



# Evaluation of Results Based Aid in Rwandan Education - Year Two Annex Report

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## Annex 1 – Evaluation Terms of Reference

### Terms of Reference for Evaluation of Project of Results Based Aid in the Education Sector – Rwanda

#### Introduction:

1. Enormous progress has been made by the Government of Rwanda in substantially expanding access to education in recent years. The government has ambitious plans to further improve access to and quality of education, articulated in its Education Sector Strategic Plan (ESSP) for 2010-2015. Development partners, including DFID, are committed to supporting the Government of Rwanda in implementing its ESSP.
2. DFID is piloting a programme of results-based aid in the education sector as part of the Education Service Delivery Grant (ESDG) of the Rwanda Education Sector Programme (RESP) which will run from 2011/12 to 2014/15. DFID Rwanda is seeking a team of consultants to conduct an impact and process evaluation of the RBA pilot.

#### The Objective

3. The objective of the programme is to pilot the provision of additional results-based aid based on (a) improvements in the number of students completing primary (P6), lower secondary (S3) and upper secondary (S6) education; and (b) the competency of teachers in Rwanda to use English as the means of instruction. DFID funding for the proposed RBA pilot is in addition to DFID's existing support to the education sector.
4. Key elements of the RBA pilot have been agreed between DFID and the Government of Rwanda and are summarised in Appendix 1 of this TOR.

#### Results Based Aid

5. Payment by results (PBR) is a new form of aid financing that makes payments contingent on the independent verification of results. PBR is part of a wider UK government agenda and several other government departments are piloting this approach. PBR is strongly referenced in the UK Government Cabinet Office's [Open Public Services White Paper](#), which sets out the Government agenda for public sector reform.
6. Internationally, definitions vary - DFID makes an important distinction between those that involve payments from funders to partner governments (results-based aid – RBA - including Cash on Delivery<sup>1</sup>) and those that involve payments from a funder or government to service providers (results-based financing - RBF). RBA is a newer and more innovative instrument.
7. Both RBA and RBF have three key elements:
  - payments based on results;
  - recipient discretion – i.e. the recipient has space to decide *how* results are achieved<sup>2</sup>; and
  - verification<sup>3</sup> of results as the trigger for disbursement.
8. DFID has a mandate to pilot test a number of different approaches to PBR, in different sectors. These pilots are expected to focus on outcomes and to build in rigorous verification and evaluation from the beginning<sup>4</sup>.

#### The Recipient

9. The recipients of this service are the Government of Rwanda and DFID Rwanda.

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<sup>1</sup> This form of RBA was proposed by the Centre for Global Development, see <http://www.cgdev.org/section/initiatives/active/codaid>

<sup>2</sup> As with all UK aid, our partnership commitments will still apply.

<sup>3</sup> This verification involved checking accuracy of results through quality audit processes to ensure tests are free, fair, and standards are consistent over time.

<sup>4</sup> DFID Primer on Results Based Approaches 2010.

### Scope of Work

10. Given that this is a pilot, it is important that the project includes rigorous, independent evaluation. DFID and the Government of Rwanda are particularly committed to learning lessons and identifying best practice from this pilot project.

### Aim

11. The aim of this piece of work is to conduct a rigorous evaluation of the pilot programme of results-based aid in the education sector in Rwanda. It is expected that the evaluation will have two main elements:

- A process evaluation which will seek to identify the recipient's, and other key actors', response to the RBA, including establishing processes that led to any increased educational results. Among other objectives, this element of the evaluation will seek to determine any contribution made by any observed increase in the number of teachers competent to use English as the medium of instruction to any observed increase in the numbers of students completing P6, S3 and S6.
- An impact evaluation which will seek to address whether or not the RBA pilot led to increased educational results.

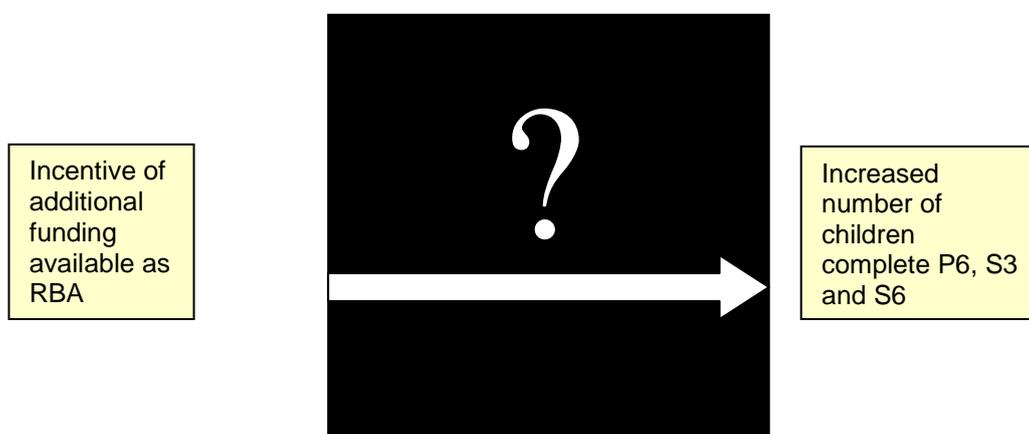
12. In addition, an annual evaluation report will be required. This annual report will serve to provide updates on progress on the evaluation. Further, the annual report will assess how the results-based aid element is working; this will allow for feedback to the design of the pilot and consequent pilot amendments.

13. These two elements of the evaluation are discussed in detail in the sections that follow. Possible questions to be asked under each of these elements are indicated in the relevant sections. However, these are indicative. It is expected that the definitive list of questions would be agreed between DFID-R, the Government of Rwanda and the selected SP through the acceptance of an inception report.

### Impact Evaluation

14. The main aim of the impact evaluation element is to determine whether or not the additional incentive of results-based aid had any effect on the number of children completing different levels of education when compared with what would have been achieved without the provision of this results-based aid. This is shown diagrammatically in Figure 1. For the purpose of the evaluation, the comparison is to be between the provision of results-based aid (of up to £9m) and non provision, with all other factors remaining constant, i.e. the counterfactual is non-provision of the RBA pilot rather than provision of a similar value of aid through another modality.

**Figure 1: Diagrammatic representation of hypothesis that provision of additional funding as RBA results in more students completing different levels of education (P6, S3 and S6) than would have occurred without RBA payments.**



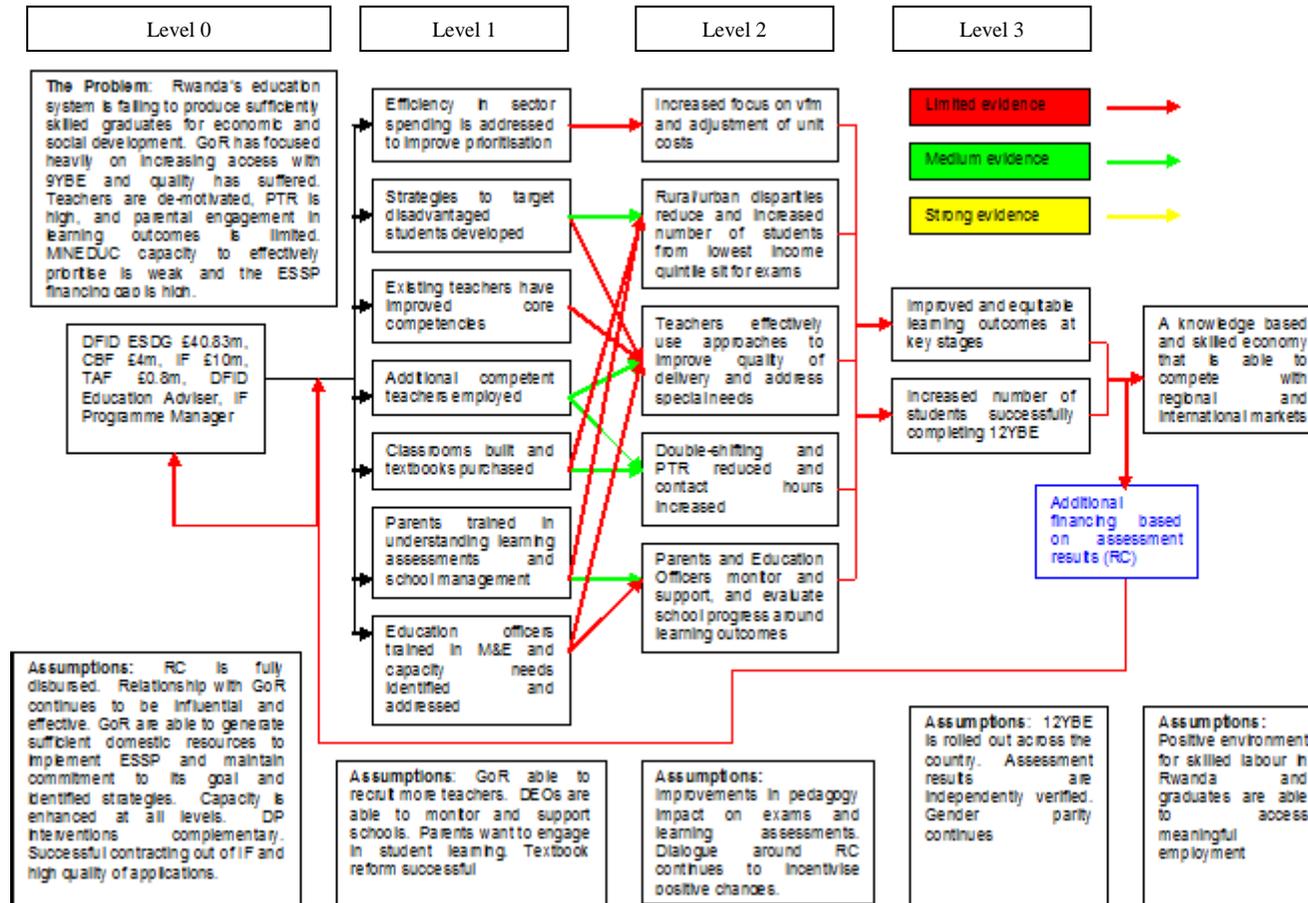
15. The first step in this element will be determining if the number of children completing P6, S3 and S6 has increased. At one level, this is expected to be a simple task based on data reported by MINEDUC and verified by the process outlined above. However, there is another level of more detailed analysis of any observed increases. Relevant questions may include who benefited from these improved results? How equitable are they? Which regions benefitted more/ less? Which socio-economic groups? Boys vs girls?
16. The second step is to determine what the main drivers of the additional results were including what contribution the RBA pilot made to these additional results. For this purpose a counterfactual is required. Experimental and quasi-experimental designs (including phasing designs or pilots at sub-national level) are unlikely to be feasible for the programme due to the barrier of not being able to establish a control group (the pilot is being rolled out nationally).
17. DFID expects the SP to adjust the impact evaluation in response to feedback from the recipient; DFID is open to suggestions about the most appropriate approach and methodology to establish causality in this context. One potential approach that would allow causality to be established is construction of a counterfactual through a prospective mathematical model to predict expected results without the additional results-based aid element. The SP would then be expected to compare actual observed results obtained from all planned elements with inclusion of results-based aid with the mathematical model to see if the observed results fall within or outside the model's parameters. The SP would then analyse these observations to draw conclusions on causal inference between the RBA pilot and the observed results, that is the evidence of whether or not the additional incentive of results-based aid led to a greater level of results than would have been achieved in the absence of this incentive.
18. DFID is open to other appropriate approaches and methodologies to establish a counterfactual, but those identified must be sufficiently robust to allow for causality to be established. In 2012, DFID published a study entitled 'Broadening the Range of Designs and Methods for Impact Evaluation, DFID Working Paper 38' (Stern, E. et al). This study sets out approaches for assessing impact that do not rely on experimental approaches. The study can be found on the DFID website at the following link - <http://www.dfid.gov.uk/r4d/Output/189575/Default.aspx>
19. The SP should also assess the level of results-based aid on offer with respect to the strength of incentive that it creates. For example, an assessment should be made of whether the results-based aid element creates an adequate incentive for improved results. Other questions include: 'Is DFID paying for results that would have been achieved anyway?' 'Are the results stretching enough/too stretching?' The annual evaluation report should recommend whether the thresholds should be reassessed (up or down) in light of the evidence generated by the evaluation in the previous year.

### Process Evaluation

20. The evaluation is also expected to examine the response to the RBA, including the mechanisms through which results-based aid led to any increase in results. This essentially involves 'unpacking the black box' shown in Figure 1.
21. The SP should use the current RESP theory of change model as a framework for this 'unpacking' (Figure 2) as this reflects the Government of Rwanda's thinking on how educational results will be delivered in the country. This has been slightly modified from the version presented in the DFID Business Case to label different levels (0-3) of the results chain and to highlight the importance of teachers' competency to use English as the medium of instruction. Tenders which are not based on this theory of change and/or propose alternate theory of change models will not be considered. The evaluation is expected to assess the extent to which observed changes have occurred as a result of the processes outlined in the RESP theory of change and/ or have occurred as a result of other processes not captured in that model. The evaluation is expected to critically assess the processes by which educational results, such as an increase in the number of students taking examinations, occurs in Rwanda and the extent to which the RESP Theory of Change reflects these processes.

22. Additionally, the SP should gather evidence of the extent to which RESP, in general, and the results-based aid pilot, in particular, have contributed to different elements of the results chain and the extent to which these elements have led to others. Indicative examples of the types of questions that might be asked by the evaluators at different levels of the results chain are presented in Appendix A2. However, bidders may suggest revisions, adjustments or additions to these proposed questions. It is expected that this list of questions would be agreed between DFID-R and the SP through the acceptance of an inception report.
23. It is expected that the SP will also pay particular attention to identifying how any observed changes in the number of teachers competent to use English as the medium of instruction have occurred. For example, this would involve unpacking the extent to which any improvement is as a result of improving the English language skills of existing teachers or as a result key factors including recruiting new teachers already competent in English and the school mentoring programme. Although this approach would involve analysing the contribution made by the school mentoring programme, it is not expected that SP's would conduct a detailed evaluation of that programme.
24. The evaluation team will also be expected to identify any unexpected consequences of RBA including, in particular, any perverse incentives created specifically by RBA.
25. As with the impact evaluation, DFID-R is flexible on the choice of approach and methodologies to underpin the process evaluation. DFID-R considers, however, that there is merit in pursuing a realist evaluation approach. A realist evaluation seeks to collectively understand if an intervention works, (and if the intervention works) for whom the intervention works and under what circumstances the intervention works. In addressing these points, it is critical to explore the context (including economic, social, political, cultural, and historic background, and organisational set-up including resources supporting the intervention). Further, a realist evaluation seeks to explain on a dynamic basis the interaction of context and the intervention, and to test the likely effectiveness of alternative contexts and interventions. Realist evaluation is particularly useful for informing policy, due to the ability to apply findings to other settings.

Figure 2: Proposed RESP Theory of Change (modified from DFID Business Case<sup>5</sup>)



<sup>5</sup> The level labels are not part of the original diagram and have been added for ease of reference in these terms of reference.

26. In addition, the evaluation is expected to explore:

- Whether the provision of RBA and the focus on increasing the number of children completing particular levels of schooling had any positive or negative effects on equity issues. Equity issues that the evaluation is expected to explore include whether results-based aid disproportionately benefited:
  - i. One sex more than another?
  - ii. Any geographical area more than another?
  - iii. Those children from higher wealth quintiles?
- Any effect on aid relationships. This element of the evaluation should cover any effects of the RBA pilot on relationships between GoR and DFID, and between GoR, DFID and other development partners. The SP should focus particularly on interactions between the RBA pilot and DFID's policy dialogue with GoR. For example, 'in what way did DFID's policy dialogue contribute to or hinder results achieved?' 'In what way did the RBA pilot increase or reduce DFID's policy dialogue with GoR?'
- Any effect on accountability to citizens. An important theoretical aspect of RBA is its proposed ability to promote citizen empowerment and accountability, for example, through the transparent publication and dissemination of results. The evaluation is expected to explore the extent to which publication has happened and how any observed change was achieved.

### **Evaluation Scope**

27. It is expected that the evaluation would have an initial inception phase in which the SP would:

- Outline their understanding of the evaluation, highlighting how they would address key issues and overcome limitations, in order to ensure that the aim of the evaluation is achieved within the timeframe
- Begin development of the mathematical model or other, alternate approach proposed to be used to generate the counterfactual
- Finalise the method and approach to be used for the process evaluation
- Finalise the indicators to be tracked and the questions to be asked in the process evaluation
- Finalise the timeline and workplan

28. One question that arises in relation to this evaluation is the extent to which the evaluators are being expected to evaluate the whole of RESP or just the RBA component. In principle, the evaluation is focused on the RBA component only. However, as the RBA component is embedded within RESP, in general, and ESDG, in particular, the evaluation will need to make some overall assessment of these instruments.

29. It is expected that the evaluation will adhere to OECD DAC evaluation criteria and standards.

### **Method**

30. For the impact element of the evaluation, the SP will be expected to develop a model for the counterfactual and to compare the verified results reported with expected results generated by this model. This could include mathematical modelling or other robust approaches of establishing impact. Tenders which do not propose a robust approach to impact evaluation and do not include team members with skills in this area will not be considered. It is expected that proposed methods and approaches will be elaborated / finalised during the inception phase.

31. For the process element of the evaluation, it is expected that the method and approach to be used will be finalised during the inception phase. Bidders are however expected to propose methods and approaches in their tenders. Final choice of method to be elaborated at inception and will depend on:

- The indicators to be tracked and the questions to be asked.
- The extent to which relevant primary data is available from MINEDUC

32. In principle, DFID would not expect the SP to have to do large surveys or significant amounts of primary data collection for the process evaluation. However, this would not exclude conducting some primary data collection in focused areas, such as surveys or focus group discussions to assess the degree of citizen empowerment and the perceptions of pupils and parents. This should only be done where it would not be possible/ appropriate for this to be done through national systems. In general, DFID's expectation is that the majority of primary data collection would be done through national data systems, such as EMIS and the system for examinations data. It is expected that data related to the competence of teachers to use English as a medium for instruction would be collected by the Government of Rwanda through surveys of representative samples of teachers in both 2012 and 2014.

### Use of Evaluation Findings

33. DFID expects that lessons learned from the evaluation will be used by MINEDUC, DFID and other development partners in a range of different ways, particularly to further improve the education sector in Rwanda and to shape DFID's policy on results-based aid more broadly. Bidders are expected to explain how they would support the process of lesson learning if appointed, including through the provision of policy relevant advice.
34. Also, DFID expects that the SP will include clear and concise recommendations on key lessons concerning the processes and approaches used to achieve intended and unintended results through the RBA incentive.
35. DFID expects the final evaluation report to be formally published, for example, in a peer-reviewed journal. Bidders are expected to outline how they would ensure this in their proposal including suggestions as to where/how this should be done.

