Tanzania on a trajectory towards a middle income status, a target it wants to reach by the year 2025.*** Human capital refers to a broad range of knowledge, skills, and capabilities needed for life and work – including those related to capability in successful living – engendered through quality education (World Bank 2006). Spence (2005) has established that countries that fail to invest consistently in education do not produce robust growth. Significant investments in infrastructure development, such as dams, roads, and airports as well as developments in other essential economic sectors such as banking, information technology, and other services sectors will be constrained and will yield low returns in the absence of an adequately educated work force. In fact, over the coming decades, an increasingly larger share of the programmed growth in Tanzania will be concentrated in occupations that will require citizens with post-secondary training and skills, as is already the case in middle income countries. It is not enrollment per se but the quality of education and learning outcome that is more strongly correlated with economic development (Hanushek and Wößmann, 2007).

B. RATIONALE BEHIND DEVELOPMENT OBJECTIVE

12. ***Learning outcomes at primary and secondary level are low and appear to be declining.*** UWEZO (2013) reports that many students in the *final* grade of primary in 2012 lacked the literacy and numeracy skills sought in the *second* grade: 47 percent could not read basic English stories; 26 percent could not read basic Kiswahili stories and 11 percent could not perform simple multiplications. The number of terminal exam

candidates at primary and secondary in recent years and their success is charted in Figure 1.

Figure 2: Trends in Enrollment and Exam Results



13. *Several factors contribute to these trends.*

- a. A large and rapid expansion inevitably poses huge challenges to maintaining education quality in terms of student intake, teaching staff availability, infrastructure and supplies, so a sizeable fall in pass rates is understandable.
- b. However, the full decline cannot be attributed to expansion of access alone. Data also point to underlying issues of quality. Also, given that the PSLE pass rate has averaged between 49 and 58 percent between 2008-2011 there is clear need to improve the share of students who achieve an adequate grasp of the curriculum.

Exam results for 2012 appear to be outliers. The data point to one-off factors in 2012 affecting education quality and changes in exam administration, rather than a chronic underlying trend.

14. *Support to BRNEd would complement other support to GoT on basic education.*

World Bank support to infrastructure has been identified as a priority within BRNEd. DFID's Education Quality Improvement Program in Tanzania (EQUIP-T), supports 6 low performing regions and improve English Language teacher training and teaching for new entrants to lower secondary school. 2014 is the last of three years for DFID's £90 million Education Sector Delivery Grant to provide budget support earmarked for the education sector. A Global Partnership for Education (GPE) grant of \$95 million to support education in Tanzania Mainland has recently been approved.

C. TECHNICAL SOUNDNESS

15. *The BRNEd interventions can be linked to the PDO through a robust Results Chain* (see Figure 3 below). They are intended to work in complementary ways to

improve student learning significantly and quickly¹. More detailed technical analysis of each of the eight included BRNEd activities is provided in Annex 2.

16. ***However, global evidence shows that improvements in learning achievement rates in response to education intervention often manifest with a time lag.*** In the short-run, BRNEd should lead to an arrest of (and possibly reversal of) the declining trends in primary and secondary achievement. However, tangible improvements in learning outcomes are only expected with a lag. With this in mind, the Technical Assessment recommends setting of very realistic targets for learning gains.

¹ Other possible criteria, such as equity, were not considered while defining the BRNEd package.

Figure 3: Results Chain



Strengthen Performance-Transparency	Official School Ranking	School ranking released (RF)	Identification of lagging schools, students, and teachers [for better planning and focused attention]	Improved student learning outcomes in PSLE & CSEE examinations
	National 3R Assessment	No. of schools participating in the 3R assessment (RF)		
Motivate through incentives	School Incentive Grants (SIG) – performance based	No. of schools receiving performance-based incentive rewards (RF)+ (DLI)*	Increased teacher effort measured through classroom presence (PDO)	
	Non-financial performance incentives for teachers	Teacher awards announced yearly to high-performing teachers (RF)		
Improve Teacher Conditions	Clear backlog of claims	No. of outstanding Teacher claims older than three months (RF)		
Provide Support where required	School Improvement Toolkit	No. of schools that receive the toolkit (RF)		
	3R Teacher Training Program	No. of teachers trained (RF)	Improved teacher proficiency 3R subjects (PDO)	
	Student-Teacher Enrichment Program (STEP)	No. of schools participating in STEP (RF)	Improved student performance in 3R assessment (PDO)+ (DLI)	
	Timely Delivery of Adequate Capitation Grants	Percent of schools receiving capitation grants on time (RF) + (DLI)	Improved textbook student ratio (RF)	

*: All DLIs are included in RF

17. ***The overall BRNEd package is technically sound.*** The BRNEd package has been designed with the specific objective of achieving tangible improvements in student learning outcomes in the short run. To this end, the main guiding principles for BRNEd are – (a) large potential impact on learning outcomes and (b) fast delivery. The following factors, related both to design considerations and design process, explain its potential effectiveness:

- a. ***Evidence-based:*** Global evidence suggests that there is rarely a silver bullet that can lead to dramatic and sustained improvements in education quality. Initiatives that logically tackle one problem may be undermined by other problems that are harder to address. It therefore makes sense to tackle various key problems at once.

In addition, some of the BRNEd interventions have shown promise in other contexts:

- i. The decision to focus on accountability and incentive issues by implementing performance-transparency and performance-linked incentives is backed by emerging global evidence. There is some promising empirical evidence associated with the use of performance-based incentives in the education sector in developing countries like Kenya (Glewwe et al., 2010) and India (Muralidharan and Sundararaman, 2009).
 - ii. The decision to focus on teacher conditions and by extension motivation and quality is likely to be effective. A large body of research shows that teacher quality is the main school-based predictor of student achievement (Hanushek & Rivkin 2010; Rivkin, et al. 2005; Nye et al. 2004; Rockoff 2004; Park & Hannum 2001; Sanders & Rivers 1996). Also, the impact of teacher quality improvements is greater when combined with demand-side programs which aim at changing behavior at the household level. In this respect, the proposed PforR will squarely complement the Bank-funded conditional cash transfer program (US\$220 million Productive Social Safety Net, under TASAF) that will give cash to poor households on the condition that they send their children to school.
 - iii. There is emerging empirical evidence from India (Banerjee et al 2007), Kenya (Duflo et al 2009), and Ghana (TCAI Initiative, Preliminary results, 2012), on the relatively high effectiveness of providing support to lagging students in the form of remedial education. Three rigorous impact evaluations from different parts of the world show that remedial education for lagging student can have strong positive impacts on the overall learning outcomes in a short period of time.
- b. ***Implementable:*** All activities are ‘implementable’ in the practical sense. They are low-cost, scalable, clearly and simply defined, and make use of the existing implementation structures and decision processes.
 - c. ***Rooted in the Education Sector Development Program, sub-sectoral plans, and the Education Reform Compact*** signed between GoT and education partners in November 2012.

18. ***The incentives for a wide range of stakeholders to implement this program are strong.*** The issue of low pass rates is high on the political and public agenda and the proposed program emerged from intensive discussions from a wide range of stakeholders. BRN is established as a top priority for the President until he completes his second term

in late 2015. This leadership offers to generate new energy to tackle difficult challenges and the shift in focus from activities to results is promising.

19. ***However, this is the first time many of these interventions are being attempted in the Tanzanian context.*** As such, to maximize likelihood of results achievement, there is need for flexible design, phased implementation, robust monitoring, and evidence-based learning and adaptation. An ongoing process of experiential and experimental learning from implementation and the iterative feedback of lessons are critical to program success. This will help ensure that intervention design adapts itself to the local context, existing implementation systems, and lessons learnt vis-à-vis effectiveness.

20. ***Overall, the assessment shows that the BRNEd program design is technically sound but for success there is need to complement it with an adaptive approach, strong implementation support, robust results tracking and follow-up, and realistic targets around learning outcome gains.***

D. Institutional Arrangement

21. ***The Program will be implemented primarily through MoEVT and PMORALG, relying on BRNEd implementation structures.*** In order to ensure swift and focused implementation, BRNEd-specific implementation mapping has been created (see Figure 1) – with clear roles and responsibilities, reporting, and accountability channels. Under this mapping, BRNEd implementation will be mainstreamed through MoEVT and PMORALG using Ministerial Delivery Units (MDU).

22. ***Ministerial Delivery Unit (MDU):*** The MDU supports the Education Minister on program management and monitors and tracks the initiatives. It will comprise of staff from MoEVT and PMORALG. Under the aegis of the Head of the Education MDU (from MoEVT), a team of 5 delivery unit ‘catalyzers’/working teams are responsible for the day-to-day program coordination. This ensures effective coordination and linkages between operations supported by different relevant units. Details of the implementation coordination responsibility mapping are provided in the Figure 4 below.

23. ***Regional Delivery Units (RDUs)*** are in the process of being created in each region (beginning initially with select pilot regions). The roles and responsibilities of the Regional Administrations were initially unclear in the design of the BRN structures; however, it is evident that they play a critical role in the delivery chain down to the level of the districts (LGAs) and up to the level of the central Ministry of Education. The terms of reference for these units are in the process of being defined.

24. ***President’s Delivery Bureau (PDB)*** supports the President and government on overall BRN program management and has the mandate to enforce program delivery through collaboration with the Prime Minister’s Office (PMO) and other relevant ministries. It plays a key role in the delivery system in (i) problem-solving and solution generation through providing advice, recommendations and feedback; (ii) facilitating development of performance contracts for ministers for purposes of accountability for results; (iii) ensuring coherent priority-setting and facilitating development of implementation plans; and (iv) reporting on progress/actions on these to the Transformation Delivery Council (TDC). New recruits are joining the PDB to support

their divisions in planning, monitoring and evaluation, agriculture delivery, communication and advocacy, corporate services, procurement and internal audit.