### Reporting Requirements

36. It is expected that the evaluation will produce the following deliverables against which payments will be made. Timings are based on the assumption that a SP will be in place by end December 2012

A written inception report within six months of contract signing and submitted to DFID-Rwanda. This report would be expected to present the approach to be used for the impact evaluation including the proposed counterfactual; finalise the method and approach to be used for the process evaluation; finalise the indicators to be tracked and the questions to be asked in the evaluation; and finalise the timeline and workplan.

- Annual reports on the progress of the evaluation, updating baseline data and making recommendations for any adjustments to the project design and implementation. It is proposed that the first written reports should be produced within 12 months of contract signing with a follow up annual report each year.
  - A draft and final evaluation report covering the whole evaluation period which presents evaluation findings, challenges and lessons learnt with clear recommendations to DFID, MINEDUC and other stakeholders relating to the design and implementation of results-based approaches in the education sector. This should be no more than 30 pages, excluding annexes and supplementary material. The draft written report is due to be submitted to DFID Rwanda by the 20<sup>th</sup> May 2015 with the final report due on or before the 30th June 2015.
37. The SP will report through the DFID Education Advisor to the RBA Evaluation Steering Committee, comprised of the Government of Rwanda and DFID Rwanda.
38. The Steering Committee consisting of MINEDUC officials, DFID and an external expert will be constituted ensure the independence of the evaluation, provide technical guidance, address any

contentious issues and discuss progress. The Steering Committee will also ensure an effective Communications Strategy is in place to guide communications in relation to the Evaluation process and outcomes. Finally the Steering Committee will undertake quality assurance to ensure technical rigour of deliverables.

### **Suggested Expertise**

39. This consultancy requires a small core team of international experts supported by a small team of national experts. Precise team composition can be proposed by bidders. Staff numbers and cost should be proportionate to the overall size of the RBA project.
40. DFID expects that the team leader would be an evaluation specialist with experience of conducting evaluations of this nature with elements of impact and process evaluation. Experience of the education sector is not considered essential for the team leader. Rather, DFID expects a team leader with high levels of evaluation expertise.
41. DFID also expects that one team member would be an expert in mathematical modelling/ alternative approaches to establish causality with experience of creating counterfactuals for the basis of evaluation. Experience of the education sector is not considered essential for this expert. Rather, DFID expects that this team member has high levels of impact evaluation expertise.
42. DFID envisages some aspects of the evaluation being undertaken by a Rwandan partner. This is in line with priorities of sustainability and enhancing local capacity. Preference will be given to bids which will demonstrate that they will build the capacity of Rwandan nationals to undertake evaluation exercises.
46. DFID intends to manage the provider's performance through a suite of key performance indicators. The draft suite of indicators is contained in Appendix 3 of this TOR and tenderers are welcome to propose additional or alternative indicators. These indicators will be agreed after the inception phase and ultimately be incorporated in to the contract.

## **Background**

The RBA programme forms part of DFID's Rwanda Education Sector Programme (RESP). RESP runs from 2011/12 to 2014/15 and is worth more than £55m. It includes an Innovation Fund of £10m, a Capacity Building Fund of £4m and a Technical Assistance Fund of £0.8m. The largest component of RESP is an Education Service Delivery Grant (ESDG) of £40.83m.

The ESDG is made up of two parts. The largest part will consist of £31.83m of sectoral budget support. In addition, the UK will provide up to an additional £3m per year in the financial years 2013/14, 2014/15 and 2015/16 based on achievement of agreed results above currently-expected levels. This element is termed "results-based aid" and is considered to be an innovative way of providing development aid. Any funds payable as results-based aid will be paid as additional sectoral budget support.

The RBA component will be paid in annual tranches of up to £3m per year in UK financial year 2013/14, 2014/14 and 2015/16, based on the number of students completing various stages of schooling (P6, S3 and S6) above the 2011 baseline. Taking a national examination will be used as an indicator of having completed a particular level of education. Payments will be made based on the number of students sitting the examination the previous year above the 2011 baseline multiplied by an agreed unit price, subject to the annual ceiling of £3m. For each examination level (P6, S3 and S6), there will be two different unit prices - a higher price for each additional student above previous year's levels and a lower price for each additional student above the 2011 baseline but below the previous year's performance.

An additional payment will be made in 2015, based on the number of teachers in 2014 with improved English language competency over a 2012 baseline. An independent verification will be undertaken to ensure the accuracy and reliability of data being used as the basis for results-based aid payments.

The main purpose of the evaluation is to determine the extent to which the RBA led to increased levels of results in comparison to what would have happened had the RBA not been provided. In addition, the evaluation is expected to learn key lessons about the processes and approaches used to achieve the observed results.

The same financial incentive will apply to all students completing levels of schooling regardless of gender or geographical location. However, the evaluation will be expected to explore the effect of results-based aid on equity issues.

It is proposed that any remaining funds after RBA payments have been made will be retained in Rwanda but used in a sector other than education. The evaluation should explore any effects that this retention of funds in country has on the RBA incentive for the Government of Rwanda (See Appendix 2, Level 0, Question 1).

A summary of the RBA project is presented in Appendix 1. This takes the form of a proposed annex to the Memorandum of Understanding concerning DFID's overall support to the education sector in Rwanda.

## **Results-Based Aid Pilot in the Education Sector: Proposed Annex to Memorandum of Understanding**

### **Parties and purpose**

This annex outlines key, agreed elements of a pilot of results-based aid (RBA) in the education sector in Rwanda. In this pilot, DFID will make additional Sector Budget Support payments in 2013-2015 to the Government of Rwanda for results achieved in academic years 2012, 2013 and 2014. This is referred to as a Results Compact in the DFID Rwanda Education Sector Programme Business Case (2011-2015). This annex guarantees that DFID will make a fixed payment for each additional unit of progress towards educational outcomes, as stipulated below.

The arrangements under which the Grant will be disbursed are set out in the attached MoU and DFID's Partnership Commitments. The Government of Rwanda will decide on the use of any funds received.

### **Term of agreement and possibility of renewal**

This agreement is from date of signature until May 2015. There is a possibility of renewal and/or expansion of the programme depending on the results of the pilot. Any renewal or expansion would require the agreement of both DFID and the Government of Rwanda.

In extreme circumstances, if DFID is concerned that the provisions of this agreement, or partnership commitments made under the arrangement may not have been fulfilled by the Government of Rwanda or if any changes occur which significantly impair the development value of this project/programme, DFID will discuss with the Government of Rwanda and where appropriate undertake assessment. If warranted, such an assessment could lead to cessation of this agreement.<sup>6</sup>

### **Results and indicators**

The main results to be rewarded in this pilot will be the number of children completing key stages of 12 year basic education, namely year 6 primary (P6), year 3 secondary (S3) and year 6 secondary (S6). These results will be measured by the number of children taking the P6, S3 and S6 examinations annually. These results should include all students taking each of these examinations for the first time regardless of the sector in which they are learning, i.e. public or private. However, students who are retaking an examination should be excluded from the figures of those taking the examination in a particular year. Payments will be made for any results achieved above 2011 levels. Payments will only be made after independent verification of the results. Payments will be made as set out in section D and will be an additional DFID contribution to the Government of Rwanda's efforts to meet ambitious education targets as articulated in the Education Sector Strategic Plan (ESSP).

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<sup>6</sup> More details of situations of this nature are provided in the main body of this memorandum of understanding.

In addition, it is agreed that an additional one-off payment will be made in 2015 based on results achieved to improve the English language competency of teachers in the education sector. It is agreed that this payment would be based on assessing the English language skills of a representative sample of Rwandan teachers at baseline (2012) and in 2014, as outlined in the payment schedule below. The level of competence in English required for a primary and secondary school teacher will be agreed by Government of Rwanda in consultation with DFID and will be set out as a further annex to this agreement. Data from this assessment would be used to calculate the number of teachers in Rwanda achieving an agreed level of competency in English. DFID will then pay the Government of Rwanda an agreed amount for every additional teacher with that level of competency in English.

### Payment schedules

It is agreed that DFID will pay the Government of Rwanda additional sums up to a ceiling of £9m in the three year period 2013-2015. Payments will be made annually in 2013, 2014 and 2015 based on verified results of the previous year's exams, i.e. 2012, 2013 and 2014. RBA payments will be made no later than April/May each year.

GoR FY	2011/12	2012/13	2013/14	2014/15
SBS	£8.57m	£6.37m	£7.72m	£9.17m
RBA		Up to £3m	Up to £3m	Up to £3m

*Table 1: SBS and RBA Disbursement schedule*

Payments will be based on independently verified data, as set out in section F below.

It is agreed that payments will be calculated as follows.

- For each additional child sitting the P6 exam above the previous year's results, DFID will pay the Government of Rwanda £50. In addition to this payment, in years 2014 and 2015, DFID will also pay the Government of Rwanda £10 for each additional child sitting the P6 examination above 2011 levels.
- For each additional child sitting the S3 exam above the previous year's results, DFID will pay the Government of Rwanda £100. In addition, in years 2014 and 2015, DFID will also pay the Government of Rwanda £10 for each additional child sitting the S3 examination above 2011 levels.
- For each additional child sitting the S6 exam above the previous year's results, DFID will pay the Government of Rwanda £50. In addition, in years 2014 and 2015, DFID will also pay the Government of Rwanda £10 for each additional child sitting the S6 examination above 2011 levels.

So for example, if 77,473 students took the S3 exam in 2011 and 85,000 take it in 2012 DFID would pay the Government of Rwanda  $(85,000 - 77,473) * £100 = £752,700$  in 2013. If 93,000 students then took the S3 exam in 2013, DFID would make two payments to the Government of Rwanda in 2014, namely  $(93,000 - 85,000) * £100 = £800,000$  plus  $(85,000 - 77,473) * £10 = £75,270$ . This would be a total of £875,270. More details of the calculations involved are available in an Excel calculator developed by DFID.

In addition, it is agreed that in 2015 DFID will also pay Government of Rwanda £50 per additional teacher competent to use English as the medium of instruction. This will be based on a baseline assessment conducted by the Government of Rwanda in 2012 and a follow-up assessment conducted by Government of Rwanda in 2014. Any payment due would be made in 2015 based on independently verified results and subject to available funds within the £9m three year ceiling as specified in paragraph 6 of this annex.

Payment levels can only be changed with the express written agreement of both DFID and Government of Rwanda. DFID and the GoR will meet to review programme related impact, targets and costs immediately after results have been verified and the annual evaluation report received.

### **Use of funds**

The funds that will be provided by DFID through the RBA pilot can be used as desired by the Government of Rwanda. DFID will not provide any restrictions for the use of these funds in accordance with the principles of results based aid<sup>7</sup>. It is expected that these will be used to further improve the results being tracked, namely the number of pupils completing key education levels – P6, S3 and S6. Any decisions as to how these funds will be used rests solely with the Government of Rwanda. In line with the overall provisions of this memorandum of understanding, DFID retains the right to access audited financial statements, prepared by the Government of Rwanda, to verify that the income received has been declared and used to support the country expenditure.

### **Data verification, citizen empowerment, transparency and accountability**

It is essential that data used to trigger payments is accurate and reliable. It is therefore necessary for the data reported for payment purposes to be verified independently. Payments will **only** be made on the basis of independently-verified results. DFID will hire an external contractor to conduct this work. DFID will select the contractor in consultation with the Government of Rwanda. Government of Rwanda agrees to cooperate fully with the work of this contractor which will involve checking the systems for collecting and reporting P6 to S6 exam participation rates and checking a data sample. The external contractor will also verify the Government of Rwanda baseline and end assessment of teacher competence in English language. Data verification needs to be both robust and timely. Government of Rwanda will provide DFID and designated verification and evaluation teams with full access to any necessary data required to validate results achieved. Both DFID and Government of Rwanda recognise and agree that if issues are identified in the data verification process, this may result in funds being delayed and/or withheld.

In line with DFID's Transparency commitments, the Government of Rwanda gives consent for this arrangement, and any subsequent amendments, to be published on DFID's website. The Government of Rwanda also agrees to make this agreement and the annual results of the exercise publically known.

It is essential that the design of the Results-Based Aid programme be communicated to schools and parent teacher associations (PTAs). Government of Rwanda agrees to ensure that this happens. This will ensure that teachers and parents are aware that the education sector will receive additional funds based on increasing the number of students taking P6, S3 and S6 examinations and the English language competency of teachers.

### **Evaluation and lesson learning**

As this is a programme to pilot an innovative way of providing aid, both DFID and Government of Rwanda agree that it is essential that lessons are learned from this process. This will be done through a rigorous evaluation. The evaluation will seek to determine the extent to which the results-based aid has had an effect additional to what would have happened without it.

In addition, both DFID and the Government of Rwanda are committed to learning lessons about the processes followed to achieve the expected results. This will be done through a rigorous process evaluation based on a causal chain leading from the inputs and processes to expected outputs and outcomes. Indicators and/or evaluation questions will be identified for each of these elements/levels. (These process indicators will not be used as a basis for payments but will be used solely for learning purposes). The evaluation will also explore unexpected consequences of the results-based aid programme. Government of Rwanda agrees to cooperate fully with any evaluations of the RBA pilot project including through allowing access to data that the evaluation team requires and allowing the evaluation team access to MINEDUC/REB staff, schools, teachers and students.

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<sup>7</sup> See for example DFID (2010) *Primer on results based aid and results based financing* and Birdsall, Savedoff and Mahgoub (2011) *Cash on Delivery: A New Approach to Foreign Aid*

### **Management arrangements**

It is expected that there will be issues which arise in the course of operations of the RBA pilot which will require discussion, dialogue and resolution. These will be handled through the routine DFID/PS forums which take place on a monthly basis.

### **Amendment, dispute resolution and termination**

Amendments to this arrangement need to be agreed by both governments in writing.

In case of dispute arising, attempts will be made to resolve these through the regular meeting between DFID and the Permanent Secretary of the Ministry of Education.

This arrangement may be terminated by three months written notice from either government. Any decision of either government regarding termination of this Arrangement will first be subject to discussion.

### **Duty of Care (DoC)**

The Supplier is responsible for the safety and well-being of their Personnel (as defined in Section 2 of the Framework Agreement) and Third Parties affected by their activities under this Call-down Contract, including appropriate security arrangements. They will also be responsible for the provision of suitable security arrangements for their domestic and business property.

DFID will share available information with the Supplier on security status and developments in-country where appropriate. DFID will provide the following:

- All Supplier Personnel will be offered a security briefing by the British High Commission & DFID on arrival. All such Personnel must register with their respective Embassies to ensure that they are included in emergency procedures.
- A copy of the DFID security briefing notes (and a further copy each time these are updated), which the Supplier may use to brief their Personnel on arrival.

The Supplier is responsible for ensuring appropriate safety and security briefings for all of their Personnel working under this Call-down Contract and ensuring that their Personnel register and receive briefing as outlined above. Travel advice is also available on the FCO website and the Supplier must ensure they (and their Personnel) are up to date with the latest position.

FCO advises against all but essential travel to within 1km of the border with DRC and Burundi, except to the towns of Gisenyi (Rubavu) and Cyangugu (Rusizi), and major border crossings to Burundi. This is because of instability in those countries' border areas. From 22 October, the border crossings between Rwanda and the DRC will be closed from 18:00 hours until 06:00 at Bukavu and Goma. It is likely these restrictions will remain in place for the foreseeable future. The FCO advises against travel to parts of DRC and Burundi. The areas close to the borders with Uganda and Tanzania are less dangerous but we advise travellers to keep to main roads and use recognised border crossings. The Supplier will not be required to work in these areas against FCO advice.

Tenderers must develop their Tender on the basis of being fully responsible for Duty of Care in line with the details provided above and the initial risk assessment matrix developed by DFID (see Appendix 1 of this ToR). They must confirm in their Tender that:

- They fully accept responsibility for Security and Duty of Care.
- They understand the potential risks and have the knowledge and experience to develop an effective risk plan.
- They have the capability to manage their Duty of Care responsibilities throughout the life of the contract.

Further information on Duty of Care is provided in the Supplier Instructions (Volume 1 of the Mini-Competition Invitation to Tender Pack).