Figure 4: BRNEd implementation arrangement – Central level

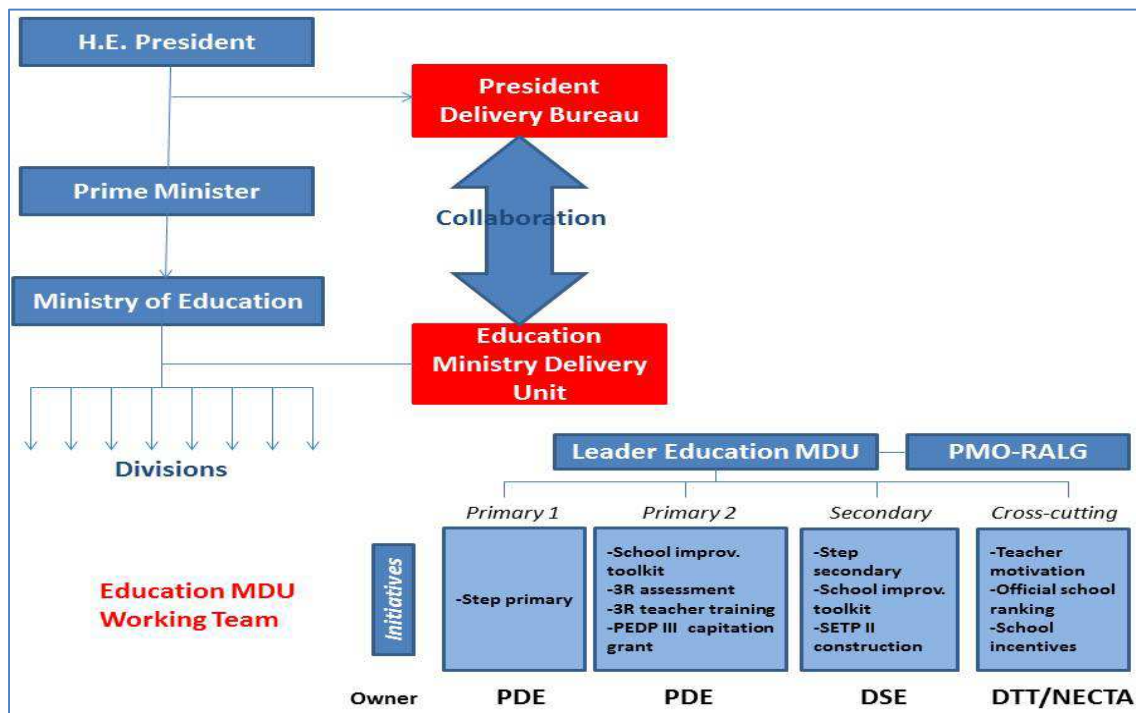
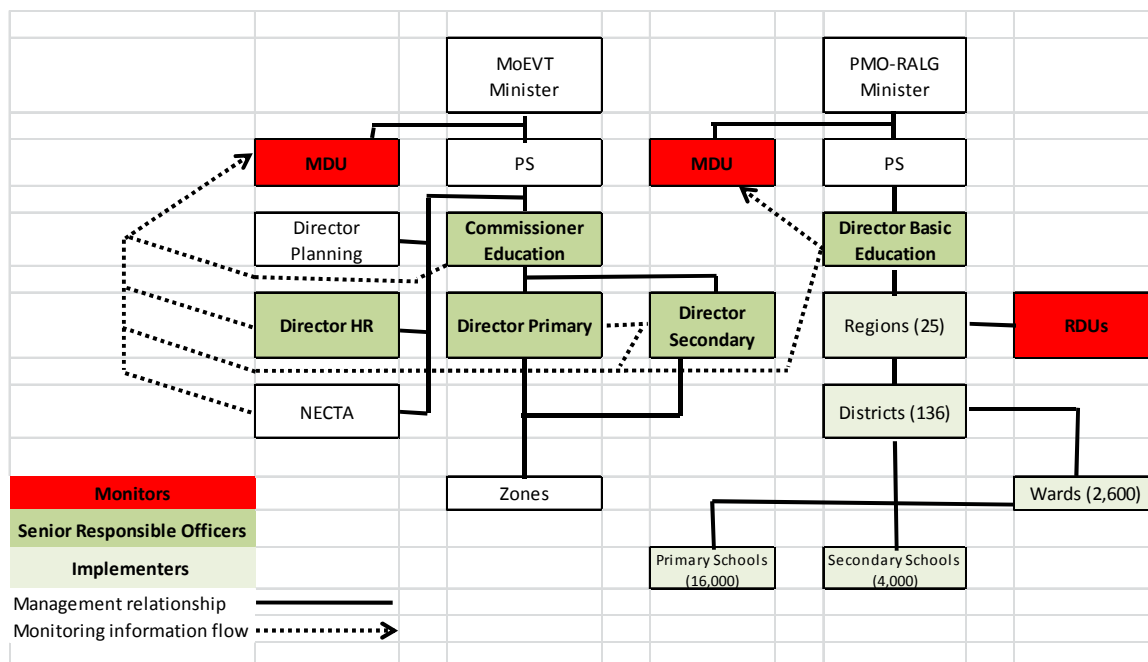


Figure 5: BRNEd implementation arrangement – Local level

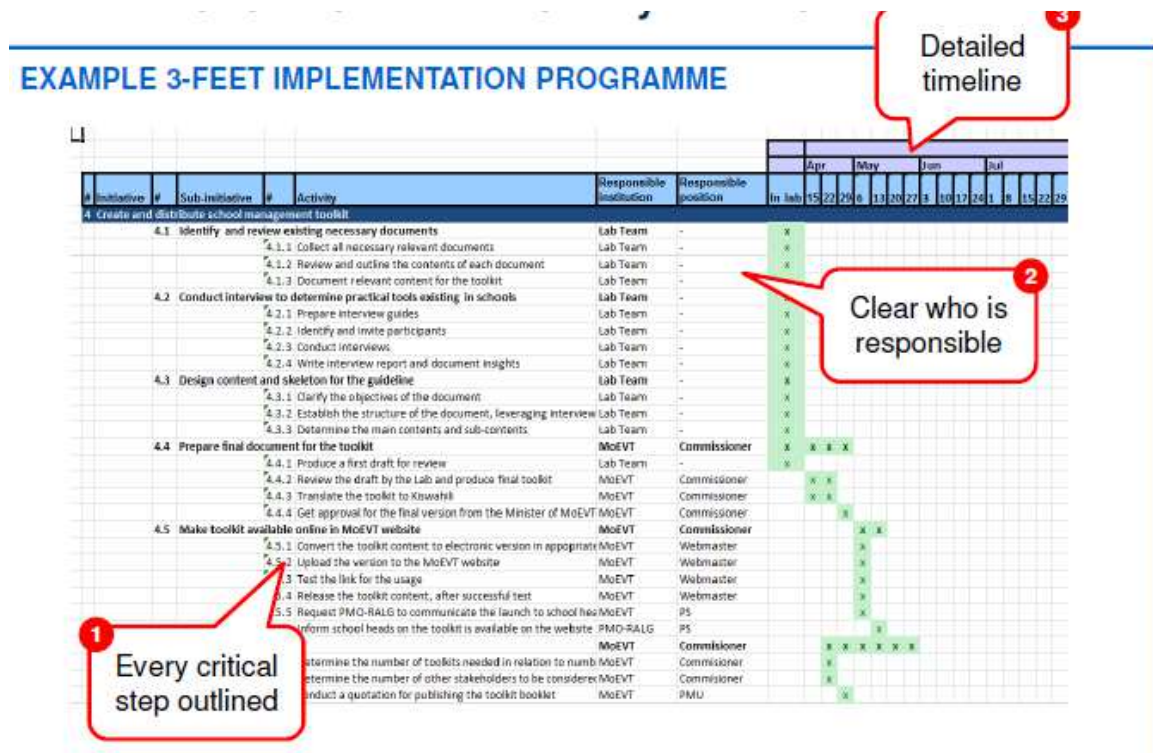


25. *Operating structures instituted as a part of the BRNEd program allow for longer term institutional building and systems strengthening.* Specifically, the National

Key Result Area (NKRA) steering committee and the President's Delivery Bureau have a clear mandate to engender a culture of enhanced accountability, more rigorous planning/budgeting, evidence-based design, and real-time results monitoring within MoEVT and PMORALG. These bodies will provide ongoing support and guidance to implementing agencies throughout BRNEd implementation. For the government as a whole, the culture of 'Labs' - as a platform for focused, evidence-based, and highly consultative intervention and implementation design - is expected to continue over the medium term.

26. **Implementation capacity:** Detailed implementation plans have been prepared for each of the BRNEd activities to ensure timely execution. Staffing and training within MDU and PDB are underway. In addition, the government has contracted with the Malaysian government through the Malaysian Prime Minister's Performance Management and Delivery Unit (PEMANDU) to receive support for the management of the PDB.

Figure 6: Example of Detailed Implementation Plan



27. **Technical assistance for BRNEd design and implementation is being provided by the Malaysian government through PEMANDU.** This has initiated the beginnings of a true South-South collaboration for knowledge and skills transfer, particularly throughout the BRN lab process, in relation to problem-identification and solving, prioritizing areas for urgent action, creating detailed ("three feet") implementation plans and also supporting the set-up of delivery units, based upon their own successful governmental experience. The government has signed a contract with PEMANDU for continuing technical assistance to support BRNEd implementation and is expected to

include provision of some full-time staff seconded, beginning January 2014, from the Malaysian government into the BRNEd MDUs.

28. ***Borrower Commitment:*** BRNEd has a strong commitment from the highest levels of the government, as evidenced by Figure 2. The NKRA Steering Committee chaired by the Minister of Education is the second highest body for BRNEd operation guidance and reform issues. The Steering Committee oversees the allocation, implementation, and use of funds for BRNEd program. The committee meets once a month to (i) get a progress update from each of the assigned working teams; (ii) make decisions and provide guidance to the program implementing teams; (iii) resolve conflicts; and (iv) oversee all other matters related to NKRA.

E. RISKS AND MITIGATION

29. Assessment of technical design and implementation capacity reveals three potential issues, mitigation of which has been built into program design.

30. ***Risk of non-implementation of some BRNEd initiatives.*** This risk is low given that detailed implementation plans have been drawn up for all nine initiatives, implementation responsibilities assigned, and implementation reporting and monitoring has been instituted. At least two BRNEd activities (official school ranking and sample-based 3R assessment) are already being implemented. To the extent possible residual risks on this front are being mitigated through the use of DLIs and TA. There are DLIs directly linked with the implementation of four critical BRNEd activities (3R assessment, School Incentive Grants, STEP, and timely and full release of capitation grants). TA will be provided to ensure effective implementation of other BRNEd activities (3R teacher training and School improvement toolkit).

31. **The PforR instrument requires effective preparatory work to be successfully implemented.** Implementation readiness is critical to ensure achievement of the expected results. One of the most common roadblocks to budget disbursement is a lack of appropriate line-items in the budget. These allow for funds to flow to the MoEVT and PMO-RALG for agreed upon activities. To mitigate these risks and ensure implementation readiness, Technical Assistance (TA) for the program² will support (i) the development of sector-wide framework for priority budget disbursement, including sub-national fund flows; (ii) the development of the Program Operations Manual to cover workflows and detailed processes for meeting DLI targets; and (iii) the undertaking of initial communications, accountability, and awareness work. This TA will be provided before program effectiveness and will need to deploy closely in tandem with the Education MDU in MoEVT and associated unit in PMO-RALG.

32. ***There is need to build-in explicit mechanisms for adaptive implementation*** - if and where needed - to ensure DLIs continue to be achieved until program completion. This risk will be mitigated through:

- TA for the program will include support for continuation of periodic BRNEd ‘check-ins’. Making explicit and formalizing the continuation of periodic BRNEd

² Provided through parallel financing from donor partners

‘check-in’ will act as a means for periodically reviewing progress since the initial BRNEd lab completed in early 2013. It will be important for the BRN change agents to be able to acknowledge if progress is not advancing as planned on a regular (perhaps 6 monthly basis). This may require facilitated discussions amongst leadership, which will provide an opportunity to reflect upon what has been achieved, what worked well and where blockages were faced and how they were overcome as well as adapting at strategic moments to stay on track to meet target results and DLIs. This check-in process will be a particularly important risk mitigation measure to BRNEd in advance of, and shortly following, elections in early 2015 because: (i) a check-in would record amongst leadership the achievements and expected progress under the BRNEd, which would then be communicated to the public, other ministries and stakeholders of achievements that would help ensure continued support and action on BRNEd post-election regardless of the elected candidate; and (ii) a check-in in the period following the elections as a forum for undertaking a prioritization and strategizing exercise for the remaining two years under this Program.

- For certain innovative interventions, like (i) STEP training and (ii) performance-based recognition awards for teachers³, TA will be provided for rigorous impact evaluations that yield results during the course of implementation. These results will be used to refine design and implementation before national scale-up. Process for impact evaluation and improvement will follow the BRN methodology approach.