## TOR Appendix 1 - Summary risk assessment matrix

**Project/intervention title:** PO – Evaluation of Project of Results Based Aid in the Education Sector – Rwanda

**Location:** Rwanda

**Date of assessment:** 06/09/2012

**Assessing official:** Sifa Uwera

Theme	DFID risk score
<b>OVERALL RATING<sup>8</sup></b>	<b>2</b>
FCO travel advice	3
Host nation travel advice	Not available
Transportation	2
Security	2
Civil unrest	1
Violence/crime	2
Terrorism	3
War	1
Hurricane	1
Earthquake	3
Flood	2
Medical services	3
Nature of project/intervention	2

1=very low risk	2= low risk	3=medium risk	4=high risk	5=very high risk
Low		Medium	High	

<sup>8</sup> The overall risk rating is calculated using the MODE function which determines the most frequently occurring value

## TOR Appendix 2 - Possible evaluation questions at different levels of the RESP results chain

Results chain element		Possible evaluation questions
<b>LEVEL ZERO</b>		
1	RESP financing	Are there any issues relating to the way DFID provides funds which have affected delivery of RBA pilot? In particular, (i) have there been any positive or negative effects of having an annual financial ceiling; (ii) have there been any positive or negative effects of the way in which funding left over from RBA has been used; (iii) have there been any positive or negative effects of having fixed, annual tranches available rather than a variable amount based solely on results achieved?
<b>LEVEL ONE</b>		
1	Efficiency in sector spending is addressed to improve prioritisation	What evidence is there that (i)RESP (ii)RBA has resulted in (a) more efficient sector spending (b) improved prioritisation? What effect (if any) has there been on value for money?
2	Strategies to target disadvantaged students developed	What strategies does MINEDUC have to target disadvantaged students? How has (i) RESP (ii) RBA contributed to these?
3	Existing teachers have improved core competencies	To what extent have the core competencies of teachers improved, e.g. in using English as the medium of instruction? How has (i) RESP (ii) RBA contributed to these?
4	Additional competent teachers employed	How have patterns of teacher employment changed over the lifetime of RESP? Is there evidence that recently-employed teachers have higher levels of competency, e.g. in using English as the medium of instruction? How has (i) RESP (ii) RBA contributed to these?
5	Classrooms built and textbooks purchased	How many classrooms have been built? How many textbooks purchased? How has (i) RESP (ii) RBA contributed to these?
6	Parents trained in understanding learning assessments and school management	How many parents have been trained to understand learning assessments? How many parents have been trained in school management? How has (i) RESP (ii) RBA contributed to these?
7	Education officers trained in M&E and capacity needs identified and addressed	How many education officers trained in M&E? What capacity needs were identified? How were these addressed? How has (i) RESP (ii) RBA contributed to these?
<b>LEVEL TWO</b>		
1	Increased focus on value for money and adjustment of unit costs	What evidence is there of an increased focus on value for money? What has happened to unit costs? To what extent do these changes reflect (a) increased efficiency in sector spending (b) improved prioritisation
2	Rural/urban disparities reduce and increased number of students from lowest income quintiles sit for exams	Are there any differences/trends in the results observed in terms of children completing different levels of education for (a) boys vs girls; (b) rural vs urban settings; (c) children from highest and lowest wealth quintiles? To what extent are any changes due to: (i) specific strategies to target disadvantaged students; (ii) patterns of classroom construction/textbook distribution; (iii) patterns of training parents?
3	Teachers effectively use approaches to improve quality of delivery and address	What evidence is there of teachers effectively using approaches to (i) improve quality of delivery (ii) address special needs. To what extent are teachers in Rwanda able to use English as a medium of instruction? To what extent are any

Results chain element		Possible evaluation questions
	and address special needs	changes due to (i) specific strategies to target disadvantaged students;(ii) teacher training in learner centred methodologies; (iii) more teachers employed and better remuneration; (iv) better trained education officers
4	Double shifting and PTR reduced and contact hours increased	To what extent has (a) double shifting reduced; (b) pupil teacher ratio reduced; (c) contact hours increased? To what extent are any changes due to (i) more teachers being employed and being better remunerated; (ii) more classrooms being built and more textbooks being distributed?
5	Parents and Education Officers monitor and support, and evaluate school progress around learning outcomes	To what extent do (a) parents; (b) Education Officers (1) monitor; (2) support and (3) evaluate school progress around learning outcomes? To what extent are any changes due to (i) parent training; (ii) Education Officer training?
<b>LEVEL THREE</b>		
1	Improved and equitable learning outcomes at key stages	What evidence is there of improved learning outcomes? How equitable are these? To what extent are any changes due to (i) increased focus on value for money and adjustment of unit costs; (ii) addressing inequalities between (a) rural/urban areas;(b) lowest and highest wealth quintiles; (iii) teachers more effectively using approaches to improve quality of delivery and address special needs; (iv) reduction of double shifting, reduction of PTR and increasing contact hours; (v) increased monitoring, support and evaluation from (a) parents and (b) Education Officers?
2	Increased number of students successfully completing 12YBE	What has happened to numbers of students completing different stages of 12YBE? P6? S3? S6? To what extent are any changes due to (i) increased focus on value for money and adjustment of unit costs; (ii) addressing inequalities between (a) rural/urban areas;(b) lowest and highest wealth quintiles; (iii) teachers more effectively using approaches to improve quality of delivery and address special needs; (iv) reduction of double shifting, reduction of PTR and increasing contact hours; (v) increased monitoring, support and evaluation from (a) parents and (b) Education Officers?

### TOR Appendix 3 - Generic Key Performance Indicators

DFID Key Performance Criteria	Sub Criteria
	How do you rate performance against:
Quality & Delivery	Quality and timeliness of milestones/deliverables
	Quality of monitoring, evaluation and reporting
	Project impact / key results on track according to programme logframe
Management, Strategy & Financial	Monthly and quarterly reports submitted to agreed deadlines
	Grants are disbursed within agreed deadlines
	Ability to deliver in line with agreed budget
Personnel	Performance of team leader
	Performance of other team personnel
	Performance of country based teams
	Timeliness in replacing personnel with appropriate level of approval from DFID
	Managing underperformance
Customer Relationship	Risk Management
	Responsiveness to stakeholders
	Impact of outreach and external communications
	Regular communication with DFID and delivery of weekly meeting action points
	Development of new delivery partners
	Attention to DFID policies
Innovation and Continuous Improvement	Provider has sought to improve on the last reporting periods performance
	Provider has delivered new ideas which have benefited the programme
Corporate Social Responsibility	Activities have resulted in a positive effect on sustainable/environmental considerations
	Supply Chain: the amount of local contractors used within the supply chain to deliver the programme
	Employment: Apprenticeships, local opportunities
Overall Performance in terms of Value for Money	

## Annex 2 – Value for Money Analysis Terms of Reference



### **Terms of reference for technical assistance to explore options for assessing value for money of the Results Based Aid pilot in the Education Sector**

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## Terms of Reference (TOR) for technical assistance to explore options for assessing value for money of the Results Based Aid (RBA) pilot in the Education Sector

### A. Summary

1. Upper Quartile are being asked by DFID Rwanda to conduct additional work on explore options for assessing value for money of the Results Based Aid (RBA) pilot in the Education Sector as part of their ongoing work of evaluating the RBA pilot (see UQ and IPAR, 2014).

### B. Context

2. The UK's Coalition Government has set out a clear agenda for its development aid focused on results, value for money and accountability. As part of this, DFID is piloting a number of RBA programmes. The idea behind RBA is that the donor agrees to pay for the achievement of certain results but recipients are empowered to decide how those results should be achieved and delivered.
3. In Rwanda, DFID is piloting a programme of results-based aid in the education sector as part of the Education Service Delivery Grant (ESDG) of the Rwanda Education Sector Programme (RESP) which will run from 2011/12 to 2014/15. The objective of the programme is to pilot the provision of additional results-based aid based on (a) improvements in the number of students completing primary (P6), lower secondary (S3) and upper secondary (S6) education; and (b) the competency of teachers in Rwanda to use English as the means of instruction. DFID funding for the proposed RBA pilot is in addition to DFID's existing support to the education sector.
4. DFID is currently supporting an evaluation of this pilot which has two main elements:
  - A process evaluation which is seeking to identify the recipient's, and other key actors', response to the RBA, including establishing processes that led to any increased educational results. Among other objectives, this element of the evaluation will seek to determine any contribution made by any observed increase in the number of teachers competent to use English as the medium of instruction to any observed increase in the numbers of students completing P6, S3 and S6.
  - An impact evaluation which is seeking to address whether or not the RBA pilot has led to increased educational results.
5. This evaluation is being implemented by Upper Quartile. Although there was some expectation that the evaluation would consider the value for money of the RBA pilot, this was not originally anticipated to be a major area of focus for the evaluation. However, it has emerged during implementation that this is a crucial area for the pilot which needs further exploration and this is the reason why DFID is requesting additional work which will be incorporated as a contract amendment.

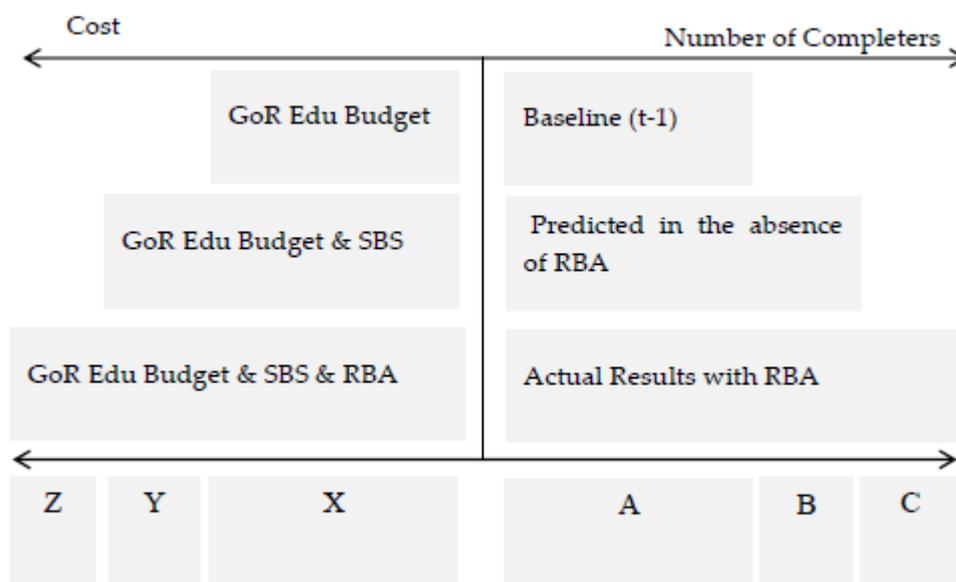
### C. Purpose and objectives

6. The purpose of this assignment is to explore options for assessing the value for money of the Results Based Aid pilot in the education sector.
7. The assignment has two objectives. The first objective is considered the main or primary objective and it is expected that most of the assignment's focus would be on this objective. The second objective is considered a subsidiary or secondary objective. The assignment is expected to conduct some work on this objective. However, it is recognised that such work may be preliminary and that it is likely to result in identification of further work that might need to be done.
8. The assignment's first/main objective is to consider and present data for four options for assessing cost-effectiveness as outlined in the evaluation team's Approach Paper on Value for Money in RBA, Rwanda (Clist, 2014). More details of these options are contained in that paper but these are presented in brief in Table 1 and Figure 1.

**Table 1: Options for assessing cost effectiveness of RBA pilot in the Education Sector in Rwanda** (for more detail, see Table 1 in Clist, 2014)

Option	Benefits	Costs	Comparison <sup>9</sup>
1	$(Z+Y)/(X+Y+Z)(A+B+C)$	$(Z+Y)$	Zero
2	B+C	Z	SBS where benefits are and costs are X+Y
3	B+C	Z	Zero
4	C	Z	Zero

**Figure 1: Three levels of costs and benefits** (from Figure 2 in Clist, 2014)



9. In Figure 1:

- X is the Government of Rwanda education budget including GoR funds and all other development partner funding but excluding sectoral budget support and RBA from DFID
- Y is DFID’s sectoral budget support in education
- Z is the cost of results-based aid including cost of verification and management (but excluding the cost of evaluation)
- A is the baseline level of completers, that is historic data from 2011
- B is the predicted additional performance above baseline based on the econometric model developed by the evaluators
- C is the observed results with RBA above the level predicted by the evaluators’ econometric model

10. The contractor is expected to clarify in an updated VFM approach paper whether:

- Costs will be calculated on an annual basis, i.e. across the education sector, as stated in the approach paper, or whether they will be calculated on a multi-year basis, i.e. for the cohort completing the level of education specified
- Benefits will be calculated on completion of each of the three levels rewarded by RBA (P6, S3 and S6) or whether the assessment will focus on only one of these levels.

11. In calculating the benefits from education, the contractor will be expected to factor in health benefits of completing particular levels of education. The contractor should also consider is other benefits of education can be factored into the calculations. These include delayed marriage for girls, better health

<sup>9</sup> Two comparisons are envisaged – a comparison with no aid and a comparison with existing aid.

of children of girls, citizen engagement. More details of these are available in DFID's education position paper.

12. The assignment's second/subsidiary objective is to consider how the economy, efficiency and effectiveness of results based aid might be assessed including the usefulness or otherwise of:
  - Measuring the level of transaction costs, particularly of data verification, and comparing these with the transaction costs of other aid modalities.
  - Calculating unit costs, i.e. total cost of each additional completer (including management costs. Is it possible assess the extent to which the price level set was optimal?

#### **D. Scope of the work**

13. The contractor will be expected to liaise with similar work being carried out to assess value for money of DFID's RBA pilot in the Education Sector in Ethiopia. However, the contractor will not be expected to calculate value for money for that programme. If figures for value for money are available for that programme, the contractor would be expected to compare and contrast those figures with those that they generate for Rwanda. The contractor is not expected to formally compare value for money of the RBA pilot in the education sector in Rwanda with DFID funding of other sectors in Rwanda, or funding of other agencies to education in Rwanda, or DFID funding to education in other countries (with the exception of the DFID RBA pilot in education in Ethiopia referred to above). However, suggestions as to how such comparisons could be done could, if feasible, be included in the contractor's final report.
14. The contractor is not expected to assess the economy, efficiency or effectiveness of how the Government of Rwanda uses funds provided by DFID through RBA.
15. The contractor is not expected, as part of this additional work, to assess whether or not results based aid achieved additional results or paid for results that would have occurred anyway as this is already a key element of the RBA evaluation. However, the contractor would be expected to use this information in its value for money calculations as outlined above.

#### **E. Method**

16. The bidder is expected to outline briefly in their proposals how they would approach this assignment including how this would be integrated into the overall work of the evaluation. It is expected that the proposed method would be finalised with the selected contractor through the process of finalising the approach paper. Bidders are expected to identify any areas where they believe data may be insufficient or too limited for the required purposes.

#### **F. Deliverables**

17. The contractor will provide the following deliverables:
  - A final VFM approach paper (September 2014)
  - Assessment of VFM of the RBA pilot up to end of Y2 (December 2014)
  - Assessment of VFM of the RBA pilot up to end of Y3 (July 2015)
  - Final report on value (or otherwise) of different approaches to assessing VFM of RBA in education sector (July 2015)

#### **G. Communication**

18. Given the innovative nature of this work, it is expected that there will be considerable interest in this work both in Rwanda and in DFID more broadly. Bidders are requested to explain how they would approach this issue. It is expected that DFID will agree the approach with the selected contractor during the process of agreeing the final approach paper. Current thinking is that there might be at least two learning events related to this value for money work – one in Rwanda (perhaps to coincide with a Reference Group meeting) and another in DFID offices in either London or East Kilbride.

#### **H. Timing**

19. The consultancy is expected to run from July 2014 to July 2015. Bidders are invited to propose appropriate levels of effort.

#### **I. Expertise required**

20. The bidder is expected to outline how the additional work would be handled within the current evaluation team, explaining implications on level of effort for existing team members and identifying if additional team members are required.

21. It is expected that this work will require the following skills and expertise:

- A proven track record in the field of development economics (essential) with experience of having published relevant research in peer-reviewed journals (desirable)
- Experience of working with DFID, particularly in relation to assessing value for money of programmes (essential)
- Strong understanding of the conceptual basis of payment by results as implemented by DFID (essential)
- Experience of the education sector in Rwanda (essential)
- Experience of the RBA pilot in education in Rwanda (desirable)
- Good written and verbal communication skills including communicating economic concepts and findings to non-economists (essential)

#### **J. Recipient**

22. The contract supports the effective evaluation of RBA overall. The primary recipient of the output is DFID Rwanda. There are a number of secondary recipients of this work, including DFID's Evaluation, Aid Effectiveness and Value for Money Department.

#### **K. Commercial Proposal**

23. The bidder should outline fully what existing resources will be available from within the current evaluation team for this work (i.e. which personnel and how many days). A clear proposal should be made for what additional resources would be required.

#### **Key documents**

Clist, P. (2014) *Approach Paper on Value for Money in Results Based Aid, Rwanda*

Upper Quartile (UQ) and Institute of Policy Action and Research - Rwanda (IPAR) (2014) *Evaluation of Results Based Aid in Rwandan Education – 2013 Evaluation Report*

DFID (2013) *Education Position Paper Improving Learning, Expanding Opportunities* see [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/225715/Education\\_Position\\_Paper\\_July\\_2013.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/225715/Education_Position_Paper_July_2013.pdf)

## Annex 3 - Qualitative Research Concept Note

Prepared by Brendan Whitty, May 2014

**This qualitative research concept note for the year two evaluation was approved by DFID in June 2014. It should be read in conjunction with the year one evaluation report (Upper Quartile, 2014) and the detailed methodology contained within the year two evaluation (which accompanies this Annex).**

### 1 Introduction

This concept note proposes an approach to the qualitative aspect of the evaluation of the Department for International Development's (DFID) use of Results-Based Aid (RBA) in the education sector in Rwanda. It outlines an approach based on an econometric modelling exercise that enables exploration of various key issues and the Value for Money of the RBA aspect of the intervention.

The concept note draws on public policy and political economy literature to develop a theoretical framework for understanding how the Government of Rwanda responded to RBA. The approach proposes to analyse the question at two levels:

- (1) How policy and management reforms were initiated by the leadership and mid-level management of Government of Rwanda Ministry of Education (MINEDUC) in reaction to the DFID adoption of RBA modalities;
- (2) How the lower-level management and the rank-and-file teachers responded to these policy and management reforms.

The rest of the concept note is structured as follows: section two sketches a theoretical framework from which it elaborates further the evaluation questions; section three builds on this by outlining a methodology.

### 2 Theoretical framework and evaluation questions

#### 2.1 Core evaluation questions

The study takes as its starting point the three process-related core evaluation questions set forth in the Upper Quartile inception report (Upper Quartile, 2013) and year one evaluation report (Upper Quartile, 2014). Of these, the first year's evaluation report generated a substantial evidence-base to respond to the question '*how is the RBA approach perceived in Rwandan Education*',<sup>10</sup> and subsequent discussion with DFID emphasised exploring and unpacking the question '*how did government respond to RBA?*' in greater detail than was possible in the year one evaluation.

The theoretical framework and elaboration of questions (sections 2.2.- 2.4. below) are designed to develop this question further, to inform the methodology and to provide further support for the extent to which the responses to the perceptions identified in year one have been implemented. By providing a theoretical underpinning, it will also ground the discussion for how far the *lessons learned* through RBA in Rwanda may be applied more broadly (evaluation question '*What lessons have been learned to inform RBA in Rwanda and elsewhere?*')

#### 2.2 National level: management and policy change

The focus of this evaluation is on the change within the government caused by the adoption of Results-Based Aid modalities. Policy processes are complex, and the literature adopts a range of different metaphors and structuring ideas to explain them.<sup>11</sup> The evaluation question seeks to

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<sup>10</sup> Finding 10, p.8 – Upper Quartile, Institute of Policy Analysis and Research – Rwanda. (2014). *Evaluation of Results Based Aid in Rwandan Education – 2013 Evaluation Report*.

<sup>11</sup> See, e.g. Kingdon's policy and problem streams in the U.S. Federal government (Kingdon 1995); Sabatier's advocacy coalitions (Sabatier 1988); Haas' epistemic communities for policy processes at the international level (Haas 1989).

understand the process of policy / management reform within the political and civil service leadership of the Government of Rwanda, and the Ministry of Education. Evaluation methods for policy change emphasise the careful analysis of contributions to behaviour change and the difficulties in tracking attribution to policy change. The funding distributed through DFID's RBA pilot is relatively small scale compared to the overall size of Rwanda's education sector.

Since the question explores the policy and management reforms triggered by DFID's use of the RBA modality, it triggers another key area of literature: policy conditionality in aid. The use of conditionality in the 1980s and 1990s was heavily criticized (see e.g. Killick, 2003) and gave rise to the Paris Declaration and country ownership modalities. However, in their implementation, institutional reform conditions remained an important part of budget support modalities. More recent critiques such as those of Andrews (2013) reiterated the earlier attacks by highlighting the occurrence of "isomorphic mimicry" strategies – sham reforms that exist on paper but lack support for implementation. RBA modalities such as the one being studied are designed specifically to incentivise behaviour change while circumventing the possibility of sham reforms by incentivising the desired outcomes not a paper reform. They leave it to the discretion of the recipient how to achieve these outcomes. As such, they do not demand the further roll-out of RBA approaches within the recipient – such decisions are at the discretion of the recipient. Adoption of RBA within the recipient is not necessarily a marker of success in RBA theory.

The year one evaluation report notes that the government management response was not to adopt RBA but rather to intensify strong messaging within the ministry – although it also notes that there were changes in the targets enshrined in official policy (p. 41). This is supported by Finding 11, which observes a lack of awareness at district level of the RBA modality but high degree of awareness of government priorities. To understand fully the effects of the RBA, it is necessary to understand in more depth the nature of these communication tools and policy shifts in the light of the broader internal management structures. It will be important to build a detailed, historically-grounded picture of what management control processes there were, how they changed and (if possible) the discussions that led to their adoption.

The challenge is the counterfactual: what would government policy/programming have been in the absence of the RBA Memorandum of Understanding? How did its existence change the balance of priorities or arguments from within the ministry? Various interpretations are possible from the year one evaluation report. One is that it would have been very similar. The report emphasizes the close alignment of the ministry with the RBA agreement and quotes officials stating that the RBA agreement simply emphasized pre-existing policy priorities. In that case, the RBA modality creates no additional incentives. The working hypothesis must be that RBA has made no difference. The second interpretation is that the targets did shift the government's thinking. The report notes that some officials believe that RBA has created a shift towards completion rather than access as the priority issue. A third is that it shifted, but not as far as it might have done. The RBA payments are based on sitting exams rather than success in them, attendance rather than quality and some are quoted as disagreeing with this approach. Perhaps without RBA the policy could have moved further. This interpretation suggests that the targets are aligned to neither the Government of Rwanda nor DFID's aims.<sup>12</sup>

Further exploration of the trends of thought is necessary. This should be with a historical and policy-oriented perspective, digging into how it has been shaped by different factions in the ministry, and including the process of negotiation over the MoU. As with the econometric modeling, the lack of a

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<sup>12</sup> The choice of target does not capture the government's desired end-goal of quality in education - "improved and equitable learning outcomes" and "students *successfully completing* 12YBE" (my emphasis, RESP Theory of Change Level 3 outcomes). The year one evaluation report at p.40 explains that the negotiations over the MoU raised and rejected quality-based assessments. They did so on the basis that there were not appropriate ready-documented targets (the obvious choice, exam results, would not work because there was only norm-referenced relatively adjusted exam results as opposed to absolute criterion-referenced results).

policy counterfactual is the challenge. The study must pick out the strands of thought, and the role of DFID RBA modality in shaping these strands.

### 2.3 District level: management reforms in a bureaucracy

One key aspect of understanding the government of Rwanda's response to the RBA modality is the policy/programming and management reforms of the political leadership and senior management – crudely, the national level. There is not a linear progression from policy/ programming to its neat implementation; in developing countries in particular implementation can be very challenging – subject to the need for political, financial, managerial and technical resources, and often subject to political dynamics, weak bureaucracies and resistance from local power-holders (Thomas and Grindle, 1990:1167).

When confronted by the exercise of management controls and accountability processes that suppresses that discretion, professions in developed-countries bureaucracies have reacted by adopting a range of strategies. These have ranged from open resistance and subversion through to acceptance. Much depends on the ways in which individuals construct their own identities and their relationship with their profession. In developing countries, where management control processes are typically much weaker and where front-line officials– the “street level bureaucrats” (Lipsky, 1980) have greater discretion, the key dynamic is how that discretion is used in the light of the demands upon them and the limited resources available to them (Lipsky 1980:13 et seq).

Much depends on the nature of the reforms, and an elaboration of the communication processes identified in the first report. The year one evaluation highlights both messaging and the stipulation of new targets focused on the completion of the year. They note that RBA was used as a kind of motivational point in ministerial communiqués to the rank-and-file. Other quotes suggest that the messaging included a change in the targets being set around access – what is the background context of targets within the education sector in Rwanda, and how are they enforced? How have the street-level bureaucrats, the teachers and head teachers, reacted to the change in policy?

### 2.4 Elaborated evaluation questions

The foregoing sketches the beginning of a theoretical framework from which to structure the qualitative element of the research. From it, a research agenda emerges for the qualitative aspect focusing on the reforms the Government of Rwanda launched in response to the RBA demands? The agenda requires:

- What were the pre-existing management control processes within the education sector of Rwanda? These may include annual performance reviews or *imihigo* performance contracts, management enforcement of policies or resource allocation decisions.
- How have these management control processes/ policies changed since the introduction of RBA?
- What were the processes by which these changes were discussed, what arguments were deployed by whom, and how were they mediated?
- How did the RBA contract play a role in it? How did the variability of funds specifically influence the discussion, including at the point of negotiating the contract?

The approach must adopt a methodology that:

- recognises the complexity of the reform processes and the challenges – including the degree to which changes may be attributable to the *modality* as opposed to the *substance* of the grant;
- captures the full range of management and policy reforms adopted (spanning mobilisation of resources, communication and training of teachers, changes in contracts, changes in management incentives, or whatever);

- navigates the extremely sensitive nature of these questions whether the incentives to ‘toe the party line’ are significant and interviewee dissembling is probable. Such an approach would involve a historical perspective and triangulation with reference to non-government observers and experts.

It is clear that this is a challenging research agenda and the methodology adopted should be realistic given the resources that are available.

### 3 Methods

The following methods draw on the theoretical framework and the elaborated questions sketched out above. They build on the desk review and seek to maximise the resources available.

**Desk-based policy and literature review** will review existing material addressing the internal processes, public financial management and management control structures (including performance contracts) within the education sector and more broadly the government of Rwanda. It will:

- Draw on existing materials generated in this programme, including the political economy analysis, and may include an extended interview with the author with a view to drawing out the main points in response to the questions.
- Draw on wider grey and academic literature, including project evaluations, research case studies.
- Provides an overview of internal management controls and an outline of avenues of research, including the wider resource flow and the ministries of finance and local government.

**Qualitative primary research at national (political leadership and top management) level:** The team will conduct up to 30 interviews with key personnel within the education sector of Rwanda.

- The emphasis will shift to include additional, expert, non-government staff in order to triangulate the data; some flexibility will be allowed in the schedule for snow-ball searching (following Kingdon 1995:231 et seq)
- The semi-structured interviews will explore: (1) the management control systems and structures within the ministry; (2) the shift in policy and education priorities within the ministry with a focus on the policy-making process itself; (3) the changes that have been instituted following RBA, perhaps through co-constructing with the interviewee possible counterfactual scenarios. Survey instruments will be adapted to the interviewee.
- Interviews will have to be very carefully conducted, with due regard to the sensitivity of the subject matter. Interviews with senior officials will be conducted by the qualitative lead and a researcher.

**Qualitative primary research at district and school (mid-management and front-line) levels:**

- This will be sequenced *after* the higher-level discussions exploring the multiple messages and pathways, and contextualise them in the light of the wider management control systems.
- The semi-structured topic guide will be adapted to respond to the changes in policy/ programming and requirements they have encountered. It will also invite their perceptions of the study.

### References

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## Annex 4 - Approach paper on Value for Money

Prepared by Paul Clist and Joseph Holden, October 2014

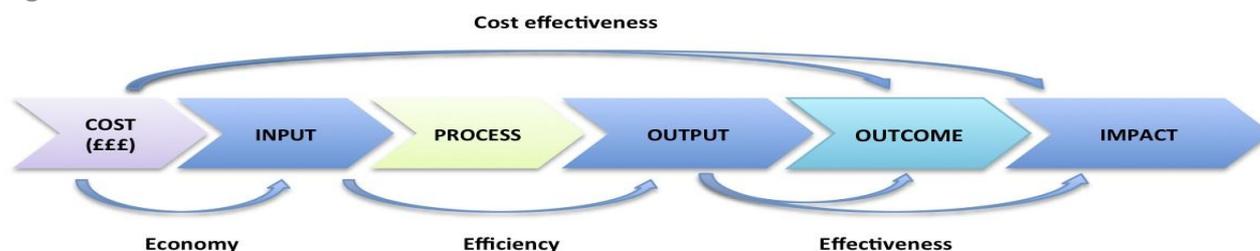
### 1 Introduction

Results Based Aid (RBA) is a relatively new aid instrument, and so it is unsurprising that there is not an agreed and established methodology for assessing its Value for Money (VfM). Our approach is therefore informed by standard practice of assessing VfM in the education sector (DFID 2011a, 2011b, 2014), some fundamental principles of RBA (Clist and Verschoor 2014) and more pragmatic concerns regarding the feasibility of conducting the analysis. We have benefited from conversations with and comments from a number of parties including DFID UK, DFID Rwanda, the Center for Global Development (CGD), Cambridge Education, and Roger Drew (independent consultant to DFID).

### 2 The basic problem of assessing VfM in RBA

DFID's standard approach to measuring VfM can be neatly summarised by its 3Es framework as shown in Figure 1. This is understood in the context of the results chain<sup>13</sup> where each "E" focuses on different stages of the chain: the cost of inputs as economy, the degree to which inputs deliver outputs as efficiency and the outcomes delivered for given outputs as effectiveness.

Figure 1: The 3Es in the results chain



The results chain is usually used to assess the VfM of projects and programmes delivered by DFID – which have costs linked to clearly defined activities and outputs aiming for pre-defined outcomes. It is not so clearly applicable to compare aid instruments such as sector budget support (SBS) or RBA. This is because RBA does not constitute a ring-fenced fund, but will supplement other resources available to the Government of Rwanda (GoR). The total of these resources are then used for all of the public education provision in Rwanda. The results chain for this expenditure would therefore be extremely long and complex.

An assessment of the economy of education delivery would look at indicators such as cost of teacher salaries, cost of teacher training, cost per classroom constructed etc. But assessing these at a country level would be difficult and raise many questions. For example, as a share of GDP per capita, teacher salaries for primary schooling in Rwanda are much lower than for many African peers - at just 2.6 times GDP per capita, compared to the sub-Saharan Africa (SSA) average of 4.1 times GDP per capita. Measured in purchasing power parity (PPP) terms, they are the lowest in East Africa, and only Guinea, Liberia, DRC and the Central African Republic pay teachers less in the whole of SSA. Teachers in Rwanda are also paid less than other civil servants with comparable qualifications - with the salary of a certified primary school teacher at one-third of the salary of a civil servant of the same level - compared to Tanzania where teachers are paid 10% more than equivalent civil servants<sup>14</sup>.

A cross-country assessment of the economy of teachers' salaries would therefore be complicated. It may be that lower salaries are linked to lower motivation, teacher attendance, or other performance measures that would impact on the quality of education provided – so lower salaries would not necessarily be better *economy* or *VfM*. Teacher salaries are of course just one component of

<sup>13</sup> See DFID (2011a, p. 4; 2014 p.1).

<sup>14</sup> Statistics in this paragraph are provided by UNESCO, 2011.

education spending, and the point would also hold elsewhere in the sector. As stated in a DFID technical note on budget support (DFID, 2011b), assessing the VfM of budget support would require instruments such as public expenditure reviews, tracking surveys (including measures of ‘leakage’), or other independent audits of Government expenditure. Assessing economy would therefore involve evaluating Rwanda’s entire education system<sup>15</sup>. As such, the VfM approach that makes most sense is to look at the overarching cost effectiveness of RBA provision as the key VfM metric.

### 3 Our proposed approach

The VfM approach proposed in this paper is therefore to look at the *cost effectiveness* of RBA relative to not providing RBA. There are two components to this, based on two different counterfactuals:

- A. The VfM of aid spent on RBA, compared to the counterfactual of not providing that aid to education.
- B. The VfM of aid spent on RBA, compared to the counterfactual of providing that aid to education by a more traditional instrument – such as sector budget support (SBS).

The overall VfM of RBA will then be A+B: that is, the effectiveness relative to the cost of the aid itself (A); and the effectiveness of RBA relative to providing aid in another form (B). The variable of most interest in looking at RBA as opposed to other aid modalities will be B, as this could be taken to be the narrower test of the hypothesis that RBA functions through an incentive effect that is not present in other forms of aid. For example, while SBS is usually disbursed regardless of results or educational outcomes, as a ‘payment by results’ (PbR) mechanism RBA is only paid if certain results are achieved.

#### A. VfM of RBA compared to counterfactual of no aid

The first, broader test of VfM will look at the amount of aid allocated through RBA under the comparison with not providing that aid. As such it could be seen as not simply a test of the effectiveness of RBA, but of other forms of aid to education, including by means of SBS. This method will look at how much aid contributes to the overall benefits attributable to the education system compared to the cost of the aid provided.

##### **Costs under test A**

The cost element for test A is quite simply the amount of money disbursed in RBA. For the case of RBA in Rwanda the direct cost of aid will be up to £9 million over the full period of the pilot (dependent on the results achieved).

The VfM assessment for test A will also need to include the contribution of RBA to the total of Rwandan expenditure on education, the assumption being that each pound spent on education is equal to every other pound. This means the total spend on education is required in order to estimate the share of the benefits from this expenditure delivered by aid, and in this case, RBA. In Rwanda, education expenditure is made up of a mixture of internal resources and development aid. This is broken down further by UNESCO (2012), which provides the following split for 2009/2010:

- Internally-financed Ministry of Finance budget to education = 46%
- Ministry of Finance from General Budget Support (GBS) aid = 25%
- Sector Budget Support (SBS) = 18%
- On-budget project aid = 1%
- Off-budget project aid = 10%

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<sup>15</sup> As useful context, Upper Quartile has been contracted to evaluate the RBA pilot scheme, a project with a maximum budget of £9 million. This is part of the Rwanda Education Sector Programme (RESP), which is worth more than £55 million from 2011/12 to 2014/15. In an RBA programme any aid money is disbursed after the outcomes have been achieved.

In addition to the above public funding of education there is Rwandan private expenditure on education, with the two together making up the total of education expenditure. It is difficult to find accurate estimates of private funding for education, as this constitutes not just money spent at private schools, but on education-related expenditures required even for public schooling. UNESCO (2011) have data suggesting the contribution of private spending on education is very low in Rwanda compared to other African countries, with household expenditure on education as a share of total education expenditure at around 1%. Education expenditure varies by household wealth - at 2.9% of household expenditure for the richest quintile, and 1.2% for the poorest. The full 'cost of education' for test A would need to account for this expenditure.

### ***Benefits under test A***

The benefit side of the equation is the more complex. As RBA has been set up the key variable or outcome of interest is those completing, or more specifically 'sitting', the final exams' at the grades of P6, S3 and S6. However, this of course forms only a small part of the outcomes within the education system more broadly, and therefore of the contribution of aid to this system.

As such, outcomes or benefits will need to be expressed in terms of a more clearly quantifiable variable. This will come from the standard economic tool to assess education benefits – *returns to education* – these are generally financial, and expressed as private returns, the additional income associated with an additional year of education. Other benefits that can be partly quantified are those to health, as well as the transmission of education benefits to future generations. In developing country contexts data on these 'non-economic' returns can be sparse – however the likes of Gakidou et al. (2010) estimate strong links between education levels and reductions in child mortality across countries, attributable to the education of more girls and the decisions they then make as women.

The return to education will need to be estimated for a given school population, and the 'school life expectancy' of children within the education system. UNESCO (2011) estimated that school life expectancy in Rwanda is 10.9 years, although more accurate and up-to-date figures should be calculable with GoR data. By looking at the contribution of a given year's expenditure on education to the overall return, an assessment can be made of the benefits of aid as a proportion of this expenditure. The return estimate will have to rely on available data for Rwanda, including estimates from Lassibille and Tan (2005), and also the 2012 Rwandan wage data available in Besamusca et al. (2013). Where Rwandan data is old or of questionable quality, international data will be used for comparison purposes and to provide a 'sensitivity' test for the calculations made.

### ***Differentiating levels of education – primary, secondary, tertiary***

It may be possible to make the calculations separately for primary, secondary and tertiary levels of education, for which varying returns are experienced. Lassibille and Tan (2005) found returns to primary of 19.4%, secondary of 29%, and vocational education of 12.5%. The costs of education are also split unevenly on a per pupil basis across different levels. According to UNESCO (2011), in Rwanda in 2009 in PPP terms, expenditure was \$83 per primary student, \$294 per secondary, and \$2292 per tertiary student. Whilst the shares of expenditure going to each level of education are similar (around 40% to primary, 30% to secondary, 26% to tertiary), the quantities of students at each level make the cost per pupil much different. This is likely to make the VfM at each of these levels also differ and these figures will inform efficiency calculations.

### **B. VfM of RBA compared to counterfactual of aid delivered by another non-PbR aid modality**

The second test will look at the VfM of RBA compared to the counterfactual of that aid still being provided, but by a more traditional means, such as SBS. This is the VfM test of the more direct theory of change of RBA – that the incentive effect will lead to greater performance against the defined metrics – in this case the completion rates for P6, S3, and S6.

### **Costs under test B**

The cost element will simply be the costs of delivering, administering, verifying and evaluating RBA, over and above the similar costs for administering traditionally through SBS. While these costs would likely reduce over time if RBA were to become a common aid mechanism, the assessment will utilise the costs based on those of this particular RBA exercise. For test B these are the only costs required as they are the only costs directly attributable to RBA. The counterfactual for test B is that the aid delivered would have been delivered anyway but by a mechanism such as SBS, so the cost of aid delivered is not considered.

### **Benefits under test B**

The benefits under test B will be those ascribable to the presence of RBA as an incentive mechanism, as measured by the Upper Quartile evaluation. For this there are two options for assessing benefits:

- I. The benefits from the '*extra*' completers at P6, S3 and S6, as paid out upon through the payment mechanism of RBA as it has been designed.
- II. The benefits from '*additional*' completers at P6, S3 and S6, estimated to be statistically significant by the econometric modelling of the evaluation.