33. ***There is need for capacity building at the central and local implementation levels*** – region, district, local government authorities (LGAs).

34. The delivery structures set up at the highest levels within government (the TDC, the PDB and MDUs at ministerial level) create a robust system for strategizing, problem-solving and monitoring. However, a lack of support to those at the implementation level of the delivery chain - where the actions and progress towards goals will actually be made at the district, LGA, and school levels - puts at risk the achievement of the implementation plans and, ultimately, the program DLIs.

35. Addressing any capacity constraints to implementation will therefore be a significant risk mitigation strategy to achievement of DLIs. Assessments to date reveal the need for capacity building at the central and local implementation levels – region, district, local government authorities (LGAs), and wards. Program TA will provide capacity building aimed at: (i) stakeholder influence mapping and identification of implementation bottlenecks as well as specific capacity gaps – using all available and relevant data sources; (ii) awareness raising on the DLI linked incentives, results reporting mechanisms, and BRNEd activities; (iii) gaps identified in the system will be supported through capacity development sessions to be undertaken at various levels of delivery - including adaptive leadership and applied communication at the central and local levels - but with an emphasis on results-oriented training at the local

³ IE on performance-based recognition awards for teachers is underway and results will be available by program effectiveness

implementation level. For this training, a train-the-trainers model (for the initial pilot districts to begin with) through local institutions such as the Agency for the Development of Educational Management (ADEM) will be utilized and it includes: (a) familiarizing implementation-level actors with program results framework, operational manual, and monitoring systems; (b) designing mechanisms at the local level to enhance the effectiveness of training of trainers model, use of data for planning, and effective utilization of capitation grants; (c) following the results-oriented trainings, and given that the need to show results quickly will be high, it is proposed that focused teams will be created and 120-day pilot initiatives will be launched that will target action towards achieving select results. Teams will be supported after initial trainings and throughout 120-day initiatives with longer-term team coaching. The 120-day timeline will align well with reporting requirements to the TDC and President and will quickly allow to see what is working and what is not working in order to learn from that, and apply to other districts for scale-up. The results and learnings from these initiatives will be presented and considered at the BRN ‘check-in’ events (described below in ‘TA to strengthen technical design’) to provide a periodic feedback loop between the implementation level progress and leadership level strategizing. Upon scale up, further support will be provided to the appropriate government institution to manage their cadre of process coaches.

III. DESCRIPTION AND ASSESSMENT OF PROGRAM EXPENDITURE FRAMEWORK

A. REVIEW OF THE BUDGET STRUCTURE AND CLASSIFICATION

36. *The PforR will support government’s BRNEd program.* The overall budget of government’s program is summarized below:

Table 2: Tanzania - Basic Education Budget

	Year 1	Per Year Cost (Year	Total for Four Years
	USD	2-4)	USD
	USD	USD	USD
BRN	888,500,752	868,943,962	3,495,332,637
Wages	765,936,514	765,936,514	3,063,746,054
Non-wage	122,564,239	103,007,448	431,586,583
Recurrent	89,813,393	89,813,393	359,253,573
Construction	3,870,465	3,870,465	15,481,860
Textbook ¹	23,930,528	4,786,106	38,288,844
Other non-recurrent	412,369		412,369
BRN Admin	4,537,484	4,537,484	18,149,938
Non-BRN (non-wage)²	321,178,426	321,178,426	1,284,713,706
Grand Total	1,209,679,179	1,190,122,388	4,780,046,343

1: Year 2-4 amounts calculated based on the assumption of a depreciation rate of 0.2

2: Approximate value, calculated as residual category

37. ***Tanzania has a well-established culture of planning and budgeting both at centralized and decentralized levels.*** In addition to overall planning and budget formulation, there is an annual Public Expenditure Review (PER) process the objective of which is to improve fiscal policy formulation and management. This process provides a forum for representatives from government, development partners, academia, the private sector, and CSOs to agree on an analytical agenda and guide and finance its implementation. Under the PER, an annual Rapid Budget Analysis (RBA) is undertaken. The RBA is designed to assess the alignment between the approved budget, the executed budget, and the MKUKUTA/FYDP priorities; and assess the consistency between expenditure outturn and approved budget.

38. ***A comprehensive overview of the expenditure framework for government's Basic Education program can be derived by triangulating documentation and analysis from different sources.*** This technical assessment of program expenditure framework is based on: (i) RBA for overall budget for 2013/14 and 2012/13⁴; (ii) RBA for the education sector for 2013; (iii) budget analysis for BRNEd; (iv) PER study on value-for-money in education (2010); and (v) Report of the Controller and Auditor General on the financial statements of MoEVT (2012).

39. ***Budget classifications exist along various dimensions and can be used to track government expenditures under the Primary and Secondary education program.*** These include budgetary information by:

- sub-sector category (primary and secondary sectors);
- programmatic composition of expenditures (i.e., the share of expenditures that is allocated to wages and salaries, operating costs, and capital spending)
- source of funding – foreign or domestic

B. PROGRAM'S FINANCIAL SUSTAINABILITY AND FUNDING PREDICTABILITY

40. ***The medium-term financial conditions appear sound with stable GDP growth and declining inflation in 2012/13.*** Tanzania's economic growth is projected to remain stable at around 7 percent in the medium term. The estimated 2012/13 fiscal deficit was 6.2 percent and exceeded the IMF target by 0.7 percent of GDP. The 2013/14 approved budget has been built with the objective to reduce the overall fiscal deficit to 5 percent of GDP. At present, Tanzania has a relatively low public-debt-to-GDP ratio, standing at slightly more than 40 percent.

41. ***Grants, concessional and non-concessional loans from both external and domestic sources are projected to reach 10.7 percent of GDP in 2013/14***

42. ***The share of budget allocated to strategic priorities defined in the MKUKUTA and FYDP⁵ should reach 73 percent in 2013/14, up from 71 percent in 2012/13 (Table***

⁴ The RBA for 2013/14 utilizes the detailed approved budget data for 2013/14 and detailed pre-audited actual spending data for 2012/13

⁵ Government's priority objectives have been outlined in several key documents, such as the MKUKUTA which is the National Growth and Poverty Reduction Strategy of Tanzania, Five Year Development Plan (FYDP)

2). Hence, the spending allocation of the approved 2013/14 budget appears well aligned with the strategic priorities of recent national strategies.

43. *Among various priority areas, education remains the largest spending sector in the government budget.* However, its share of total government budget (excluding CFS) has reduced slightly to 22 percent in 2013/14 budget, down from 22.5 percent in total actual public spending in 2012/13. This is in line with the 22 percent average projected in the Education Sector Development Program (ESDP) for the period 2008-2017 indicating the 2013/14 budget is broadly aligned with the sector policy priorities.

Table 3: Trends in priority sector spending

	2007/08 Actual	2008/09 Actual	2009/10 Actual	2010/11 Actual	2011/12 Actual	2012/13 Budget	2012/13 Prel actual	2013/14 Budget
<i>In percentage of total spending</i>								
Education	20.6%	18.0%	17.1%	18.7%	18.3%	21.2%	21.0%	19.6%
Health	9.0%	13.6%	8.7%	9.1%	8.1%	9.7%	9.4%	8.8%
Water	3.5%	2.6%	2.8%	2.3%	1.9%	4.4%	2.8%	4.7%
Agriculture	4.9%	4.2%	5.6%	4.8%	4.8%	7.0%	4.5%	7.9%
Roads	9.4%	9.4%	13.4%	11.1%	14.7%	11.6%	13.4%	12.9%
Energy	1.3%	1.3%	1.6%	2.9%	4.8%	5.2%	7.2%	7.8%
Total	48.8%	49.2%	49.1%	48.9%	52.6%	58.1%	58.4%	57.6%
Total (excl CFS)	54.3%	52.6%	53.6%	57.7%	59.2%	65.5%	62.5%	64.6%
<i>In percentage of GDP</i>								
Education	4.7%	4.6%	4.6%	5.3%	4.8%	6.1%	5.1%	5.9%
Health	2.1%	3.5%	2.4%	2.5%	2.1%	2.5%	2.3%	2.7%
Water	0.8%	0.7%	0.7%	0.6%	0.5%	1.3%	0.7%	1.3%
Agriculture	1.1%	1.1%	1.5%	1.4%	1.3%	2.0%	1.1%	1.3%
Roads	2.2%	2.4%	3.6%	3.8%	3.9%	3.4%	3.2%	3.9%
Energy	0.3%	0.3%	0.4%	0.8%	1.3%	1.5%	1.7%	2.4%
Total	11.1%	12.7%	13.2%	14.5%	13.9%	16.7%	14.1%	17.5%

Source: RBA 2013/14

44. *Education is one of the six priority areas of the government, as evidenced by the formulation of the Big Results Now in Education initiative.* The resources allocated to the education sector have remained stable in percent of GDP, around 22, in the approved 2013/14 budget, which is relatively high for a low income country. The education sector also saw an increase in actual spending in 2012/13 compared to 2011/12. The total education sector budget in 2013/14 has nominally increased by 34 percent compared to 2012/13 actual spending, and by 28 in real terms.

Table 4: Relative Education Sector Budget

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
	Actual	Actual	Actual	Actual	Actual	Budget
Relative budget:						
Sector expenditure as a share in total expenditure, %	19.30%	17.90%	18.90%	18.27%	17.98%	14.70%
Sector expenditure as a share of GDP, %	5.00%	4.80%	5.20%	4.83%	5.07%	4.86%
Share of decentralized sector expenditure, %	49.90%	59.40%	60.80%	68.05%	65.60%	70.34%
Share of wage bill sector spending (%)	60.40%	61.10%	64.00%	54.00%	58.23%	64.27%
Share of development sector spending (%)	9.50%	8.40%	7.20%	3.95%	5.94%	6.04%
Budget growth:						
Nominal budget change, %				10.55%	13.92%	3.04%
Real budget change, %				8.96%	12.50%	2.87%
Nominal change, %				11%	23%	-1.0%
Real change, %				9%	21%	-0.9%

45. *The Primary and Secondary education expenditure framework adheres fully to the government's priorities of improving education quality.* This is evidenced by the large share of this budget going to the implementation of BRNEd initiatives over the next four years (see Table 4).

46. *Fiscal sustainability* is also ensured through the mainstreaming of program financing through MoEVT and PMO-RALG. However, sustainability also depends upon the government's ability to maintain the overall resource envelope for primary and secondary education in the future.

C. HIGHLIGHTS OF GOVERNMENT PROGRAM'S EXPENDITURE FRAMEWORK

47. *The overall education sector budget includes three major sub-sectors: Primary, Secondary, and Higher education.* The program expenditure framework includes only Primary and Secondary education sub-sectors.

48. *The education sector budget is increasingly decentralized.* Around 70 percent of the education sector budget in 2013/14 is decentralized, up from 65 percent in the 2012/13 budget. This demonstrates an on-going commitment to spend more of the education budget at district level in order to improve the quality of primary and secondary education.

49. *There is high volatility in the decentralized development budget.* There was a 902% rise this year follows a 97% drop from FY 2010/11 to FY 2011/12. This seems to be due to its substitutability with PMO-RALG development expenditure, with rises and falls largely offset there. It might also be a reward for improvements in execution, 67% in FY 2011/12 compared to 26% in FY 2010/11. The decentralized development budget constitutes 21% of the total education development budget this year.