The first option for estimating benefits here is less rigorous. That is because the baseline time-trend for the RBA payment mechanism is assumed to be flat, so any increase experienced is paid out upon. The exception being that the baseline is updated – i.e. 2012 is compared to 2011 data, but 2013 is compared to 2012 data.

The counterfactual of a flat time-trend is not particularly scientific, although it is the counterfactual upon which the system has been set so it will be assessed through the first option for calculating benefits. This is generous to RBA in the sense that some of the improvements may have happened without RBA, but it provides a benchmark resting on fewer assumptions.

The second benefit calculation is much more rigorous and is based on looking at the underlying time-trend of previous years, and other more rigorous assumptions. Completers of P6, S3 and S6 will only be considered *additional* if they can be shown to be by the econometric modelling used in the evaluation.

The next step to the benefit calculation will be expressing the outcome of 'completers' in terms of the broader *economic returns to education*, and therefore comparable with test A. This will involve a model to estimate how sitting the final examination for P6, S3 and S6 contributes to additional years of schooling – which will in turn feed through into a return to education, estimated as a result of RBA.

Table 1: Table of approaches

Approach	Benefits and costs	Comparison	Notes
A	Pro rata benefits from education expenditure – the amount of aid distributed as a result of RBA as a proportion of total education expenditure in Rwanda used to estimate the share of benefits attributable to this aid. Cost is simply the amount of aid delivered by the RBA mechanism.	RBA against counterfactual of aid not going to education expenditure.	<ul style="list-style-type: none"> <li>The percentage of the education budget which the aid represents is calculated.</li> <li>The benefits are then calculated pro rata, and compared to the cost of the RBA.</li> <li>Requires cost data on all education expenditure in Rwanda, public and private.</li> <li>Requires calculating benefits based on estimating years of schooling generated and average returns to education (economic and, if possible, non-economic benefits such as health).</li> <li>Can look separately at different levels – primary, secondary and tertiary education.</li> </ul>
B1	Benefits of more sitters at P6, S3, S6 against cost of delivering, administering and evaluating RBA. Benefits as ‘extra’ sitters of examinations at these levels (i.e. with a flat time-trend).	RBA against counterfactual of aid going to education but not in the form of RBA (i.e. SBS). Measures incentive effect of RBA.	<ul style="list-style-type: none"> <li>Any improvement in completion is treated as a benefit of RBA.</li> <li>Costs of delivering, administering and evaluating RBA required.</li> <li>Requires estimating the additional years of schooling generated by more students completing P6, S3, S6 and converting this into a return to education.</li> <li>This needs to account for the share of completers at P6, S3 and S6 that do not continue in education or repeat.</li> </ul>
B2	As B1, but benefits defined as ‘additional’ sitters of examinations based on the evaluation’s econometric modeling.	As B1, RBA against counterfactual of aid via another mechanism.	<ul style="list-style-type: none"> <li>As above (B1), but with only the estimated additional effect of RBA being included as an RBA benefit. Again, management costs would need to be included.</li> </ul>

## 4 Final comments

The approach outlined above will seek to assess the VfM of RBA against two counterfactuals, where the overall VfM of RBA is A+B. For those seeking an assessment of RBA against other aid instruments, such as SBS, the narrower test will be through test B, and the more rigorous of the two approaches for B will be from B2. In this latter case, the VfM of RBA can only be positive if the evaluation’s econometric model finds that completion at grades P6, S3, and/or S6 are statistically significantly above pre-existing trends, and the benefits of this are greater than the cost of delivery via the RBA aid delivery mechanism.

There is a possibility that the econometric model provides an answer of a positive but non-statistically significant effect of RBA. Such a scenario will come under the B1 test, in which the time-trend will be assumed to be flat. While this test is less robust, it is a possibility that the econometric model and time-series fail to detect small changes, and as such it is worth looking at this test as well. In addition, this approach is useful as it assesses the VfM of RBA against the payment design that has been set up – i.e. with a flat time-trend.

Finally, the overall test including test A takes into account the fact that even if RBA does not perform the desired incentive effect, this aid has not been wasted, as it can still contribute to educational outcomes in Rwanda through adding to education expenditure. This broader test does not mean that RBA is any better than other aid instruments, but neither does it mean it is any worse.

We believe that our suggested approach represents a reasonable and tractable methodology for assessing VfM for this pilot project.

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## Annex 5 - Econometric report

Prepared by Paul Clist, October 2014

### Data sources

EMIS – Save for one VARIABLE that was received for an additional two years, the EMIS data available were exactly those available to the general public from the Ministry of Education's website. This includes data on student enrolments, teacher numbers and so forth.

The 2012 General Population and Housing Census provided provisional data for population by district for 2012.

The Integrated Household Living Conditions Survey 3 (EICV3) from 2011 was used to calculate district-level averages that describe important district-level characteristics. These include the average number of repetitions, the fraction of parents reporting no problems at their school and the fraction of the district meeting the definition of "extremely poor".

The Demographic and Health Survey (DHS) 2010 was used in the same way as the EICV3 data. It provides data on those meeting the definition "Poorest", those who "can't read at all" and the fraction of respondents that fall in the 15-19 age range.

### Data availability

Data availability is difficult to summarise concisely as the data have not been presented in a consistent fashion and are an amalgamation of many different sources. The largest binding constraint is the set of DEPENDENT VARIABLES: these are the number of students taking the P6, S3 and S6 examination by district and gender. We have these data for 2008-2013, though some complications creep in for S6 data for 2011 and 2012 as TTC and TVET examinations are newly administered by the Kigali Institute for Education and the Workforce Development Authority respectively. (This is a problem only indirectly, as students cease to be covered by the EMIS data.)

For enrolment data, crucial for indicating the maximum bound of examination completion, it is available in one of two ways. We use the number of students in a given education level (Primary, Lower Secondary or Upper Secondary) by district, which is available 2010-2013 for Primary and 2011-2013 for Secondary. (The same discrepancy exists for teacher numbers.) Alternatively, the number of students enrolled by grade is available nationally. This is used to inform judgements and the general empirical evaluation, but is not included in either Model 1 or 2 as it is not available at the district level.

Many of the district-level characteristics (including population, socio-economic and literacy statistics) are only available at one point of time. This is less than ideal, and its use depends upon the assumption that relative characteristics remain stable. For any characteristics which are likely to change slowly the loss of annual data is negligible.

## Glossary of Terms

We aim to strike a balance in this report between providing sufficient detail so as to allow an assessment of the quality and breadth of the empirical work undertaken, and providing sufficient clarity so as to allow a non-specialist reader to understand the key messages in the report. There will be inevitable failures, and we are sorry for cases where technical details are glossed over or the reader is left unclear. In order to aid the non-technical reader a glossary is provided. Throughout the text, SMALL CAPS are used to denote that a term appears below.

**COEFFICIENT** – The estimated COEFFICIENT describes the strength of the effect that a one unit increase in the INDEPENDENT VARIABLE has on the DEPENDENT VARIABLE.

**DEPENDENT VARIABLE** – In crude terms, the thing we are trying to explain.

**DUMMY** – A VARIABLE which takes the value one when a condition is met, and zero otherwise. For example, a year DUMMY for 2012 takes the value one when the year is 2012, and zero otherwise. In this example, the COEFFICIENT would measure the effect of it being 2012 relative to the base year.

**INDEPENDENT VARIABLE(s)** - In crude terms, the thing(s) we are using to explain the DEPENDENT VARIABLE.

**OBSERVATION** – One data point. If we have data on the population of each Rwandan district for one year, we have 30 OBSERVATIONS (there are 30 districts in Rwanda). If we have it for two years, we have 60 OBSERVATIONS.

**OUT-OF-SAMPLE prediction** – This helps us test the accuracy of our model. We first run the model on a subset of data, deliberately excluding some OBSERVATIONS (specific years or districts). We then use those COEFFICIENTS to ‘predict’ the excluded OBSERVATIONS. We can then compare the prediction with the known outcome.

**SIGNIFICANT** – The measure of how likely it is to see an effect purely through chance. To be SIGNIFICANT at the 1% level means that once in 100 times you would see the effect and it would purely be due to chance. The other typical significance levels used are 5% and 10%. The smaller the level of significance, the more confidence the evaluator can have in the evidence.

**SPECIFICATION** – The list of INDEPENDENT VARIABLES included in a specific model and the type of estimation technique used.

**VARIABLE** – An indicator or measurement, such as population or teacher numbers.

## Executive summary

The impact evaluation of Results Based Aid (RBA) is complicated by the fact that it is a nationwide programme, making a counterfactual harder to construct. This econometric report details two main types of model that attempt to do this, along with summary statistics and tests for model accuracy. Model 1 builds a counterfactual by relying upon time trends and recent district performance to project into the future. Model 2 uses a broader array of information, such as the enrolments and district-level population statistics.

Summary statistics show that S3 saw large increases in completion in 2013, which coincides with a large cohort. P6 declined this year, but still saw some positive payment due to the formula used. S6 has increased slowly. Model 1 and 2 largely corroborate these basic descriptions. RBA years are generally found to be below trend for P6 and S6, often significantly so. The higher tariff applies to S3, which has seen a large increase this year. While this coincides with a large cohort, it appears that RBA has seen above-trend performance even controlling for cohort size.

Many of the broader lessons in this year’s report are consistent with last year’s. These include the following observations:

- 2011 was a poor year for P6 performance, which casts RBA results in 2012 and 2013 in a flattering light.
- District-level repetition norms, literacy levels and poverty remain strong predictors of cross-district differences in completion.
- Females face greater barriers to completion at higher levels, evidenced by population being a better predictor of male completion.
- Both genders tend to respond better to teachers of their own gender.

## 1 Introduction

The econometric report presented here builds on that presented alongside the year one evaluation report, which sets out the data limitations and general approach. The data limitations persist, but are eased slightly by one extra year of data (2013). To summarise the approach briefly, the report will consist of three main sections. First, summary statistics, tables and graphics are used to provide an overview of the situation with regards to school completion in Rwanda. This helps provide a context and highlights a number of trends. Second, results from Model 1 are presented, which essentially gauges whether the numbers of student sitting exams is above the trend. District and year dummies control for observed and unobserved characteristics. For RBA to be judged to have increased performance, it must be shown to have coincided with above-trend numbers of exam-sitters. Third, results from Model 2 are presented. This model uses all available information to construct the trend, including information on teacher numbers, the district-average level of repetition and enrolment numbers. Identification comes from district and year-level differences, with and without RBA.

## 2 RBA payments

The headline figure is that the 2013 RBA payment was £1.88 million (the initial annual maximum was £3 million)<sup>16</sup>. The general trends in the numbers of students sitting exams is shown in Table 1, with the summarised payment information in Table 2. As explained in the audit report (HEART, 2014), while the numbers of boys and girls sitting the P6 exam has declined in 2013, there is a positive payment because all payments are examined by gender and province: any improvements are paid out upon and any decline overlooked.

Table 1: Exam sitters by grade, gender and year, 2011-2013

	Primary 6			Secondary 3			Secondary 6		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
2011	70,548	84,406	154,954	38,043	39,377	77,420	24,535	22,023	46,558
2012	74,877	91,276	166,153	37,754	42,836	80,590	24,237	26,065	50,302
2013	73,552	89,542	163,094	44,227	49,505	93,732	26,689	27,102	53,791

Table 2: Payment overview

Level	2013 - 2012 Improvement	2013 - 2011 Improvement	Total
P6	£2,550	£87,830	£90,380
S3	£1,314,200	£163,120	£1,477,320
S6	£232,050	£83,670	£315,720
TOTAL	£1,548,800	£334,620	£1,883,420

Table 1 and Table 2 both show that the bulk of the improvement in 2013 happened at the S3 level (where a higher tariff is paid), with both genders seeing a marked improvement. Gains at S6 level are more modest, with a drop in numbers at P6.

<sup>16</sup> This annual ceiling has been altered such that the maximum is now £9 million over the three years.

As shown in Table 1, between 154,000 and 167,000 students took the P6 exam for the last three years. It is useful to compare these numbers with the numbers of students enrolled at each grade: Figure 1 and Figure 2 plot enrolments by grade and year, for primary and secondary respectively. P1 includes a large number of re-sitters, as discussed in last year's econometric report, and the trends in the numbers enrolled at primary level are broadly stable. As noted in last year's report, there are three options for every student in every year: repetition, drop out or progression. Completion at any level is best understood as the culmination of a series of progressions (or non-drop out and non-repetition).

At the primary school level for the period 2009-2012, the most recent EMIS statistics paint a fairly static picture: approximately 75% of students are promoted, 13% repeat and 12% drop out. Promotion over the period has risen slightly from 73.8% to 76.4%. However, the most recent EMIS summary statistics do cause some concern for primary school. The percentage of 12-year olds in P6<sup>17</sup> has fallen from 74.5% in 2008 to 69.0% in 2012 (this is described by the misnomer 'completion') and the percentage of P6 students that go on to S1 in the following year has dropped from 95% in 2009 to 74.4% in 2012. These summary statistics show that primary school students are not completing their primary education in an efficient manner, which signals deeper lying problems.

While repetition rates have fallen from 14% in 2009 to 12.5% in 2012, these are still higher than ideal.<sup>18</sup> A repetition rate of 12% means that on average 12% of *all students* in primary school in any given year are repeating a grade. We know that most repetition happens at lower levels and this explains how apparently low repetition rates are consistent with over a quarter of 12-year-olds not being in P6.<sup>19</sup> A drop-out rate of 11% is similarly worrying. If every student stayed in school for six years and then dropped out without completing, you would expect a drop-out rate of 16.7%.

At secondary school level, there has been much more movement in the fundamental numbers. The most striking trend in Figure 2 is the apparently large number of students that joined S3 in 2011, moved up to S4 in 2012 and were in S5 in 2013. This cohort would seem to relate to policy changes in Rwanda: 9 years basic education was implemented in 2009. We would expect this to lead to a larger S1 cohort in 2009, filtering through to a large S3 cohort in 2011. This policy change should then lead to a large S6 dividend in 2014: the final year of the current RBA agreement. A similarly high cohort can be seen in S1 in 2011 (S2 in 2012 and S3 in 2013), which may help explain the high number of S3 exam sitters in 2013. The reason behind this is not immediately apparent, but will be explored in the fuller report.

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<sup>17</sup> Ideally, all 12-year olds would be in P6, as this would mean they a) started P1 on time and b) were promoted to the next grade each year.

<sup>18</sup> Of course, it may be the case that at this stage high repetition is needed in order to maintain the quality of instruction at higher levels.

<sup>19</sup> To illustrate why a repetition rate of 12.5% is more problematic than it first appears, consider the following example. Imagine that everyone repeats P1 and no other grade, with equal cohorts. In this case there would be a repetition rate of 14.3%, as only one seventh of the school population would be repeating a grade. Figure 1 makes it clear that students tend to repeat P1 and P2, often then dropping out before reaching P6.