50. ***The total wage bill (personal emolument (PE) and all personal allowances) has continued to increase as a share of the total education budget and stands at 64% in the FY 2013/14 budget.*** This is mainly explained by increases in the decentralized budget to 70%, of which wages make up 89%, but also represents increases in the wage share at central level. Basic salaries, or PE, accounts for 97% of total wage costs, the vast majority of which is at decentralized level (i.e. for Basic and Secondary). As execution of PE tends to be higher than other types of spend (97% in FY 2012/13 compared to 90% for the sector overall), this figure is likely to rise with implementation, which would make relative wage spend in 2013/14 higher than in any other year for which data was available.

51. ***The development budget in FY 2013/14 remains at 6% of the overall education sector budget.*** This is higher than in FY 2011/12 but lower than that achieved from 2008 to 2011. The vast majority of decentralized expenditure (98%) is classified as OC (current transfers to regions) in the national education budget data, meaning that LGA data is needed to analyze by economic classification. After reclassifying the regional budget, we calculate that two-thirds of the recurrent budget is PE, although as we shall see later, a substantial proportion of OC is in fact personnel payments (allowances).

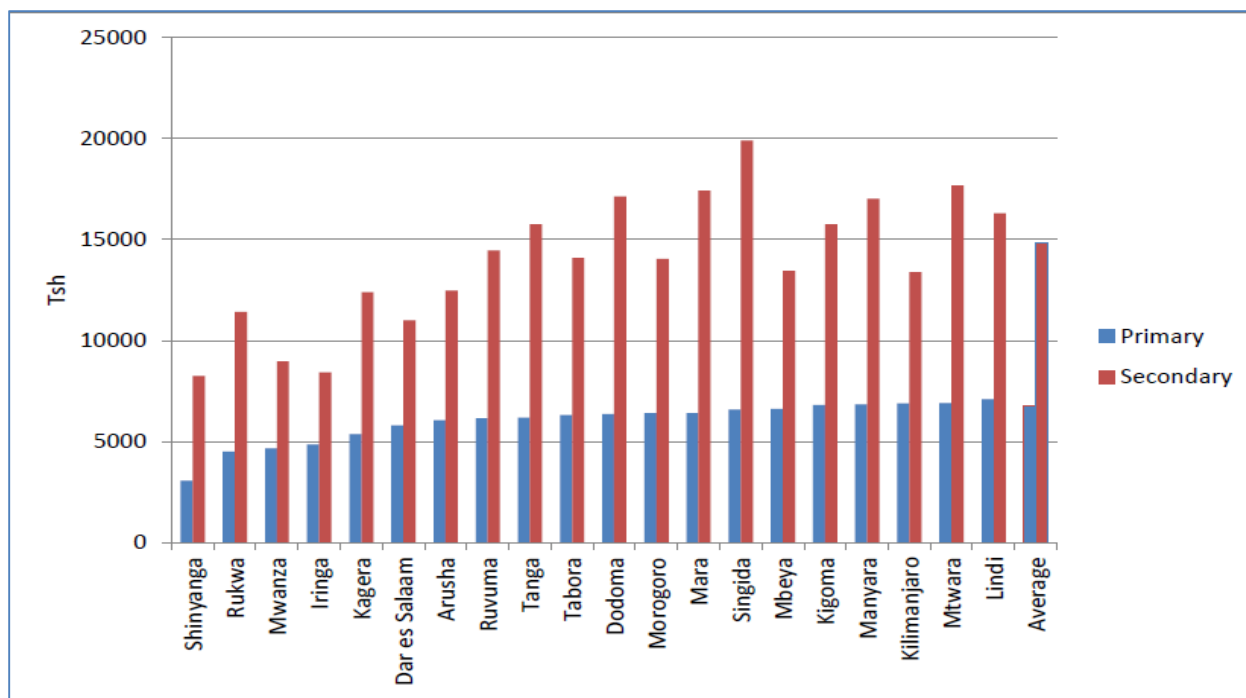
52. ***The capital budget in FY2013/14 is estimated at 2%.*** This is considerably lower than the 9% recorded in the FY 2011/12 budget but it is not clear if this is due to classification change or real change (current-capital classification is only made in the National budget). Of the 98% recorded as current, 64% is for wages and salaries and 34% for other current.

53. ***The budget shares to the main three sub-sectors (primary, secondary and higher education) are broadly in line with international benchmarks of 50% for primary, 20% for secondary, and 20% for higher education.*** Basic education's share of the budget continues to increase, rising from 52% in the FY 2012/13 budget (and actual spend) to 54% in the FY 2013/14 budget (and from 46% in the FY 2011/12 budget). Secondary also increases from 17% to 18%, now far higher than 2007-2010 levels, but lower than the share allocated in FY 2011/12. Higher education continues to fall relative to other sectors, from a high of 27% in FY 2010/11 to 19% in FY 2013/14 budget.

54. ***Basic and Secondary budgets have outpaced inflation fairly consistently in the last five years*** (both falling 2011/12-2012/13). This has been at the expense of all other sub-sectors, with TVET doing particularly badly.

55. ***There is great regional variation in capitation grant levels for both Primary and Secondary.*** Primary and Secondary monthly capitation grants make up 2.0% and 0.9% of the education sector budget respectively in FY 2013/14. Identifying capitation grants in the regional budgets and comparing these to enrolment figures for 2012, we see that at the Primary level, Lindi has the most generous allocation at an average of Tsh 7,099 per pupil and Shinyanga the least generous allocation at an average of Tsh 3,064 per pupil. At the secondary level, Singida gives Tsh 19,905 per pupil and Shinyanga, again, has the lowest average allocation of Tsh 8,254 per pupil. This demonstrates considerable inequities in budget allocation for capitation grants across regions.

Figure 7: FY 2013/14 Budget for Primary and Secondary Capitation Grants by Region



D. BUDGET EXECUTION

56. *There has been a trend of improved overall education sector budget execution.* The education sector saw a continued improvement in the centralized budget execution in 2012/13 with 94 percent of approved funds released (97 percent of the recurrent budget and 80 percent of the development budget) and almost all money being spent. This is a substantial improvement on the previous year where 79 percent of approved funds were spent (96 percent and 25 percent respectively for recurrent and development budgets).

Table 5: Basic Education Program Budget 2013/14

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
	Actual	Actual	Actual	Actual	Actual	Budget
Budget execution:						
Allocated to approved funds, %			83%	87%	94%	
Spent to allocated funds, %					99.8%	

57. *There is a wide variation in the education budget execution rates for individual districts.* PMO-RALG data show that these rates range from as low as 21.6% in Bahi District to as high as 121.4% in Lushoto District.

E. EFFICIENCY OF PROGRAM EXPENDITURES

58. *Estimates suggest that the nominal unit cost for basic education has increased but nominal unit cost estimates for secondary education have decreased*⁶. At the Secondary level, where the unit cost has decreased by Tsh 40,000, it raises concern given that increasing the quality of secondary education is a core priority given the low examination pass rates.⁷

Table 6: Basic Education Program Budget 2013/14

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
	Actual	Actual	Actual	Actual	Actual	Budget
Education expenditure in (US\$ millions, Nominal)	1,043	1,094	1,196	1,153	1,538	1,624
Education expenditure per capita (US\$, Nominal)	24.7	25.1	26.7	25.0	35.2	36.1

59. *There is significant wastage in the education system which undermines value-for-money.* This is due to high repetition rates in the early grades of primary education and a low examination pass rates at the end of the primary and lower secondary cycles. Basic analyses on unit costs per student suggest that around half of the basic education budget is spent on students who are repeating and/or fail to graduate.

60. *By improving education quality, BRNEd is expected to enhance the efficiency of expenditures associated with government's primary and secondary education program.*

F. RISKS AND MITIGATION

61. *There is need for more predictable funding availability for optimal implementation of BRNEd activities.* Budget re-allocations through the fiscal year often lead to significant deviations from approved budgets and can constrain implementation of planned activities. This also results in inequitable funding allocations across districts.

62. *This issue will be addressed through a DLI* which involves establishment of and adherence to a sector-wide framework for priority budget disbursement. This is expected to improve planning, prioritization, and stronger focus on results within the sector. Technical assistance, through parallel financing from other donor partners, will be provided for the creation of the sector-wide framework for priority budget disbursement.

63. *Late and incomplete release of capitation grants severely constrains effective education service delivery.* Capitation grants are critical instrument for decentralizing resource allocation in the education sector so as to foster direct accountability for schools' performance at the school level. Predictability of the level of funding at school level supports more effective resource planning, prioritization, and expenditure patterns during the school year.

⁶ Estimates based on Education PER 2010

⁷ It must be noted that these estimates are dependent on our assumptions of relative spend at the decentralised level as PE has not been assigned to sub-sectors.

64. To address this, a DLI has been designed to help ensure that all schools receive full and timely capitation grants. This DLI relates to the level of funds released to school level by LGA as a percentage of the budget (based on agreed per capita formula).

IV. DESCRIPTION AND ASSESSMENT OF PROGRAM RESULTS FRAMEWORK AND M&E

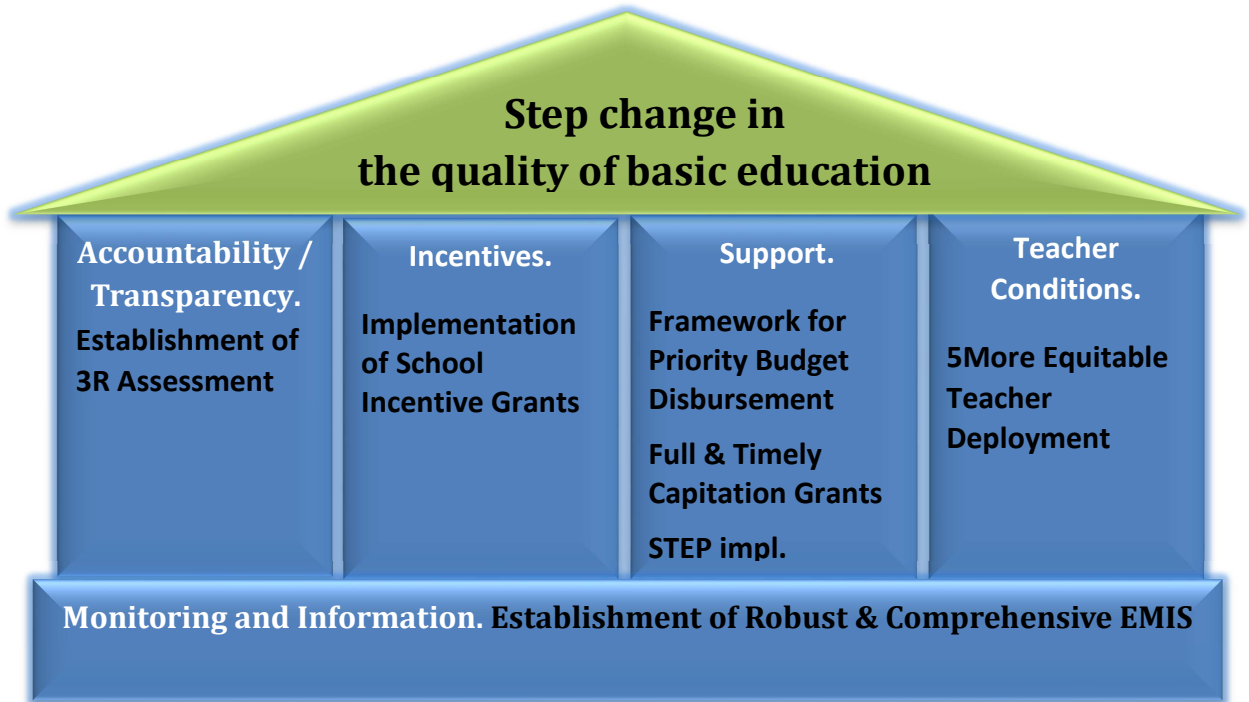
A. PROGRAM RESULTS FRAMEWORK

65. ***Disbursement Linked Indicators (DLIs)*** have been designed to serve as triggers for performance-based payments within the program. More broadly, they are expected to lay the foundation of systemic results-based management approaches and systems for education service delivery in Tanzania. This payment approach is expected to help create a culture of increased mutual accountability between fund recipients and providers. As disbursements are linked to the achievement of tangible and verifiable results, this approach provides the government with incentives to achieve key program results and improve performance.