Figure 1: Primary school enrolment by year and grade

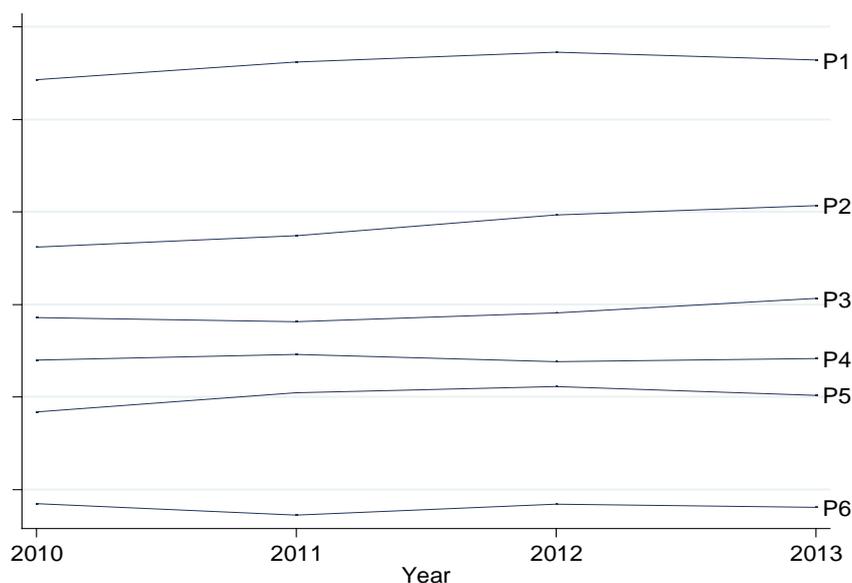


Figure 2: Secondary school enrolment by year and grade

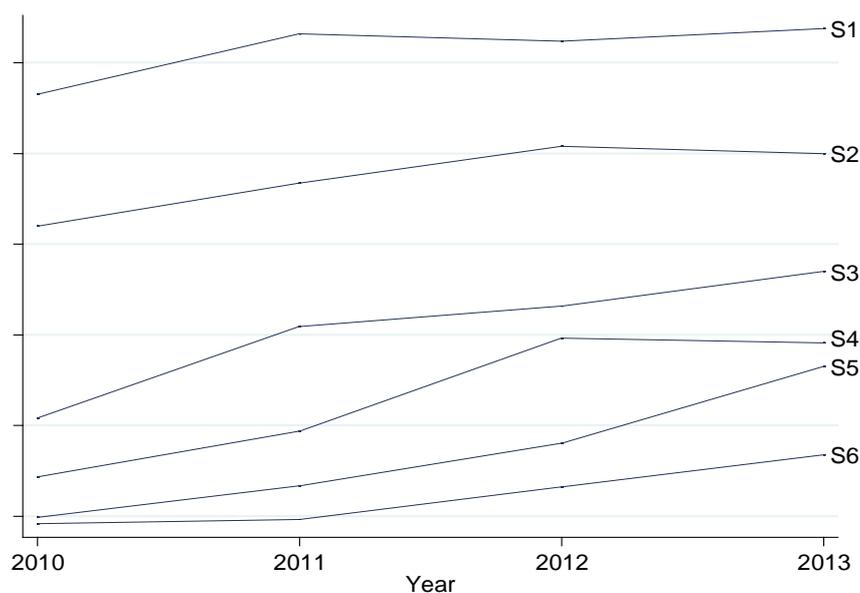
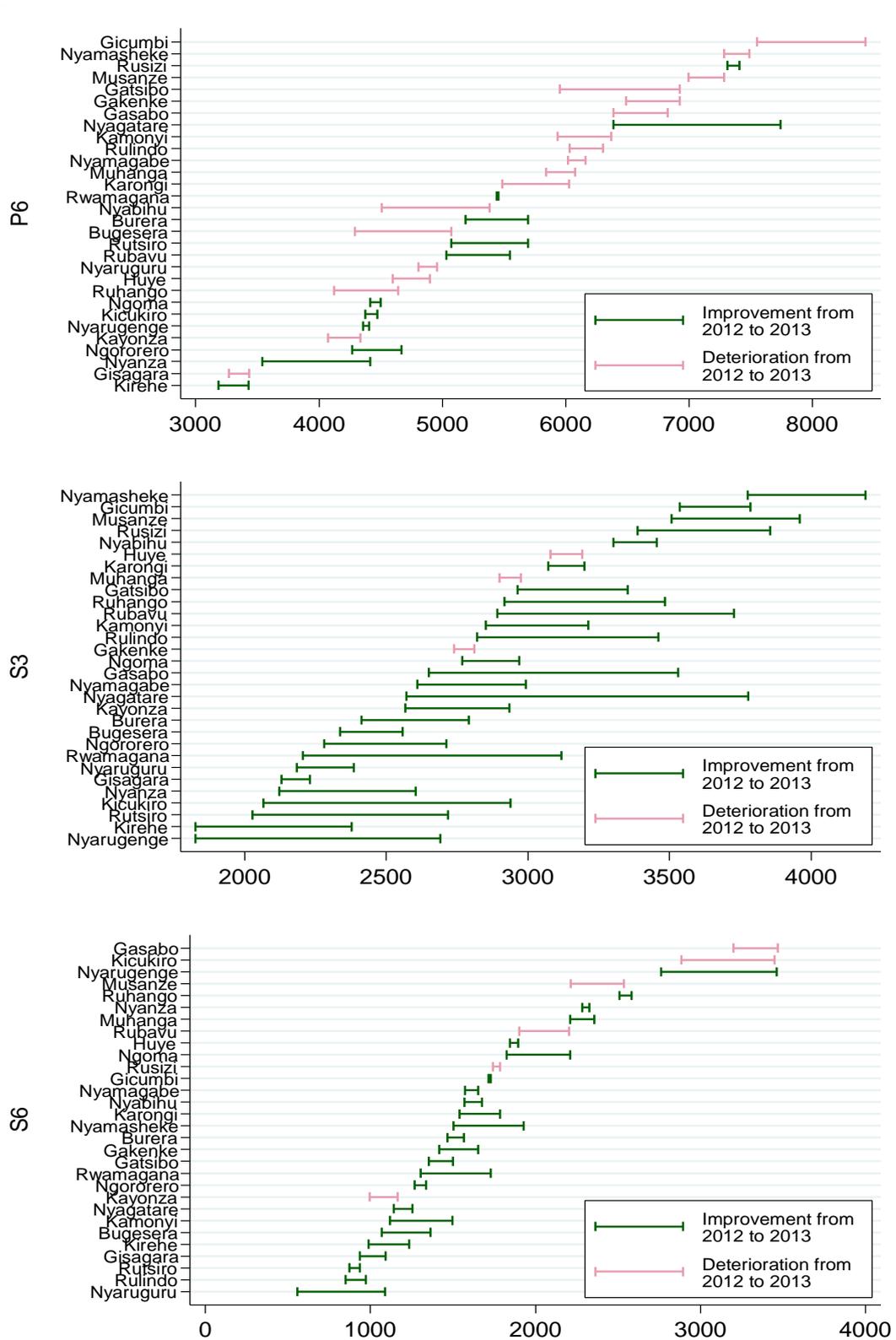


Figure 3 presents the data by district and exam in 2013, with reference to the 2012 numbers. Where annual improvements have been made the line describing the distance is coloured in green; where there has been a deterioration it is coloured in red<sup>20</sup>. Immediately, Figure 3 makes clear that the majority of districts have seen a drop in P6 numbers. Two strong exceptions to this are Nyagatere and Nyanza, which increased their performance by 1,385 and 876 respectively. At secondary level there has been general improvement spread amongst the districts: marked for S3 and steady for S6. There has been some evidence of regression to the mean for Gasabo and Kicukiro at S6 level, where outstanding performance in 2012 has been followed by more normal performance in 2013.

<sup>20</sup> In black and white, the lighter line describes deterioration.

Figure 3: Changes in numbers completing by district and exam 2012-2013



### 3 Overview of models

As with last year, two main types of model will be used. Model 1 uses no information regarding district characteristics, but instead relies on district-dummies, a time trend and year-DUMMIES. The advantage of the model is that it requires very little data and can thus exploit a longer time series. Model 2 takes a different approach as it uses as much information on district and time differences as possible, including information such as the number of classrooms and teachers in each district. This year, in response to feedback from the reference group<sup>21</sup>, Model 2 has been split into two parts. Model 2a uses only information that is available on an annual basis, which allows for district level fixed effects and clustering of the standard errors. Model 2b uses all available information, including data for which we have only one OBSERVATION per district. For example, we do not have annual data on population by district. Model 2a thus ignores differences in population by district, with all static cross-district information being ‘soaked up’ by the district DUMMIES. Model 2b provides an estimate of the effect of the district-level differences that we do observe. Table 3 summarises the model differences.

**Table 3: Model summary**

	<b>Model 1</b>	<b>Model 2a</b>	<b>Model 2b</b>
Dependent variable	Exam sitters by district, level and year.	Exam sitters by district, level and year.	Exam sitters by district, level and year.
Independent variables	District and year dummies, time trend.	All information which is available by district <i>and</i> year.	All available information.
Advantages	Allows standard errors to be clustered and unobserved fixed effects to be controlled for. Allows cross-gender correlation to be controlled for.	Allows standard errors to be clustered and unobserved fixed effects to be controlled for.	Provides an estimate of the effect of all relevant characteristics. Allows cross-gender correlation to be controlled for.
Disadvantages	May ‘over fit’ the relationship and assumes historical trends continue in perpetuity.	Doesn’t exploit cross-gender correlation or provide rich policy-relevant information.	May bias standard errors downwards. Assumes homoscedasticity.

The point of presenting and describing these models is not that the reader should decide upon their favourite model. Rather we believe a strong evidence base would be a consistent message across models, where a common conclusion rests upon a range of different assumptions. It is also worth bearing in mind the substantial data limitations which preclude more elaborate modelling options.<sup>22</sup> We now move on to presenting the results.

#### 3.1 Model 1: Results for primary and secondary

The evaluation of RBA using the econometric model is essentially a matter of making an assessment of whether exam sitting has been significantly above trend. Model 1 constructs this trend using district and year DUMMIES. Table 4 presents the results from three separate fixed effects regressions, using the total number of exam sitters and a time trend. In all three cases there is a positive and significant time trend, but in no case is there a positive ‘RBA year’ effect. In fact, for P6 there is a negative effect at the P6 level which is significant at the 1% level. The COEFFICIENTS for the year VARIABLE in Table 4 imply that we should expect to see the P6 district average completion rise by around 230 students per year, with 323 and 100 extra students at S3 and S6 levels: any RBA effect would need to reveal itself net of these time trends.

<sup>21</sup> The reference group suggested all results used cluster-corrected standard errors. Model 2a is able to do this, but model 2b is not. A large econometric literature exists on the ideal approach with no settled view. We believe the range of options chosen represent best practice.

<sup>22</sup> For example, Pooled Mean Group Estimator allows cluster-specific slopes, but the paucity of data means this is not viable.

Table 4: Fixed effects regression with time trend, 2008-2013

Variables	P6	S3	S6
	(1)	(2)	(3)
Year	230.6*** (7.278)	322.9*** (17.03)	100.4*** (3.715)
RBA Year	-235.6*** (-2.914)	-39.64 (-0.720)	-41.79 (-0.697)
Constant	-458,457*** (-7.202)	-646,885*** (-16.99)	-200,278*** (-3.683)
Observations	180	180	180
Number of Districts	30	30	30

Note: Cluster-Robust T statistics are provided in parentheses.

Table 5 provides a similar test, but is disaggregated by gender. The time trends are very similar to those in Table 4 for all three levels. RBA years are only found to be significant when the RBA DUMMY is negative. This suggests RBA years have been below the broader trend, by between 50 and 150 students per district. Table 5 is interesting in the differential gender impact: RBA years have been significantly below trend for primary school girls and secondary school boys.

Table 5: SUR Estimates with time trend, 2008-2013

Variables	P6		S3		S6	
	Male	Female	Male	Female	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)
Year	76.75*** (4.842)	153.9*** (7.351)	143.4*** (15.32)	179.5*** (17.19)	56.43*** (4.500)	43.97*** (3.348)
RBA Year	-84.96 (-1.480)	-150.7** (-1.987)	-59.76* (-1.762)	20.12 (0.532)	-104.6** (-2.302)	62.78 (1.319)
Constant	-152,175*** (-4.778)	-306,968*** (-7.297)	-287,186*** (-15.27)	-359,997*** (-17.16)	-112,636*** (-4.470)	-87,992*** (-3.334)
Observations	180	180	180	180	180	180
R-squared	0.828	0.853	0.857	0.894	0.855	0.866

Note: Cluster-Robust T statistics are provided in parentheses.

### 3.2 Model 1: OUT OF SAMPLE predictions

As in last year's report, OUT OF SAMPLE predictions are used both to judge model accuracy and whether completion has improved in RBA years. Table 6 presents the OUT OF SAMPLE predictions from the model used in Table 5, where the model was run using 2008-2011 data and used to predict performance in 2012 and 2013. We recover the following 95% confidence interval for average district exam completers for the two years, and the actual numbers for comparison. In 9 out of 12 cases, the actual district-average performance is within the 95% confidence interval. In the other 3 cases, performance is below that which is expected due to the trend.

Table 6: OUT OF SAMPLE predictions for 2012-2013 using the SUR Estimator

	2012		2013	
	Actual	95% CI	Actual	95% CI
P6 Boys	2496	2394 - 2707	2451	2482 - 2796
P6 Girls	3043	2921 - 3360	2985	3096 - 3535
S3 Boys	1258	1261 - 1412	1474	1397 - 1578
S3 Girls	1428	1337 - 1500	1650	1537 - 1764
S6 Boys	808	752 - 1085	890	807 - 1139
S6 Girls	869	726 - 1012	903	667 - 1030

Note: 'CI' stands for confidence interval, i.e. the range in which we expect the district-average exam sitting to fall.

Similar results are found (but not reported) when using the panel data fixed effects for total numbers of completers. In that case the only significant difference with the OUT-OF-SAMPLE predications are that P6 panel data for 2013 is significantly below trend (at 5% level). This is mirrored above for both P6 boys and girls in 2013, along with S3 boys in 2012.

To summarise the results from Model 1, RBA years have not kept up the impressive progress of previous years. In some cases there is evidence of a dip in performance below trend, occasionally significantly so. This could be interpreted either as a sign that performance in RBA years is significantly poorer than in preceding years, or that the underlying trend was unsustainable in the longer run. Model 2 will provide a further set of tests, and the entire body of evidence will be considered before a judgment is made.

### 3.3 Model 2: primary level

Table 7 presents two sets of results. Columns (1) and (2) are more similar to the model 1 SPECIFICATION, with additional controls for the numbers of students enrolled and teacher numbers. The effect of RBA is captured through the use of the year DUMMIES for 2012 and 2013. If there were a positive RBA effect, one would expect to see positive COEFFICIENT estimates for these years. The only SIGNIFICANT effects are that 2011 was a SIGNIFICANTLY worse year than 2010 (as recognised last year). The two RBA years were not SIGNIFICANTLY different from the general trend.

Columns (3) and (4) come from a SUR regression, where errors in the numbers of completers by district are allowed to be correlated across the two genders. The use of SUR is advantageous in many ways, as it allows an estimate of the effect of components for which we do not have annual data. For example, we only have one estimate of population for each district, and the SUR model allows this effect size to be estimated.

Table 7: P6 Examination sitters estimated with SUR and panel data, 2010-2013

Model	2a: Fixed Effects		2b: SUR	
	Male (1)	Female (2)	Male (3)	Female (4)
(Fe)Male Primary School Students Enrolled	0.039 (1.20)	0.028 (0.77)	0.045*** (6.47)	0.075*** (6.95)
Male Primary School Teachers	-0.13 (0.56)	-0.046 (0.15)	0.58** (2.30)	0.47 (1.17)
Female Primary School Teachers	-0.039 (0.18)	0.19 (0.71)	0.38 (1.56)	1.26*** (3.43)
% of district deemed "Poorest" (DHS)			296.6 (1.12)	389.3 (0.97)
Average Repetition, district (EICV)			-1221.6*** (4.23)	-1564.9*** (3.57)
% of district reporting "No School Problems"			288.8 (0.76)	1508.4*** (2.59)
% of District that Can't read at all			-3081.0*** (6.25)	-4660.4*** (6.07)
(Fe)Male Population by district			0.0042*** (3.96)	-0.00084 (0.43)
2011	-124.6*** (3.22)	-116.1** (2.12)	-209.9*** (3.11)	-251.7** (2.42)
2012	-27.3 (0.40)	82.9 (0.97)	-74.7 (1.16)	-47.2 (0.48)
2013	-76.0 (1.10)	21.9 (0.26)	-119.4* (1.86)	-114.7 (1.15)
Constant	1111.9 (0.94)	1753.0 (1.29)	1852.2*** (3.43)	1286.5 (1.55)
<b>Observations</b>	<b>120</b>	<b>120</b>	<b>120</b>	<b>120</b>
<b>R Squared (overall)</b>	<b>0.36</b>	<b>0.37</b>	<b>0.75</b>	<b>0.70</b>
<b>Chi Squared</b>			<b>396.1</b>	<b>301.6</b>

Note: Robust T stats are given in parentheses. SUR T-stats are not cluster-robust, FE are.

The SPECIFICATION here is much richer, allowing a greater understanding of the mechanics behind performance. In (3) and (4), we can identify the effects of district-level characteristics. We should expect a district to have more P6 exam sitters if it has greater enrolment, more teachers of the same gender as the students, has lower average (historical) repetition and greater literacy. All of these effects were also found last year. There is, again, evidence that female completion rates are more variable by district, with no SIGNIFICANT population effect being present along with much stronger effects from district characteristics like school quality and literacy rates. The variable *% of district reporting “No School Problems”* comes from the DHS and is simply a district-based fraction of those reporting no problems with the local schools, and ranges from 0.64 (worst) to 0.93 (best). The SIGNIFICANT and negative COEFFICIENT implies that districts with more problems are more of a barrier to female P6 completion, with a change from the best district to the worst associated with a drop of 428 female P6 completers. This fits with the general theme of low aspirations/expectations in some districts, as historical norms explain current practice.

The only SIGNIFICANT RBA-relevant year DUMMIES in Table 7 relate to males in 2013, and then only at the 10% level. This does, however, echo some findings from model 1 that P6 performance in RBA years has been below trend (e.g. Table 7). Results where an RBA DUMMY is added to the SPECIFICATION in (1) give a COEFFICIENT estimate of -119.42 (with a T statistic of 1.86, which is SIGNIFICANT at the 10% level). Across the 30 districts, this would imply a shortfall of 3,582 boys at the P6 level.

To summarise the evidence for primary school completion from Models 2a and 2b, there is no evidence of a positive effect of RBA for either boys or girls in either year of RBA operation. In the seven cases in which we estimate an RBA effect for primary schools (either as an RBA DUMMY or as a year DUMMY), the COEFFICIENT is insignificant and negative four times, and SIGNIFICANT and negative three times. As with the previous year, the weight of the evidence for 2013 data at the P6 level points to either a negative or insignificant effect, with a positive effect ruled out.

### 3.4 Model 2: secondary level

Table 8 reports the fixed effects regressions for secondary school performance. As with last year, data availability is low for model 2 (while model 1, with less ambitious data requirements, now runs for 6 years). There are few significant effects. The lagged number of S3 completers is significant in (4), where the model estimates that, controlling for other effects, we should expect almost half of girls completing S3 to complete S6 three years later. The number of male teachers is significant (with large district-level differences) at the S6 level, with a 3:1 male-female gender imbalance for secondary school teachers. For both RBA years, there is a SIGNIFICANT and positive effect on female S3 completion. Nationally, (2) implies that there are an extra 8,463 female students that completed S3 in 2013, and 2,772 in 2012. This should not be over-interpreted given the context of the results from Model 1 (which has more years of data) and the apparent large cohort discussed in relation to Figure 1 and Figure 2. They are, however, positive signs.

Table 8: Model 2a for secondary school, 2011-2013

	S3		S6	
	Male	Female	Male	Female
	(1)	(2)	(3)	(4)
Lagged P6/S3 Completers	-0.088	-0.056	-0.079	0.46*
	(0.73)	(0.65)	(0.23)	(1.91)
Lower/Upper Secondary Enrolment	0.022	0.022	-0.0019	0.011
	(1.63)	(1.45)	(0.13)	(0.94)
Male Secondary Teachers	0.51	0.37	1.79*	2.49***
	(0.55)	(0.45)	(2.01)	(3.20)
Female Secondary Teachers	0.010	0.34	-0.85	0.086
	(0.01)	(0.18)	(0.69)	(0.07)
2012 Dummy	-35.8	92.4**	-71.8	-10.6
	(0.84)	(2.40)	(1.30)	(0.22)
2013 Dummy	145.1	282.1***	-26.4	-147.9
	(1.59)	(3.64)	(0.25)	(1.59)
Constant	1014.9**	1018.0**	249.0	-746.2*
	(2.18)	(2.27)	(0.49)	(1.73)
<b>Observations</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>
<b>R Squared (Overall)</b>	<b>0.35</b>	<b>0.32</b>	<b>0.27</b>	<b>0.40</b>

Note: The results here were estimated with district fixed effects, and cluster-robust t statistics are reported in parentheses.

Table 9 presents the results using model 2b, allowing for estimations of district-level characteristics. The most striking COEFFICIENT relates to male S3 exam sitting in 2013, which is also positive. The national estimate here is of 6,546 extra exam sitters. A positive effect is also found for females in that year, with a negative effect for 2012. For S6, three of the four RBA-affected year DUMMIES are significantly negative, implying S6 completion has been below what we should expect.