66. ***DLIs have been designed based on the following guiding principles:***

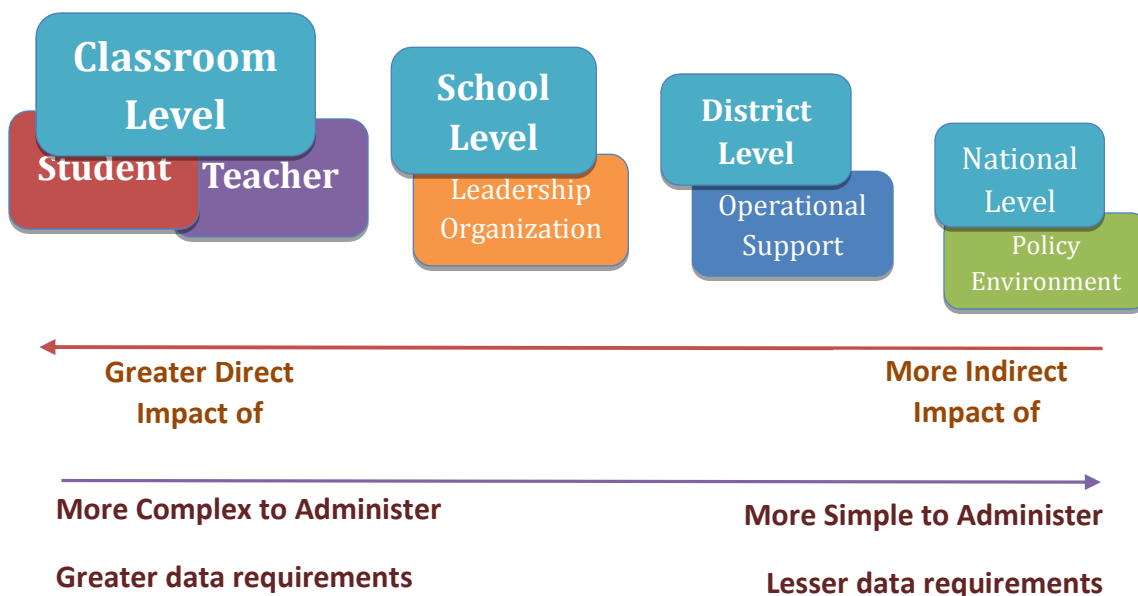
- Focusing incentives as close as possible to key actors accountable for their attainment. In other words, targeting incentives at those with control and authority to improve performance at the operational level.
- Using DLIs to incentivize key actions around which political will might be low.
- Simplicity and manageability in the number and framing
- Ensuring that targets are realistic
- Ensuring that the performance assessment approach implicit in the DLIs is perceived to be fair
- Emphasis on process indicators and system improvements in first two years, increased focus on learning outcome improvements in last two years
- DLIs map directly to BRNEd design (see figure below)

Figure 8: Mapping DLIs to BRNEd Design



67. *There are many different tiers and actors within the education sector* that contribute to and have ‘control over’ factors that can improve learning outcomes. Clearly, parental education levels, socio-economic background, pre- and post-natal nutrition levels etc. all significantly influence each student’s learning outcomes. However, directly responding to these issues is beyond the immediate scope of this program. Areas that may feasibly fall within the scope of this program include:

Figure 9: Design Considerations for DLIs



68. *Incentives targeted at the school and classroom level* would result in the greatest impact on learning outcomes. The design of BRNEd includes interventions that provide performance-based incentives to schools and teachers. Program DLIs and activity indicators reinforce incentives for implementation of these interventions at the district and national levels. By using this approach, the program rewards the establishment of and adherence to a results-based financing culture within the education system.

69. *Program's DLIs are summarized in the PAD*

B. GOVERNMENT M&E SYSTEMS

70. *Government M&E systems comprise of three interlinked data sources and mechanisms.*

71. *The key centrally available M&E data source on government's basic education program is the national Education Management Information System (sometimes called BEST, BSMIS, BEMIS, IMIS)* which is maintained by the MOEVT. EMIS has been designed to provide comprehensive strategic and operational information regarding the national education system. Data for EMIS is collected through an annual school census⁸, through which information is collected on: school location, infrastructure and assets, enrollment, availability of learning material, staff, expenditure and income etc.

72. *Data on student performance comes from the National Examinations Council of Tanzania (NECTA)*⁹. NECTA administers all the primary and secondary exit exams, and has more than 40 years of experience in the field. NECTA assessments are always administered at the end of an education cycle: a) grade 7 for the primary education cycle, b) "form 4" (i.e., grade 11) for the secondary education cycle, and c) "form 6" (i.e., grade

⁸ Annual School Census started from 2003. However, due to changes in the database software, all data prior to 2006 was lost during the conversion from MS Access to SQL

⁹ www.necta.go.tz/index.php

13) for the advanced secondary education cycle. NECTA assessments are very high-stakes for students because they determine whether or not a student is eligible for entering the next stage of the education system – from primary to lower secondary, lower secondary to higher secondary etc. Because of this, NECTA results are closely monitored by the government, schools, parents, and general public. Also, given the semi-autonomous status of NECTA, average student performance on NECTA exams is often perceived as a score-card of the education system and these results receive considerable publicity in National media.

73. ***The BRNEd initiative has its own M&E system within the MoEVT.*** The BRNEd program has already established a set of key performance indicators covering all nine interventions of the program. This set of indicators will be tracked on a weekly and monthly basis first by the MDU team within the MoEVT, and then collated by the newly established President's Delivery Bureau (PDB) to produce a public Annual Report on progress against results targets in the previous year. It forms the base for the performance management ecosystem of the Tanzanian government. Collection and use of these data will include participation of DEOs, REOs, WECs, and school inspectors. One key pillar of this system is the collection and dissemination of information on 'official school rankings'.

74. ***Assessment of the government's M&E systems¹⁰ suggests a need for consolidation and strengthening.*** Scope for improvement exists along the following dimensions:

- a. The M&E system comprises of multiple databases – maintained by different bodies – that need to be linked to each other. Utility of data can be considerably enhanced by linking NECTA and EMIS data with each other and also with the school mapping data which currently sits with the National Bureau of statistics;
- b. Existing mechanisms, in particular the IT infrastructure, for data quality assurance, storage, and accessibility need to be strengthened;
- c. Existing M&E systems are deficient in real-time data; and
- d. Evidence suggests that there are significant margins for improvement in the degree to which M&E data are being used for planning and management.

75. ***Considerable strengthening of the government's education M&E system is expected through the Open Government Partnership (OGP).*** Tanzania joined the international OGP for improved service delivery initiative in 2012 and has made Education one of the priority sectors through which OGP will be mainstreamed over the next few years. As a part of this work, an Open Data road-map is being developed which will include the creation of an Education Dashboard which will bring together - in a linked, accessible, and visualized manner - data from various education databases. It will also help establish an updating mechanism to ensure the dashboard is useful not only annually, but more frequently within the year.

¹⁰ As a part of PforR preparation independent assessments of the EMIS and NECTA systems were carried out by DFID and World Bank consultants. The assessment also relies on findings of the Open Data Readiness Assessment of the Education Sector in Tanzania which was carried out by a team of experts working on the Open Governance Partnership in the country.

76. ***BRNEd includes training to ensure enhanced use of data for planning and management.***

77. ***Impact Evaluations have been built into program implementation plans.*** For certain innovative interventions/activities, like (a) STEP training and (b) performance-based recognition awards for teachers, a phase-in approach of implementation will be used. This approach involves starting implementation with a select number of – randomly selected - regions and districts. This provides built-in learning opportunities within program design which can be exploited to refine design and implementation before national scale-up. It will also generate data for rigorous impact evaluation of specific program interventions.

C. RISKS AND MITIGATION

78. ***Additional measures are needed to improve the national student assessment system, including the validity and reliability of PSLE and CSEE pass rate data (which represent higher order objectives of the program) as reliable proxy for learning gains.*** This concern stems from the high degree of volatility that these rates have demonstrated in the last few years. In addition, recent media discourse on pass-rates has demonstrated concern that policymakers make change to the pass-rate thresholds or modify the weighting formula that allows improvements in pass rates without corresponding increases in learning achievement gains. These risks will be mitigated through the following measures:

- Technical Assistance to NECTA and TIE, through parallel financing by DFID and SIDA, to help: a) develop the National Assessment Framework; b) align question items to a benchmarked student competency framework along with the National Assessment Framework, and c) assist with technology-intensive data analyses practices around student assessments and psychometrics.

79. ***Program M&E and overall accountability can be considerably strengthened if it includes real-time feedback data*** directly from service providers and beneficiaries. To this end, mobile technologies will be leveraged to monitor the progress of program activities and collect indicators on program performance. These data can: (a) provide direct information on program results framework; (b) function as a source of data validation when triangulated with administrative data; and (c) provide decision-makers and implementers with real-time data to improve planning and implementation. Such a system is clearly feasible in Tanzania, as evidenced by the ongoing local initiatives in Tanzania such as the *Sauti za Wananchi* (Twaweza), and lessons learnt from these initiatives will be leveraged. Design and implementation of such a system will be incorporated within the Program Action Plan (PAP) and will be supported through TA for the program provided through parallel financing from DFID and SIDA.

80. ***Strengthening of program M&E is also directly incentivized through the use of DLIs.*** One of the DLIs (DLI 3) rewards demonstrated improvements towards a robust and comprehensive EMIS. Within the DLI, MoEVT will receive disbursement in Year 1 conditional upon verified establishment of EMIS hardware, software, processes, and staff deployment. In addition, districts will be incentivized for submitting high quality school level data from all pre-primary, primary, and secondary schools to the school census.

This DLI is expected to support the sector in more effective planning, prioritisation, monitoring, and assessment of the delivery of education services at school and system level. It is also linked to DLI 1 by acting as the basis for performance assessments and resource prioritization at the school, district, and national levels. This DLI will be complemented by TA support to improve quality, efficiency, and reliability of school-level data collection. It will also help strengthen mechanisms for data accessibility and use for planning.

81. ***Verification protocol.*** Disbursements for the PforR modality will be made on the basis of verified results attainment. For this purpose, a verification protocol has been prepared (see Annex 3). The protocol will rely to two sources of information. For all non-learning outcome related DLIs, DLI verification will be undertaken by the Presidents Delivery Bureau. For DLIs related to timely receipt of capitation grants and 3R assessment, the government will commission an annual review to be undertaken by an independent firm, with the agreement of the Bank.

82. Specific details related to the flow of funds, in terms of paying for results, will be detailed in the Operational Manual. The Operational Manual will contain detailed information on procedures to be followed at each stage of the transaction cycle, including commitments, transaction verification and approval, payments and reporting. The Operational Manual will be submitted to the Bank for review at appraisal.

V. PROGRAM ECONOMIC EVALUATION

A. RATIONALE FOR PUBLIC PROVISION AND FINANCING

83. ***There is strong rationale for public provision of quality education at primary and secondary levels.*** In Tanzania, government intervention in the education sector is strongly justified on the grounds of public good, externality, equity, and efficiency.

84. ***Quality education provision produces several positive externalities.*** Economic studies have consistently shown that education provision may provide economic benefits to society greater than the sum of its benefits to individuals – by providing a rich environment for innovation, scientific discovery, education can accelerate overall economic growth (Hanushek 2008). National income rises directly with earnings from workers with more and better skills. The more educated are also more prone to be civically involved, to vote in local and national elections, and to be a better informed and more responsible electorate (Teixeira 1992). Increases in the level of education are associated with reductions in crime [e.g., Ehrlich (1975), Lochner and Moretti (2001)].

85. ***Public provision can also be justified on the grounds of equity.*** Public expenditures in education are a powerful instrument to help address socio-economic inequalities. In Tanzania, public sector remains an important source of provision of education services in the rural and newly emerging areas where service delivery gaps for primary and secondary education remain the most pronounced.

86. ***Investments in education quality are needed to improve efficiency of public expenditure.*** Tanzania has had much success in increasing access to education. These

efforts now need to be complemented by an education system that can provide quality learning. Public sector remains an important source for provision of education in Tanzania while private providers (both for-profit and nonprofit) account for only a small share of the enrollment. Therefore improving quality of the public sector will contribute to better overall education outcomes.

B. ANTICIPATED ECONOMIC IMPACT

87. ***To measure economic impact, we examine the private returns to BRNEd in terms of expected improvements in schooling completion rates.*** The principal outcome expected from program interventions are higher completion rates at Primary (PSLE) and Secondary (CSEE) levels. According to the results chain (see figure 2), these rates are expected to respond to improvements in access to teaching and learning materials, improved teacher quality due to pedagogical training and increased teacher effort through strengthened incentives among other interventions.

88. ***Cost-benefit (CB) analysis of BRNEd using the present discounted value (PDV) method suggests that the program is justifiable on economic grounds*** with a Net Present Value (NPV) of \$529,677,806, Benefits to Cost Ratio of 2.48 and corresponding to an estimated internal rate of return (IRR) of 19%. Further, this return is considered to be a lower bound, given that: (i) only (private) outcomes for the students are considered as part of the benefits of the program, and (ii) we have attempted to be conservative in our assumptions in all cases where discretion was exercised in this analysis.

PROGRAM BENEFITS

89. ***To quantify the scope and size of program benefits we estimate the number of students who are likely to be impacted by BRNEd.*** We focus our attention to the increase in the number of students passing the PSLE and CSEE examinations using the pass rate targets of set by the BRNEd design and implementation documentation.

90. BRNEd targets put the anticipated average increase in pass rates of PSLE and CSEE to be around 40% for the next four years. Taking an extremely conservative view, we assume that a realistic increase in pass rates would be around 3% to 5% over the next four years. In addition, even though the program would have a positive impacts lasting beyond four years, we restrict our attention to the next four years and using the average increase in pass rates as 3%.

91. There are currently around 8 million students enrolled in primary schools while around 1.6 million students enrolled in secondary schools. With an average increase in pass rates of 3% it is expected that addition 137,143 students would clear the PSLE and 48,000 would clear the CSEE over the next four years. We would use these numbers for our benefit-to-cost analysis to justify the project on economic grounds, the methodology of which would be described subsequently.

MAIN PRINCIPLES GUIDING THE ANALYSIS

92. ***The benefit-to-cost analysis follows from an economic model that accounts for the cash flow generated by a person in his or her productive lifetime.*** Distinction is made between the different education levels (primary or no primary education, secondary

or incomplete secondary education). The education premia (parameters of the Mincer equation) were estimated using the Tanzania National Panel Survey (NPS) Data. While calibrating the education premia we have controlled for the different education levels, number of years of professional experience, rural and urban effects. The model was calibrated and the discounted expected cash flow generated by level of education was estimated.¹¹ This represents the present value of all the income that an average person, with a given level of education, will generate in her lifetime (17 years to 60 years). The model accounts for differences in education premium, labor force participation rate, and employment rate. Finally, an 11% yearly rate was used to discount the cash flows. The current inflation rate in Tanzania is 6.2% while average rate over the next five years would be around 5.6% (according to IMF), we have added an additional 5% to this rate as our risk premium and discount rate is taken as 11%.

93. *In all components and subcomponents the benefits are defined as the difference between the gains under the program and what would be expected to happen in its absence (counterfactual).* To give an example, for a Form 2 student the benefits would be the difference of life time earnings (17 years to 60 years) after completing secondary education and going to the labor market without completing Form 2. In case of primary students the benefits would be the difference of life time earnings of completing primary education and going to the labor market without completing the primary education. Since the earnings start at the age of 17 for the primary graduates who in most cases complete the education at the age of 13 there would be a lag of four years before they start earning. For primary graduates the benefits accrued over the lifetime would be discounted again to the present value. The fact that some primary graduates will go on to secondary education does not hamper our results since the education premium for secondary school students is higher than the primary graduate as would be seen later. Such a lag is not seen with secondary graduates who complete their education at the age of 17. Table 7 shows the estimates of return to schooling and the labor market indicators (labor force participation and employment rates) and other parameters used in the analysis.

Table 7: Parameters for the estimation of discounted cash flow

Parameters	Values
<i>Marginal wage effects of level of education and other attributes</i>	
Complete Primary Education	53%
Complete Form 1 of Secondary Education	98%
Complete Form 2 of Secondary Education	142%
Complete Form 3 of Secondary Education	206%
Complete Secondary Education	296%
Experience	8%
Experience ²	-0.11%

¹¹ The calibration of the model was done by using information from actual real wages observed in Tanzania to determine – using the parameters estimated in the Mincer equation – the wages for each education attainment takes into account the number of years of professional experience. The whole cash flow – for primary or no primary and secondary or incomplete secondary graduates as well – follows from the relationship between wages of each education level and number of years of professional experience found in the estimation of the Mincer equation.

<i>Other parameters</i>	
Discount Rate	11%
Employment Rate	88.3%
Labor Force Participation Rate	90%
Exchange Rate (USD to Tanzanian Shillings)	1606.48

94. *Note that the model employed in the analysis captures only part of the program's benefits and therefore underestimates its potential benefits.* For instance, primary and secondary education is increasingly associated with better cognitive and non-cognitive skills that create better outcomes in a host of labor market and adult life indicators (better health, lower criminality, better informed voters, etc.). In the case of higher education, more relevant courses can shorten unemployment periods people's lives. Also not included are potential increases in economic growth brought about by the program. Research by OECD (2010) has estimated the impact of improving academic quality (measured by results in international assessments) on countries' future economic growth. According to the study, a 50 points increase in PISA scores (half standard deviation or one year and a quarter of education) is associated with 0.9 percentage points higher growth rates in the long-term (that is the impact will be felt over a period of 50 years).

PROGRAM COSTS

95. *Estimates suggest that the Program's non-wage resource requirements could be about US\$ 416 million over the next four years.*

Table 8: BRNEd Cost Estimated by Expenditure Category (annual)

	Year 1	Per Year Cost (Year 2-4)	Total for Four Years
<i>BRNEd Program (excludes construction)</i>	<i>118,693,774</i>	<i>99,136,983</i>	<i>416,104,724</i>
Official School Ranking	645,920	539,494	2,264,400
3R Assessment	524,280	437,896	1,837,970
School Incentive Scheme	1,243,876	1,038,927	4,360,657
Teacher Motivation	19,246,711	16,075,492	67,473,188
School Improvement Toolkit	351,368	293,474	1,231,791
3R Teacher Training	2,630,640	2,197,198	9,222,235
STEP	18,242,033	15,236,352	63,951,088
Capitation Grants	75,808,945	63,318,150	265,763,394

Source: MoEVT Budget 2013/14

RESULTS

96. *Using the parameters from Table 6, the calculation of the NPV for this program, benefit to cost ratio and the IRR is achieved by comparing the entire flow of*

costs and benefits over the working life of students affected by the program. As mentioned earlier, this is assumed to occur while the student is aged between 17-60 years, so no flows are calculated beyond that. Using the above estimates, the NPV of the project is calculated as USD 529,677,806, Benefits to Cost Ratio of 2.48 and corresponding to an estimated internal rate of return (IRR) of 19%, a significant return, suggesting that even under conservative assumptions, the program is economically justified.

SENSITIVITY ANALYSIS

97. As discussed in the preceding sections, we are interested in determining the sensitivity of calculated NPVs, IRRs and benefits to cost ratio to our initial assumptions. We undertake four analyses and examine resulting outcomes first we assume that returns to educational quality are lower than the expected 3% pass rates (due, for instance, to only partial disbursement under the operation), then we vary the implicit discount rate, following which we change the employment rate to test the sensitivity to any future shocks, and finally we examine the sensitivity of our final results to estimated marginal wage effects by level of education (consistent with the program being less able than estimated to convert inputs into educational results). The last analysis is the most stringent sensitivity analysis we perform since we are inherently changing five parameters. The sensitivity analysis performed confirms that the project is a good investment.

Table 9: Sensitivity Analysis for Program Economic Impact

Assumption	Change	NPV	IRR	Benefits to cost ratio
Principal Analysis	As per description in text	\$529,677,806	19%	2.48
Decrease in returns to education outcomes	Reduced to 2%	\$233,706,373	15%	1.65
Higher Discount rate	Applied at 15% rather than 11%	\$167,969,050	19%	1.49
Change in employment rate	Applied at 70% rather than 88.3%	\$345,659,327	16.6%	1.96
Change in marginal wage effects by education level	Estimated effects halved	\$52,083,840	12.3%	1.20

C. WORLD BANK ADDED VALUE

98. *In addition to the financing provided, this program and the World Bank will bring value-added to improve education quality in Tanzania through technical expertise, implementation support, and global knowledge from a large number of similar support operations within primary and secondary education.* This value-added is reflected in the innovative results-based financing model and the shift in focus from education inputs to improvements in the education system underlying this program.

Secondly, this program is part of four on-going or planned operations in education in the country, which yields substantial economies of scale within technical assistance, implementation support, and monitoring.

VI. TECHNICAL RISK RATING

99. ***Based on the findings of assessments undertaken for the preparation of the Program, the overall technical risk rating is high.*** The major technical risks are (i) technical capacity at MOEVT and PMO-RALG to implement the program; (ii) inadequate M&E arrangements; and (iii) adherence to and timely release of budget for BRNEd implementation. The overarching measures to mitigate these risks will be: (a) a series of institutional enhancement activities which will be financed through parallel funding from development partners; **and** (b) use of DLIs.