In terms of other factors, several relationships are found to be SIGNIFICANT. The COEFFICIENTS of lagged P6 completers suggest that, controlling for other factors, around a quarter of P6 completers will go on to complete S3 three years later. Enrolment is found to have a positive effect, but the size of the COEFFICIENT is rather small at around 0.05. This suggests that, *controlling for lagged P6 completers*, an extra 20 students enrolled is consistent with only one extra S3 completer. At the S6 level, where lagged S3 completion is a weaker indicator, the effect of enrolment is about twice the size. Population is again found to be negative, most probably because we already control for enrolments and lagged completion. Male secondary teachers have a positive effect for both genders and levels, where female teachers only have a significantly positive effect on girls. One extra male teacher at lower and upper secondary is consistent with around 2 and 4 extra students respectively<sup>23</sup>. Female teachers have a disproportionately positive effect on female students.<sup>24</sup> In terms of poverty, the poorest districts only have lower S6 completion, with no significant effect found for S3 completion. To give a sense of the meaning of the COEFFICIENT size, consider the following example. Moving from the district with the lowest percentage of people who are considered to be in the poorest category (Nyarugenge) to the one with the highest percentage (Nyamagabe) is consistent with around 500 fewer male and 420 fewer female students completing S6.

<sup>23</sup> For example, one extra male teacher is consistent with 1.13 male and 0.66 female S3 completers, so one male teacher is consistent with 1.8 extra completers.

<sup>24</sup> The negative effect for P6 boys is most likely due to the fact that an extra female teacher is likely to mean one less male teacher, and each student gender is found to respond more to their own gender of teacher.

Table 9: Model 2b for secondary level, 2011-2013

	S3		S6	
	Male	Female	Male	Female
(Fe)Male Population, 2012 Provisional Data	-0.00048	-0.0020***	-0.0025**	-0.0028***
	(0.70)	(2.66)	(2.43)	(2.95)
Lagged P6/S3 Completers	0.22***	0.25***	0.013	0.015
	(4.38)	(6.05)	(0.09)	(0.12)
% of district deemed "Poorest" (DHS)	-150.9	-101.0	-1033.5***	-857.9***
	(1.10)	(0.66)	(4.46)	(4.41)
Lower/Upper Secondary Enrolment	0.042***	0.048***	0.093***	0.085***
	(4.98)	(4.66)	(5.55)	(5.74)
Male Secondary Teachers	1.13***	0.66**	1.94***	2.19***
	(4.53)	(2.31)	(3.83)	(5.14)
Female Secondary Teachers	-0.93*	1.25*	0.55	1.33*
	(1.77)	(1.82)	(0.65)	(1.66)
2012 Dummy	-73.3**	37.9	-214.2***	-78.9
	(2.02)	(0.89)	(3.37)	(1.42)
2013 Dummy	135.4***	218.2***	-286.4***	-220.4***
	(3.26)	(4.51)	(4.12)	(3.62)
Yrs15_19			-1234.3	-462.3
			(1.24)	(0.53)
Constant	16.5	0.80	354.9	-29.6
	(0.14)	(0.01)	(1.16)	(0.11)
<b>Observations</b>	<b>90</b>	<b>90</b>	<b>90</b>	<b>90</b>
<b>R Squared</b>	<b>0.72</b>	<b>0.77</b>	<b>0.57</b>	<b>0.68</b>
<b>Chi Squared</b>	<b>245.7</b>	<b>327.2</b>	<b>131.5</b>	<b>203.9</b>

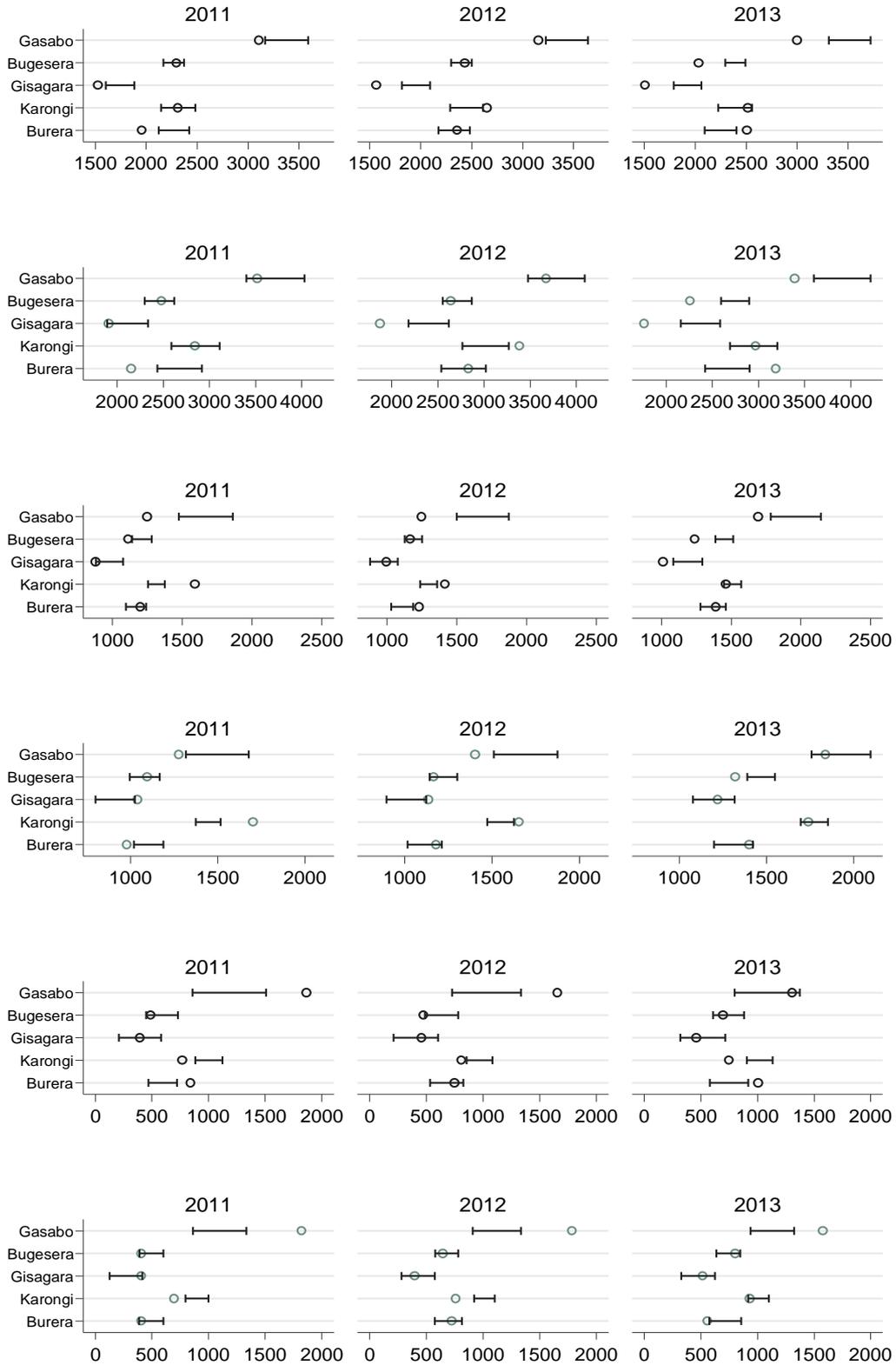
Note: These are Seemingly Unrelated Regressions with T statistics provided in parentheses.

#### 4 OUT OF SAMPLE predictions

As with last year, OUT-OF-SAMPLE predictions are used to gauge the accuracy of the model. Five districts were randomly chosen to be 'OUT OF SAMPLE', with the model run for the remaining 25. The COEFFICIENTS were then used to predict OUT-OF-SAMPLE performance for the five districts for the years 2011-2013. Figure 4 presents the 95% confidence interval that the model predicts as a line, and the actual performance as a circle. If the model is performing well, the circle should be within that line.

To summarise the evidence, correlations between point predictions (not the range graphed) and actual results by grade and gender range from a low of 0.70 to a high of 0.90, with an average of 0.83. Given the data limitations and that these are made completely OUT OF SAMPLE (i.e. the model does not know of these other 5 regions), these predictions are surprisingly good. It should be remembered that even a perfect model would see actual performance outside of the 95% confidence interval 5% of the time. The consistent weakness of the model is that it finds Gasabo boys difficult to predict at all levels. This is unsurprising as Gasabo is by far the most populated district, with 2012 data giving its population of 530,907 against an average of 351,241. The specific models used for these predictions are from the SUR regressions with the SPECIFICATIONS of Table 7 and Table 9: they should not be taken as a judgment on the accuracy of other models.

Figure 4: OUT OF SAMPLE predictions using Model 2b by year, gender and level



Note: circles represent the actual results, with the lines representing the 95% out of sample prediction.

## 5 Conclusion

A large number of results have been presented and discussed in this document, making synthesis both necessary and complicated. Table 10 aids this process by summarising each model's results only in terms of their judgement of performance in RBA years.

**Table 10: Summary of results by approach**

Level	P6	S3	S6
Summary statistics	Fell in 2013.	Strong improvement in 2013, in line with large cohort.	Slow improvement.
Model 1	RBA years significantly below trend.	RBA years slightly below trend for males.	RBA years slightly below trend for males.
Model 2a	RBA years below trend. 2011 was a significantly poor year.	Males are on trend. Significant improvement for females in both RBA years, especially strong in 2013.	RBA years slightly below trend.
Model 2b	RBA years below trend – significantly so for boys. 2011 significantly poor.	Strong and significant 2013 performance for both genders. A significantly below trend performance for boys in 2012 (if a relatively small effect size).	Significantly below trend for both genders in 2013, and for boys in 2012. RBA is always found to be below trend.

Performance at the two lower tariffs (P6 and S6) is fairly similar, with either insignificant or significantly negative results found. The results regarding P6 are unanimous: RBA years have seen negative or flat performance relative to expectations. 2011 was a SIGNIFICANTLY poor year for performance at this grade, and so the baseline has cast performance at the P6 level in a positive light. Performance at the S6 level is never found to be above trend in RBA years, and is sometimes found to be SIGNIFICANTLY below trend.

S3 has a higher associated tariff of £100, as opposed to £50 for P6 and S6<sup>25</sup>. The models mostly report improvements in RBA years at S3, often significantly so, with stronger evidence for boys. Summary statistics imply that much of this improvement should be expected due to a large cohort. Model 2 is able to control for lagged P6 completion, and generally finds strong above-trend performance. Model 2 does rest on a smaller available time series, but the overall message is that S3 performance under RBA has been above trend, especially for females.

## Bibliography

HEART (2014) Independent Verification Of Educational Data For A Pilot Of Results-Based Aid (RBA) In Rwanda: Second Annual Verification Report For Student Completion Results

<sup>25</sup> Notwithstanding the ratchet effect.

## Annex 6 - Value for Money Analysis

Prepared by Joseph Holden, November 2014

### 1 Introduction

The degree to which results based aid (RBA) provides value for money (VfM) to DFID and the British taxpayer is a key question for its efficacy as an aid instrument. Notably the questions of how much benefit is derived from DFID support to education through the Government of Rwanda (GoR), what the best means of delivering that aid is, and whether a 'payment by results' (PbR) incentive mechanism delivers more relative to its cost than other non-PbR forms of aid.

#### 1.1 The Approach to Measuring VfM

Measuring the VfM of aid to education represents a complex problem. This is because the benefits in terms of returns to education come only when the educated are in employment, and then accrue for many years afterwards. This requires estimates of how long each individual stays in education, when individuals will enter and exit the labour market, and what returns in terms of wages will be in future years.

The VfM approach proposed in the VfM design paper was to look at the cost effectiveness of RBA relative to not providing RBA. There are two components to this, based on two different counterfactuals:

- A. The VfM of aid spent on RBA, compared to the counterfactual of not providing that aid to education.
- B. The VfM of aid spent on RBA, compared to the counterfactual of providing that aid to education by a more traditional instrument – such as sector budget support (SBS).

The overall VfM of RBA will then be A+B: that is, the effectiveness relative to the cost of the aid itself (A); and the effectiveness of RBA relative to providing aid in another form (B). The variable of most interest in looking at RBA as opposed to other aid modalities will be B, as this could be taken to be the narrower test of the hypothesis that RBA functions through an incentive effect that is not present in other forms of aid. For example, while SBS is usually disbursed regardless of results or educational outcomes, as a PbR mechanism RBA is only paid if certain results are achieved. The model presents two versions of test B – B1 using the benefits derived from the number of 'extra sitters' at P6, S3, and S6, which the PbR design pays out upon. The second, B2, uses the econometric model of the RBA evaluation to estimate the number of 'additional sitters' at these grades – i.e. the statistically significant level of change.

The model presented here is built on existing data of the Rwandan education system, with the key variables being the rate of drop-out, the rate of repetition, and the rate of progression between grades. This is then combined with labour market information on wage rates and returns to additional years of education, to model the returns to education over time, and specifically those returns attributable to the year of investment in education in question, in this case 2013.

#### 1.2 Summary of VfM results

The VfM model provides the present value (PV) of the benefits and the costs generated from RBA to Rwanda in 2013 for both test A and the two models for test B – B1 and B2. The high level results are presented in Table 1 include the cost of disbursed aid for 2013, £1.9 million for test A; the cost of verification in 2013, £90,000 for test B; and a third of the cost of the three-year evaluation of the RBA pilot, £144,000. The benefits for test A include an estimate of the PV of economic returns from the investment in education in 2013. The benefits for test B represent the returns to education following the additional completion rates for P6, S3 and S6, offset against the estimated costs of the additional years of schooling implied.

Table 1: Summary of results from VfM assessment of RBA for 2013 (GBP million)

	PV benefits	PV costs	NPV	B:C ratio
<b>Test A</b>				
Benefits attributable to the 2013 year of education	14.0			
RBA disbursed in 2013		1.9		
<b>Overall NPV for test A</b>	<b>14.0</b>	<b>1.9</b>	<b>12.1</b>	<b>7.4</b>
<b>Test B1</b>				
Benefits from extra sitters: P6	-	-		
Benefits from extra sitters: S3	132.8	25.1	107.7	5.3
Benefits from extra sitters: S6	30.1	5.4	24.7	5.6
Evaluation costs and verification costs		0.2		
<b>Overall NPV for test B1</b>	<b>162.9</b>	<b>30.7</b>	<b>132.2</b>	<b>5.3</b>
<b>Test B2</b>				
Benefits from additional sitters: P6	-	-		
Benefits from additional sitters: S3	107.2	20.2	87.0	5.3
Benefits from additional sitters: S6	-	-		
Evaluation costs and verification costs		0.2		
<b>Overall NPV for test B2</b>	<b>107.2</b>	<b>20.5</b>	<b>86.7</b>	<b>5.2</b>
<b>Tests A and B combined</b>				
Overall A+B1	176.9	32.5	144.4	5.4
Overall A+B2	121.2	22.3	98.9	5.4

Combining the two models gives an overall assessment of the VfM of RBA, with a benefit-cost ratio above 5 for both A+B1 and A+B2, and a net present value (NPV) of £144 million and £99 million for the two combinations respectively. Sensitivity analysis is conducted in the paper, finding that returns remain significant and positive even when a number of assumptions are made more stringent. One final test is conducted to see if just additional sitters generate significant benefits, even if they drop-out afterwards. This test, a version of test B2, finds a NPV of RBA of £19.1 million. This suggests that even with more unfavourable assumptions, as long as the RBA model predicts additional sitters at P6, S3 or S6, the VfM of RBA as an aid instrument will be strong.

In addition, we also seek to estimate some health benefits for the test B. These show that RBA in 2013 led to 6,546 additional female sitters at S3, with the VfM model estimating this will lead to an average additional four years of education. Utilising international data on maternal education and child mortality as well as the child mortality figures for Rwanda, we seek to estimate an effect of RBA on this variable. However, this estimate should be treated with much caution as it is built on a larger number of assumptions than the standard education model itself.

A summary of the assumptions made in the model is that it constitutes an idea that current trends will continue into the future, although in reality change can be discontinuous. Particularly with respect to RBA, it is very important to note again the central assumption that RBA itself does not represent a discontinuity – i.e. RBA does not change behaviour around other aspects of the system that would impact on educational outcomes. This is particularly relevant with respect to the quality of education, which is likely to be the main underlying driver of economic and non-economic returns to education. The models undertaken for the VfM analysis must be taken together with the other elements of the RBA evaluation to ensure that other qualitative and quantitative information also implies that RBA is effective in incentivising improvements to the educational system.

## 2 Test A: VfM of RBA compared to counterfactual of ‘no aid’

The first test of VfM looks at the amount of aid allocated through RBA under the comparison with not providing that aid. As such it can be seen as not simply a test of the effectiveness of RBA, but of other forms of aid to education, including by means of SBS. This method will therefore look at how much aid contributes to the overall benefits attributable to the education system compared to the cost of the aid provided.

### 2.1 Costs under Test A

The cost element for test A is quite simply the amount of money disbursed in RBA. For the case of RBA in Rwanda the direct cost of aid could amount to £9 million over the full period of the pilot dependent on the results experienced. Disbursements to date include the £1,164,150 paid in 2013 for results achieved in 2012, and £1,883,420 paid in 2014 for improvements made in 2013. The latter is the key figure of interest for this test of VfM, as the benefits to be compared against will be those achieved by the education system during the year 2013.

The VfM assessment for test A will then need to include the contribution of RBA to total Rwandan expenditure on education, the assumption being that each pound spent on education is equal to every other pound, and that the aid provided is non-fungible. The assumption here is that this money would contribute towards spending for the year 2013, although in reality it is likely to be spent by the GoR in the subsequent year due to the timing of the disbursement. The model assumes that this money would be additional to GoR expenditure on education in 2013.

#### 2.1.1 Breakdown of GoR education expenditure

The total spend on education is required in order to estimate the share of the benefits from this expenditure delivered by aid, and in this case, RBA. In Rwanda, education expenditure is made up of a mixture of internal resources and development aid. UNESCO (2012), estimated the following split for 2009/2010:

- Internally-financed Ministry of Finance budget to education = 46%
- Ministry of Finance from General Budget Support (GBS) aid = 25%
- Sector Budget Support (SBS) = 18%
- On-budget project aid = 1%
- Off-budget project aid = 10%

More recent data from the Rwanda 2013/2014 budget used here for the VfM model shows that the contribution of GBS and SBS aid has fallen since 2009/2010.

Table 2 shows the breakdown between GoR Ministry expenditure (MINEDUC) - making up around 60 per cent of Government spend, principally for higher education and technical and vocational education and training (TVET), and districts - making up 40 per cent of expenditure, mainly for pre-primary, primary and secondary education.