Table 10: Technical Assessment: Key risks and mitigation strategies

Risk	Mitigation
<i>Technical Design</i>	
Insufficient financing to implement BRNEd activities and resource inequity and inefficiency at the district level	<ul style="list-style-type: none"> • TA for establishing sector-wide prioritized budget framework • DLI for agreement on and adherence to sector-wide prioritized budget framework • DLI on full and time release of capitation grants at the national and district levels
Uncertain effectiveness of some proposed BRNEd activities	TA to build-in explicit mechanisms for adaptive implementation including: <ul style="list-style-type: none"> • BRNEd check-ins, • Impact evaluations that yield lessons for improved design and implementation early in the program
<i>Risk of non-implementation of certain BRNEd activities</i>	
School Incentive Grants	DLI
National 3R Assessment	DLI
3R Teacher Training, Student-Teacher Enrichment Program, and School Improvement toolkit	TA and capacity building at local implementation levels
Timely Delivery of Adequate Capitation	DLI

Grants	
<i>Results Monitoring</i>	
Validity and Reliability of PSLE and CSEE test items for meaningful/ comparable results overtime.	<p>Increasing validity and reliability of PSLE and CSEE test items for comparable results in a designed National Assessment Framework by:</p> <ul style="list-style-type: none"> • TA to NECTA for benchmarking student assessment instruments
M&E Capacity	<ul style="list-style-type: none"> • TA for enhancing EMIS system • A DLI associated with collection, dissemination, and use of high quality school-level reliable EMIS data
Lack of data from ultimate beneficiaries	<ul style="list-style-type: none"> • TA for development of mobile-based system for generation of real-time feedback data from stakeholders and beneficiaries

ANNEX 1: TECHNICAL ASSESSMENT OF BRNED ACTIVITIES

This annex summarizes and discusses the technical soundness of each of the eight BRN education initiatives that are being supported under the PforR.

Strengthen Performance- Transparency

1. **Official School Ranking:** Official school ranking is designed to catalyze accountability pressures on school administrators and teachers from policy-makers and public (in addition to the linked SIG initiative, which is discussed below). Available international evidence on such initiatives is mixed in terms of impacts on student learning in the short run¹²¹³. Also note that an intervention like this is critical for catalyzing a culture of results-based management in education.

Some potential risks around this intervention and associated mitigation are described below:

Risk	Mitigation
Pure information provision to communities might not be enough to meaningfully change the behaviour of important stakeholders –head-teachers, teachers, parents, or students themselves	A complementary intervention in the BRNEd package (school incentive grants) involves provision of bonus grants and recognition awards to schools that show high performance and most improved performance.
Intervention might fail to impact poor performing or poorly resources schools because they feel too discouraged	<p>Schools are being rewarded not just for low performance but also for most improved performance. The latter, by definition, favors low performing schools.</p> <p>A complementary intervention, of timely and full release of capitation grants is designed to help overcome resource constraints in schools</p> <p>This risk will also be managed through collection of direct beneficiary data from schools which will monitor perceptions of stakeholders with respect to this intervention.</p>
Risk of non-implementation	Negligible because intervention is

¹² Banerjee, A., Banerji, R., Duflo, E., Glennerster, R., Khemani, S. (2008) Pitfalls of Participatory Programs: Evidence from a Randomized Evaluation in Education in India (Working Paper 14311) Retrieved from <http://www.nber.org/papers/w14311>.

¹³ Bruns, B., Filmer, D., Patrinos, H. (2011) Making Schools Work: New Evidence on Accountability Reforms. <http://go.worldbank.org/UHR0U2UQ60>

	already being implemented.
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National 3R Assessment: The PSLE and CSEE examinations serve high-stakes exit examinations that help determine whether students continue in school system. However, they are not sufficient to describe overall system-wide learning outcomes due to their timing and high-stakes nature.

Evidence of low achievement from Uwezo in early years provide a clear rationale for greater monitoring in the core 3R skills (reading, writing, and mathematics) earlier in the learning cycle. The national 3R assessment would help identify lagging students early in the cycle so that more timely remedial action is possible.

Assessments for similar purposes, such as the NAPE in Uganda and the ASER in India have provided insight into weaknesses in student learning and helped improve student outcomes. If the teaching/learning processes can be improved, measurable improvements in learning outcomes within two years are possible as the skills are meant to be acquired by the end of the second grade.

There are some implementation and monitoring risks linked to this activity. First, a there is a risk of producing biased results through handpicked school samples. For this reason, schools will be selected as a stratified random sample. To ensure teachers do not influence student responses, council school inspectors will randomly monitor test provision. To account for the limited time in school inspectors' schedules a reserve list of alternate inspectors will also be developed. Risk of non-implementation of this intervention is being mitigated through the use of DLIs.

Motivate through incentives

2. **School Incentive Grants (performance based):** The official school ranking forms the basis for School Incentive Grants. The use of financial incentives to increase teaching effort and effectiveness is relatively new and there are few RCTs to assess the approach. There is so far some mixed evidence that the approach can achieve some positive results, with a more successful application in India (Muralidharan and Sundararaman, 2011) and a positive though less successful application in Kenya (Glewwe et al., 2010, as discussed in McEwan 2013). Giving performance-based financial incentives to schools and teachers is the subject of tow ongoing impact evaluations in Tanzania which are likely to yield results in the next few months¹⁴. Lessons learnt from these evaluations will help enhance the potential effectiveness of this intervention.

The detail of the SIGs' design is crucial to the intended and unintended consequences of giving the financial incentives to schools. To ensure rewards

¹⁴ One IE comes from SEDP II program and examines the impacts of non-financial performance-based incentives for teachers and schools; the second IE is being implemented by TWAVEZA and examines the impacts of financial incentives for teachers and schools.

create the intended incentives, they must be (and be perceived as) obtainable, sizable, and equitable. If awards were given only to a few dozen schools, most stakeholders would consider them unobtainable and not strive to compete for them. Conversely, if they were too common, there would be insufficient funds to make meaningful incentives. To address these issues, multiple tiers of incentives were proposed, which rewards to be both sizable and broad. Secondly, incentives must be linked only to issues that stakeholders can control, and not external parameters such as socioeconomic background. By measuring improvement in school pass rates, the schools that already have the highest student outcomes do not have a monopoly on the awards, and a much broader set of schools will be able to compete. The proposed SIGs incorporate rewards for both highest overall achievement and highest improvement.

There is the risk that SIGs create incentives for teachers to help students improve test scores without actually improving learning (through test strategies and gaming). Technical assistance to ensure strong monitoring will be necessary.

There is also a risk that the SIGs will not be an incentive because of doubts that the government will actually disburse the money. Including disbursement of SIGs as a DLI will help mitigate this risk and ensure timely and complete disbursement.

Improve Teacher Conditions

3. **Clear backlog of claims:** The improvement of teachers' motivation to attend school and to teach actively in class when they do was identified in the Lab's focus group as being the single most effective initiative. The Lab paints a picture of low morale among teachers, with strikes and go-slows on the one hand and chronic delays in payments and a lack of esteem for the teaching profession on the other. This is backed by evidence generated from focus-group discussions with teachers.

Most of the initiative discussed the need to clear the backlog of outstanding financial claims by teachers. This appears to be a non-controversial move that offers to remove causes for grievance blamed for undermining teachers' morale. Tackling this problem is no doubt technically challenging and there is a cost to taking effective action. The high-profile, President-led nature of the BRN and the creation of the PDB and MDUs to address multi-agency problems may offer the best chance to implement this activity.

Provide Support where required

4. **School Improvement Toolkit:** The School Improvement Toolkit is a new summary guide to existing regulations and guidelines on how heads of schools are to manage their schools and all heads are to be provided copies and training about how to use it. The adoption of similar approaches under UNICEF and EQUIPT endorses the need for such support. The Toolkit that has been developed is thought to be a useful document. There is need to ensure quality of the cascade

training model along with follow-up support, by limiting the number levels of cascades, fidelity of training is likely to be high. Additional technical support to ensure proper monitoring of training delivery to heads of school and opportunities for mid-course adaptation will be necessary.

5. **3R Teacher Training Program:** The aim is to improve 3Rs teaching in over 6,000 (out of 16,000) schools in 40 (out of 136) low-performing districts by delivering cascade training to two teachers (1st and 2nd grades) in each school, so the aim is to affect a sizeable and under-achieving minority of the country. This type of approach has become a common one in such situations; indeed other programs are in operation in Tanzania¹⁵. Two potential weak points are whether the cascade training effectively informs the teachers and whether the teachers' classroom behavior is altered without follow-up support. Technical assistance to in the form of monitoring and responsive mid-course correction through the mini-labs will be necessary to ensure training quality and fidelity.
6. **Student-Teacher Enrichment Program (STEP):** The STEP initiative does not feature in the ESDP. The program addresses the need for quick impact on PSLE and CSEE pass rates by focusing on pupils in their final examination year. The origin of the initiative is remedial education, which is more naturally applied in contexts where difficulty in understanding the curriculum is the exception, rather than the norm. The information presented in the BRN Storyline and elsewhere indicates that many children in many schools and districts are struggling across many elements of many subjects. Some elements of STEP's design seek to mitigate these problems. They target schools that saw the largest reduction in exam scores between 2011 and 2012 on the assumption these are likely to have the potential to rise more quickly than with persistent low scores; the core subjects of Maths, English, Kiswahili and (Secondary only) Biology; item analysis is promoted and schools encouraged to select students with the motivation and potential to improve in the smaller classes that are offered.

The improvements sought through STEP may be broadly separated into exam skills and subject teaching. It would be critical to ensure that a balance is maintained between the two pathways and the former does not come at the expense of the latter.

At primary, STEP covers three teachers in each of nearly 6,000 (out of 16,000) schools in 40 (out of 136) districts. At secondary, STEP covers four teachers in each of nearly 2,000 (out of 4,000) schools in 11 (out of 25) regions. National trainers will train those at the council level, who will in turn train two teachers at each school, who will train the remaining teachers at the school. As with the 3Rs training, the challenges of making cascade training effective are recognized, and the national team that designs the training will also be charged with monitoring

¹⁵ Such programmes include: EQUIP-T (a new major DFID funded primary education programme operating in 7 regions); School Based Teacher Development (supported by Unicef in 6-7 districts), and the TZ-21 programme that supports early grade reading in Mtwara region (funded by USAID).

teachers receiving the training to ensure training fidelity.¹⁶ STEP may prove less concentrated in secondary schools where there are more potential pupils to assist per teacher trained under the program. Technical assistance could help measure the effectiveness of the STEP trainings and help develop mid-course adaptations.

7. **Timely Delivery of Adequate Capitation Grants:** Capitation Grants to support non-teaching recurrent expenditure have had a long history in Tanzania and other similar countries. They are not controversial, but they have been consistently underfunded in Tanzania due to reductions in revenue flow and being given a low spending priority. In fiscal year 2012-2013, Tanzania funded secondary school capitation grants at approximately 56 percent of what was originally committed and some districts received eleven times the per-student funding of other districts. The Ministry of Finance (MoF) needs to allocate the full amount of money, it needs to flow quickly down through the system as intended without leakage, the districts, wards and schools need to know the money is there and what they can do with it; they need to make wise choices on how to spend the grants and then teachers need the skills and support to make good use of the resources. It is hoped that the high profile nature of BRN and the priority it is given by the government, in addition to the monitoring position of the PDB and MDUs, it will be receive funding as committed.
8. Separately, there have been issues on timely distribution funds to districts and distribution from districts to schools. MoEVT is currently exploring whether funds may be sent directly to school bank accounts without passing through other levels. Additional complexities are currently caused by confusion in the education system over the apparent withholding of 40 percent of primary capitation grants for central textbook distribution and the launch of a new textbook scheme with reparation funds from the faulty BAE systems contract¹⁷. Working to make the implementation of the Capitation Grants system more effective is a natural element of BRN's attempt to quickly improve the quality of education. The intervention will involve strengthening the monitoring and delivery systems to ensure successful capitation grant delivery. To this end, government is planning to pilot direct transfer of funds from MoF to schools to reduce delays and increase ease of monitoring. Including timely and complete capitation grant distribution as a DLI will incentivize the government to fully fund capitation grants, the most costly of all BRN activities.

¹⁶ See BRN Lab Report.

¹⁷ See www.pesptz.org.

ANNEX 3: ANALYSIS FOR ESTABLISHING TARGETS FOR LEARNING GAINS

Guidance on 3R Assessment

DLI 6 of the P4R-BRNEd program focuses on improvements in student achievement. Instead of using the national PLSE and CSEE exams of the *National Examinations Council of Tanzania* (NECTA), it tracks academic achievement using an EGRA¹⁸ sample-based approach. The objective of this document is to provide some guidance on what a reasonable target for this DLI might look like.

1. International Evidence of Academic Progress in Reading

The EGRA assessment has no overall score. Instead, each student has a series of scores, one for each sub-module of the test.¹⁹ So, the first task is to choose a relevant sub-module to use for setting targets. The most appropriate sub-module for reading is *Oral Reading Fluency* (ORF).

The baseline 3R performance level of Tanzania has just been estimated by RTI, and the national average is equal to 17.9 correct words per minute for ORF. Exhibit 1 presents the ORF results of four other national longitudinal EGRA studies.

Exhibit 1: EGRA Oral Reading Fluency Results of National Longitudinal Studies

	2007	2008	2009	2010	2011	2012	Average-Annual-Improvement
Egypt			10.3		19.5		44.4%
Liberia		19.6	20.7	28.5			22.8%
Malawi				0.8	0.4	1.3	26.3%
The Gambia	4.9		10.5		10.9		30.0%
Cross-Country-Average							30.9%

As observed, the 2013-2014 result for Tanzania is close to the performance of Egypt in 2011 and Liberia in 2008. But more important are the annual improvement rates observed in these countries over time.²⁰ Egypt is the country with the largest improvement rate in ORF, above 40 percent a year, followed by The Gambia (30 percent), Malawi (26.3 percent), and Liberia (22.8 percent).

¹⁸ See www.eddataglobal.org for details about the EGRA exam.

¹⁹ It is not possible to average the scores across sub-modules to get an overall EGRA assessment score.

²⁰ The best approach for estimating average annual improvement rates is to take the earliest and latest values and divide that growth rate by the number of years. This minimizes the annual volatility problem.

Other international evidence is much less encouraging. Beatty and Pritchett (2013)²¹ provide evidence that learning progress is extremely slow. Of special interest for the P4R-BRNEd program are their results for the Southern and Eastern Africa region. *The SACMEQ results indicate that a one standard deviation improvement in reading takes in these countries (14 countries included in the study) about 87.*

Even though we do not have access to the student-level EGRA database of Tanzania, we can use the other international EGRA examples as a reference. The standard deviations for Egypt, Liberia, Malawi, and The Gambia range between 0.9 and 3.0 words per minute. *This would suggest that even setting a target of 20 words per minute for ORF in Tanzania for 2017-18 could be ambitious.*

A balanced approach for DLI 6 is to consider both of these cases. A low-end scenario would set an ORF target for 2017-18 of about 20 words per minute. This is certainly still ambitious considering the Beatty and Pritchett (2013) evidence. The other extreme case would be to assume that EGRA results in Tanzania would follow a trajectory similar to the one observed in Egypt, Liberia, Malawi, and The Gambia. This high-end scenario could lead to an annual improvement of 20 percent. A mid-level performance case sits between these two extremes. Exhibit 2 shows the trajectory we would observe under these three different scenarios.

Exhibit 2: EGRA Oral Reading Fluency Results Under Three Scenarios

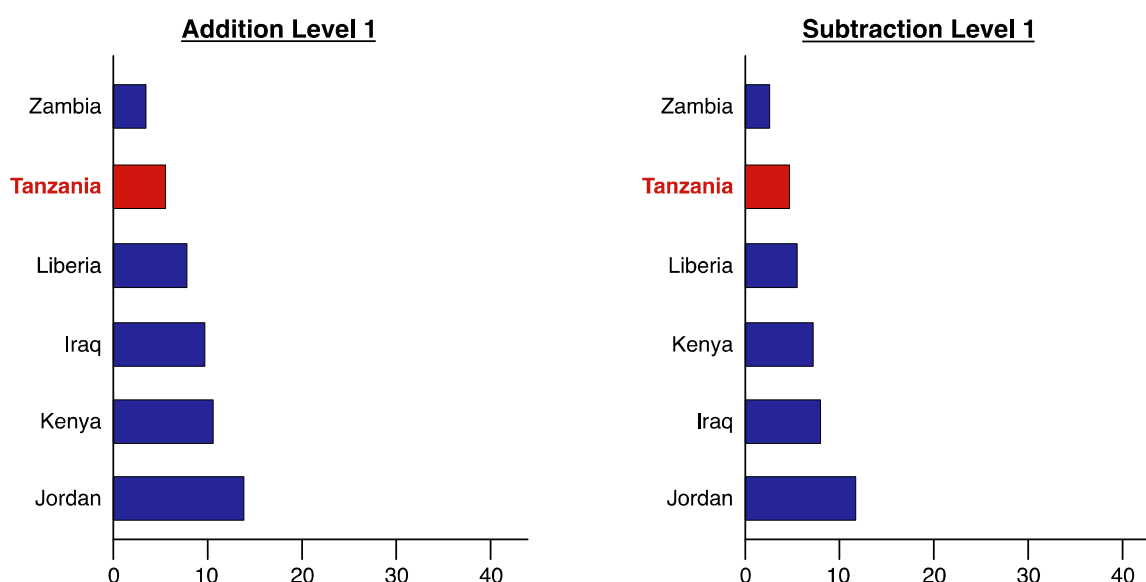
	2013-14	2014-15	2015-16	2016-17	2017-18	Average Annual Improvement
Low-Performing Scenario	17.9	18.3	18.6	19.0	19.4	2%
Mid-Performing Scenario	17.9	18.8	19.7	20.7	21.8	5%
High-Performing Scenario	17.9	21.5	25.8	30.9	37.1	20%

2. International Evidence of Academic Progress in Math

EGMA has a relatively shorter history than EGRA. Because of this, no longitudinal trends exist yet in other countries that could help us get an idea of possible progress in EGMA. It is only possible to compare the *levels* of EGMA performance across countries. Exhibit 3 shows the number of correct answers per minute in addition and subtraction level 1 for Iraq, Jordan, Kenya, Liberia, Tanzania, and Zambia.

Exhibit 3: Number of Correct Answers per Minute in EGMA Addition and Subtraction Performance in Grade 2

²¹ Amanda Beatty and Lant Pritchett. 2012. *“From Schooling Goals to Learning Goals: How Fast Can Student Learning Improve?”* CGD Policy Paper 012. Washington DC: Center for Global Development. 2013



RTI has estimated that the average number of correct answers per minute in addition and subtraction level is equal to 7.6 and 5.5, respectively. This sets Tanzania's performance in these sub-modules between Zambia and Liberia.

The other challenge of EGMA is that it has no single sub-module that strongly predicts performance in other ones. In the case of EGRA, ORF is generally used as a good leading indicator of performance in other sub-modules. But EGMA does not have a corresponding ORF sub-module. This raises the question of which EGMA sub-modules to focus on (addition, subtraction, number identification, quantitative comparisons, etc.).

The relatively low baseline performance of Tanzania in math means we should probably focus on level 1 EGMA tasks for setting future targets, such as subtraction. Exhibit 4 shows future performance levels for this sub-module under a low-, medium-, and high-performing scenario. Note that these are set lower than for reading as no international evidence is available besides SACMEQ (i.e., not very encouraging results of one standard deviation improvement taking about 68 years). The mid-performing scenario corresponds to 2 percent annual improvement in correct answers per minute in the subtraction sub-module, equal to the low-performing scenario in reading. Under this scenario, the average number of correct answers per minute should reach six by 2017-18.

Exhibit 4: EGMA Subtraction Results (Correct Answers per Minute)

Under Three Scenarios

	2013-14	2014-15	2015-16	2016-17	2017-18	Average Annual Improvement
Low-Performing Scenario	5.5	5.6	5.6	5.7	5.7	1%
Mid-Performing Scenario	5.5	5.6	5.7	5.8	6.0	2%
High-Performing Scenario	5.5	5.8	6.1	6.4	6.7	5%

3. Performance Average or Percent of Students Above a Threshold?

DLI 6 currently states that the resources allocated to it will be released according to the *percent of student reaching the predefined 3R targets*. But this raises an important question. Why not simply use improvements of the *average national performance* observed in EGRA (as well as EGMA for math)? Note that thresholds are always arbitrary and do not pick up changes that occur below and above it. The average is a much more robust statistic (consistent and unbiased estimate) of the average population skill level.

Exhibit 5: Cumulative Function of Oral Reading Fluency Scores in Liberia

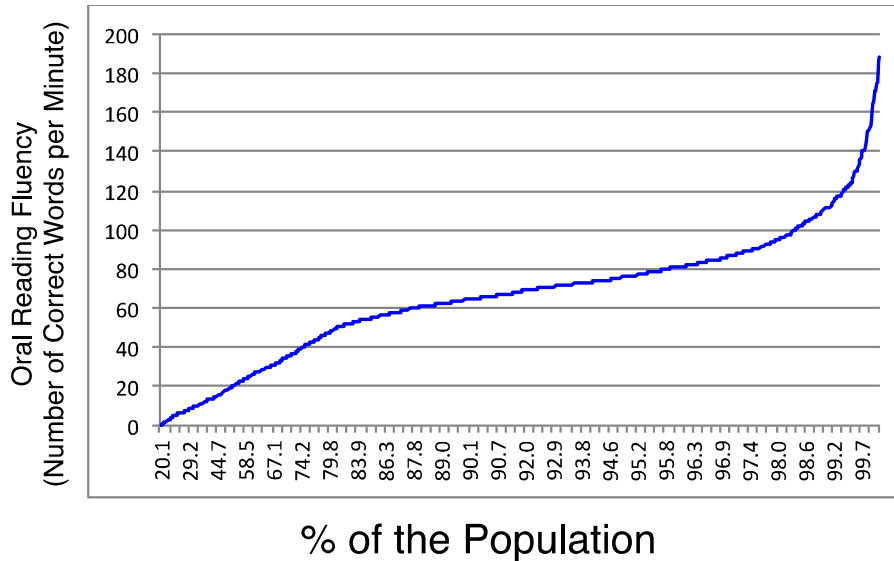


Exhibit 5 also shows that the cumulative function of ORF scores is not linear (using student-level scores of the Liberia study as an example). Therefore, improvements of ORF scores (i.e., movements of the distribution to the right) would result in different improvement rates of the *percentage of students passing a certain threshold* depending on where that threshold is set. Again, computing *changes in the national average* is a more robust approach.

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