**Table 2: Breakdown of GoR expenditure on education in 2013/2014**

Budget line	Budget to	Amount RWF (billion)	GBP (million)
<b>14</b>	<b>MINEDUC</b>	<b>149.2</b>	<b>135.1</b>
1421	Higher education	34.4	31.1
1422	TVET	51.0	46.2
1423	Curricula and pedagogical materials	6.3	5.7
1424	Teacher development and management	5.2	4.7
1425	Education quality and standards	10.1	9.2
1426	ICT integration	7.5	6.8
1427	Examinations and accreditation	3.5	3.2
1428	Higher education scholarship management	10.4	9.4
<b>Districts</b>	<b>Total</b>	<b>101.4</b>	<b>91.8</b>
of which	Pre-primary and primary education	50.0	45.2
of which	Secondary education	51.3	46.4
of which	Tertiary and non-formal education	0.2	0.2

Source: GoR MINECOFIN Budget for 2013/2014. Exchange rate used is RWF 1105 = 1 GBP, as found on 4<sup>th</sup> November 2014.

The data from the GoR budget for 2013/2014 is used to estimate the share of the total spend going to each level of education. As shown in Table 3 this splits fairly evenly between pre-primary and primary, secondary level, TVET, and tertiary levels, with around a quarter of expenditure each. For spending categories in the MINEDUC budget not specifically classified – for example “1425: education quality and standards”, we assume this to be split evenly across each stage of education.

**Table 3: Share of GoR education expenditure going to each level of education**

Stage of education	Amount RWF (billion)	Amount GBP (millions)	Share of total
<b>Pre-primary and primary education</b>	63.3	57.3	25.3%
<b>Secondary education</b>	64.7	58.5	25.8%
<b>TVET</b>	64.4	58.3	25.7%
<b>Tertiary</b>	58.3	52.8	23.3%
<b>Total</b>	250.7	226.9	100.0%

Source: GoR MINECOFIN Budget for 2013/2014. Exchange rate used is RWF 1105 = 1 GBP, as found on 4<sup>th</sup> November 2014. Author estimates on non-categorised spending.

In terms of the source of funds for the £227 million set out in the 2013/2014 budget, the budget indicates the amount of money coming from sector budget support (SBS) allocated to education, as well as larger allocations of general budget support (GBS). Table 4 shows estimates of the education spend from each source, with SBS and GBS both making up around a tenth of overall expenditure.

The final source of expenditure cited by UNESCO (2012) was off-budget project aid. Unfortunately, this is harder to find data on. Searching DFID and USAID databases we could find approximately £5.1 million of additional expenditure for the year 2013/2014. In addition, DFID’s Rwanda Education Sector Programme, has spent an average of £22 million per year since 2011, although it is not clear if this has been largely taken into the DFID SBS allocation to the GoR budget. Given these uncertainties we have assumed that there is another £5 million or so of off-budget aid, taking the total to £10.1 million or 4 per cent of the total.

**Table 4: Share of education expenditure coming from different sources**

Source	RWF billions	GBP millions	Share of total
<b>Education total spend</b>	<b>261.8</b>	<b>236.9</b>	<b>100%</b>
From sector budget support (SBS) specified for education	26.7	24.2	10%
From general budget support (GBS)	20.2	18.3	8%
Tax rev, other revenue or borrowing	203.8	184.4	78%
Off-budget aid	11.2	10.1	4%

Source: GoR MINECOFIN Budget for 2013/2014. Author estimates for GBS and tax revenue shares. Off-budget aid is an estimate.

### 2.1.2 Private expenditure on education

In addition to public funding of education there is Rwandan private expenditure on education, which together comprise total education expenditure. It is difficult to find accurate estimates of private funding of education, as this constitutes not just money spent at private schools, but on education-related expenditures required even for public schooling. Additionally, evidence suggests that parents in Rwanda also put in labour to construct classrooms, and also supplement the capitation grant to schools (Paxton and Mutesi, 2012). Parents make direct financial contributions through a parent teacher association (PTA) contribution, a sum determined by each PTA, which all parents are required to pay. The PTA contributions are used to supplement teacher salaries (Williams et al. 2014).

In 2008 it was estimated that parents met 45 per cent of the costs of education – 29 per cent at primary level; 59 per cent at junior secondary level; 68 per cent at senior secondary level; and 40 per cent at higher education level (International Bank for Reconstruction and Development /World Bank, 2011). However, these averages are deceptive as parental contributions can form a substantial part of the income for schools in more affluent urban areas. The inability of parents in poor rural areas to make similar contributions has created significant inequalities in the quality of education (Paxton and Mutesi 2012). Given the paucity of other estimates, we utilise the figures from 2008 to form our estimates of private expenditure on education.

### 2.1.3 Total expenditure on education and the share of RBA

The estimates above are assumed to represent the level of expenditure on education in Rwanda during 2013. For reasons set out in the next section on benefits under test A (see 2.3.1), TVET has been excluded from the model due to the difficulty of accurately modelling returns to this type of education and the relatively few enrolled in TVET during 2013. As such, it will also be removed from the cost expenditure. However this also means that a proportion of the RBA amount equivalent to the share of GoR education expenditure going to TVET should also be removed for our purposes.

**Table 5: Estimated total expenditure on education in Rwanda in 2013 (excluding TVET)**

Stage of education	GoR expenditure		Off-budget project aid		Private expenditure		Total spend	
	RWF billion	GBP million	RWF billion	GBP million	RWF billion	GBP million	RWF billion	GBP million
Pre-primary and primary education	63.3	57.3	-	-	25.9	23.4	89.2	80.7
Secondary education	64.7	58.5	-	-	105.5	95.5	170.1	154.0
Tertiary	58.3	52.8	-	-	38.9	35.2	97.2	87.9
<b>Total</b>	<b>186.3</b>	<b>168.6</b>	<b>11.2</b>	<b>10.1</b>	<b>170.2</b>	<b>154.1</b>	<b>367.7</b>	<b>332.7</b>

Source: GoR 2013/2014 budget data, author estimates for off-budget aid, World Bank (2011) data from 2008 used for estimating private expenditure.

The overall expenditure on education in 2013 in Rwanda is therefore estimated to be £332.7 million as shown in Table 5. The disbursement of RBA for 2013 of £1.9 million stripped of the component that

would go to TVET is £1.4 million. The share of the total expenditure that this would make is then 0.4 per cent. This will be the share that is also applied to the benefits derived under test A as an estimate of the attribution of the RBA aid to the overall benefits derived. However the full RBA allocation will still form the main cost comparison for the VfM final analysis for test A.

## 2.3 Benefits under Test A

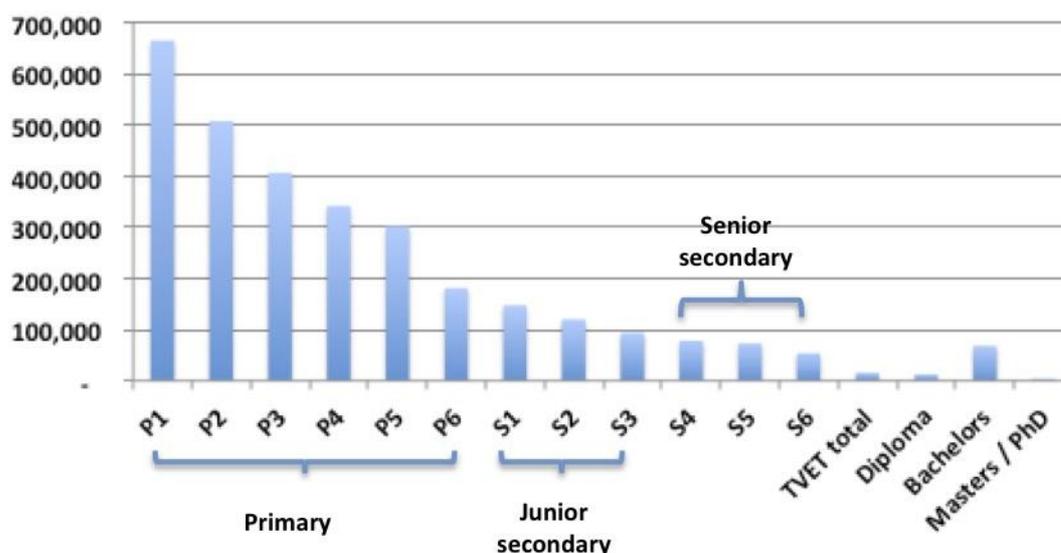
RBA has been set up with the key variable or outcome of interest as those completing, or more specifically ‘sitting the final exams’ at the grades of P6, S3 and S6. However, this forms only a small part of the outcomes within the education system more broadly, and therefore of the contribution of aid to this system.

As such, outcomes or benefits should be expressed in terms of a more clearly quantifiable variable. This comes from the standard economic tool to assess education benefits – returns to education – these are generally financial, and expressed as private returns, the additional income associated with an additional year of education. The challenge is then to calculate what these benefits are and express them in terms of present values.

### 2.3.1 Defining the cohort

The first challenge is to model the amount of education a given cohort of children receives. The cohort in question is the full group of children and young adults in education in 2013. For this, GoR data on the number of children in different grades and stages of education during that year provides the starting point. The cohort as defined by grade and stage of education is shown below in Figure 1.

Figure 1: Number enrolled in each grade and stage of education in 2013



Source: GoR (2014) 2013 Education Statistical Yearbook

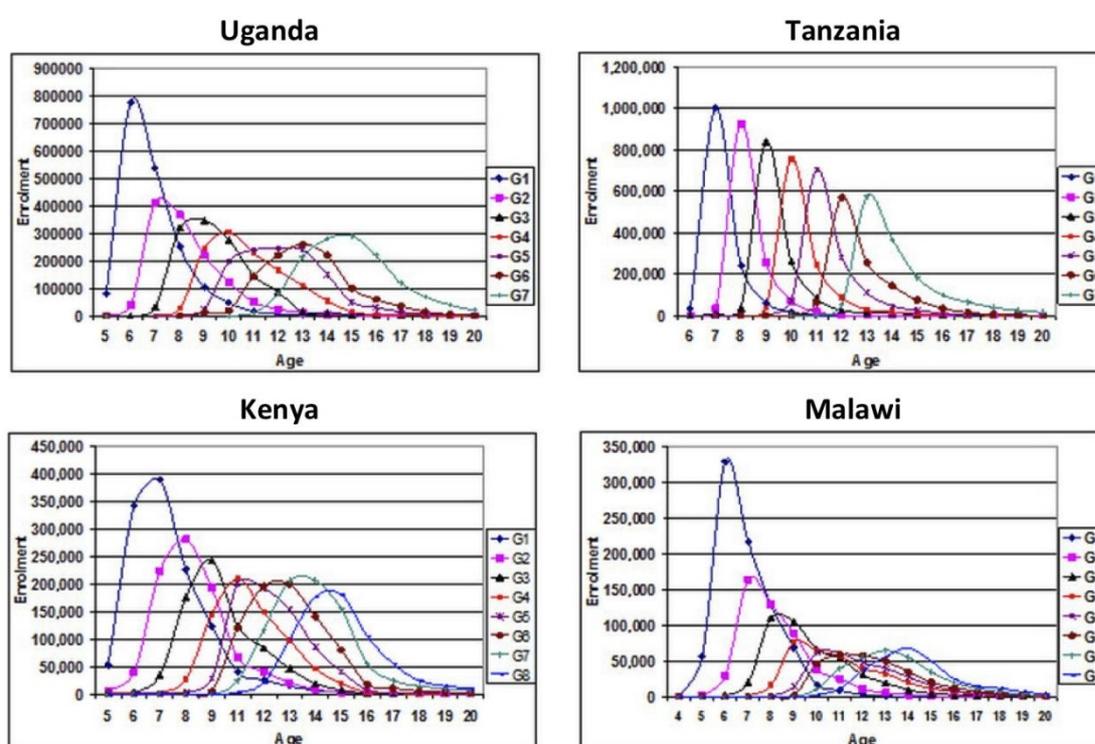
Those enrolled in technical, vocational education and training (TVET) have been excluded from the VfM model at this time. This is because the majority of TVET classes are for less than one year and therefore it is hard to count this as an additional year of education. In addition, there is no information available on how much education those enrolling in TVET courses had beforehand and at what age they enrol, so it is hard to know whether to model it as an additional year of education for someone with three or six years of primary, or who has finished senior secondary level. For similar reasons, those taking either masters or PhD level education are also excluded from the model. The numbers enrolled in these levels are much smaller than for other levels, returns estimates are not available, and again it is not clear the age ranges for those taking these higher level qualifications.

The cohort is therefore refined to those in primary, junior secondary, senior secondary, and at tertiary level studying either for a Bachelors or Diploma qualification. These latter courses are assumed to last for four years, and are defined in the model as BD1, BD2, BD3 and BD4 for each year respectively.

### 2.3.2 Estimating the age range

The age range of a given grade is likely to be highly variable, unlike in a developed country such as the UK. As such, each grade is modelled to have a range of ages. While Rwandan data could not be found for this, regional neighbours such as Uganda and Kenya do have some data available, and as shown in Figure 2, there is a significant spread of ages for each grade. It is assumed that a similar pattern is likely to exist in Rwanda. Indeed the numbers of children enrolled, particularly in the early grades of primary show that this is a certainty. For example, the starting age for grade 1 of primary school in Rwanda is 7 years old, but while there were likely to be just over 300,000 children aged 7 in the country in 2013, close to 700,000 children were enrolled in grade 1.

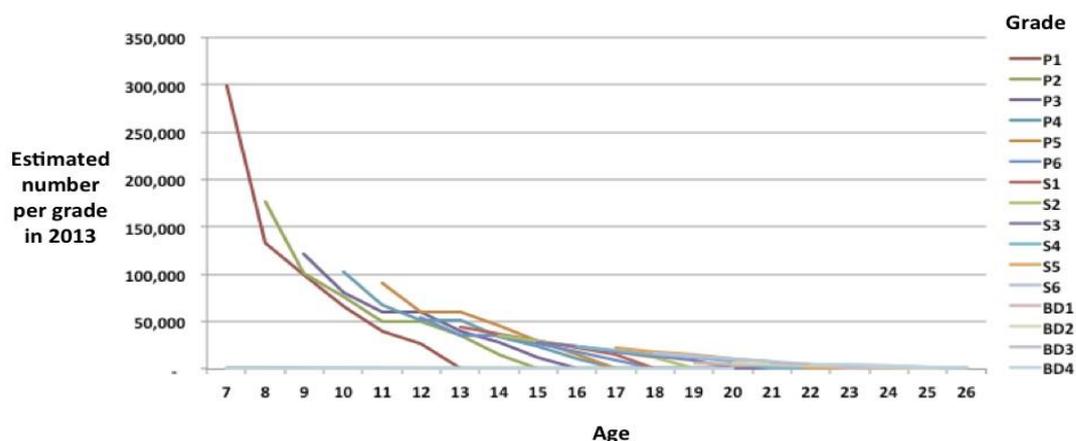
Figure 2: Enrolment distribution for grades by age in regional countries



Source: Lewin and Sabates (2009)

The most accurate and up-to-date population estimate in Rwanda comes from the Integrated Household Living Conditions Survey 3 (EICV 3), a large household survey conducted across the country between November 2010 and November 2011. We use this data as the estimate for 2011 population. While EICV 3 splits this by age group, we break that down to individual ages, utilising the natural growth rate between these age groups to estimate the growth for particular ages. This information on the number of children at each age, combined with the regional estimates above, allows us to estimate the distribution of age for each grade. These are shown in Figure 3.

Figure 3: Estimated breakdowns of each grade by age utilised for VfM model



Source: Author estimates, based on information from NISR (2012) and Lewin and Sabates (2009)

### 2.3.3 Estimating the current numbers per year group for tertiary level

The tertiary level information available does not break down the overall number into the individual year groups. Given the bachelors courses in Rwanda take four years, we estimate the numbers split between four years taking bachelors or diploma courses in 2013, assuming a six per cent annual drop-out rate (which is the rate for upper secondary level).

Table 6: Split between different years of tertiary level assumed in VfM model

Stage of education	Number enrolled
Number enrolled for Bachelors in 2013	68,246
Number enrolled for Diploma in 2013	12,557
<b>Bachelors and Diploma number combined</b>	<b>80,803</b>
Number assumed in first year: BD1	21,999
Number assumed in second year: BD2	20,754
Number assumed in third year: BD3	19,579
Number assumed in fourth year: BD4	18,471

Source: GoR (2014b). Author estimates. Assumption of 6 per cent annual drop-out.

### 2.3.4 Drop out, repetition and progression

The VfM model utilises the data provided by the GoR 2013 Education Statistical Yearbook for estimates of the drop-out rates, repetition rates and progression rates for particular grades and between different levels of education (GoR, 2014b). These rates are shown in Table 7. Unfortunately no data is available on drop-out rates for tertiary level education, so these are assumed to be the same as for senior secondary. All of these rates are then assumed to carry on into the future. The rate of transition from finishing upper secondary to tertiary education is estimated using an estimate of the 2012 to 2013 transition rates between these levels.

Table 7: Repetition, drop out and progression rates used in VfM model

	Repetition rate	Drop-out rate	Progression rate
Primary level	12.5%	11.1%	76.4%
Lower secondary level	6.2%	17.7%	76.1%
Upper secondary level	1.7%	6%	92.3%
Upper secondary to tertiary transition	-	-	41.1%
Tertiary level	-	6%	94%

Source: GoR (2014b), progression rate from upper secondary to tertiary calculated using 2012 and 2013 data, tertiary level drop-out rate assumed to be same as for upper secondary.

### 2.3.5 Running the education model into the future

The model is used to run through into the future to see where and when different cohorts leave education, which in turn is used to estimate the years of education gained. Years of education are calculated based on the highest grade an individual reaches – so for example a child dropping out during grade 5, will be assumed to have had four full years of education, regardless of if they repeated a particular grade, and are then classified accordingly. In total there are just over 3 million individuals in the cohort, and the model is run for these individuals until 2034 based on all of the key assumptions laid out above, notably that repetition, drop-out and progression rates continue and do not decline or increase over time. Twenty years is a period that allows the initial P1 cohort to get to graduation at BD4 with some repetition.

**Table 8: Model estimates of years of education achieved by individuals in 2013 cohort**

Stage of drop-out	Number dropping out at each stage	Years of education	Percentage	Cumulative percentage
Drop-out during P1	84,254	0 years	2.8%	2.8%
Drop-out during P2	137,894	1	4.5%	7.3%
Drop-out during P3	171,967	2	5.7%	13.0%
Drop-out during P4	193,467	3	6.4%	19.4%
Drop-out during P5	207,230	4	6.8%	26.2%
Drop-out during P6	203,904	5	6.7%	32.9%
Drop-out during S1	292,672	6	9.6%	42.6%
Drop-out during S2	260,089	7	8.6%	51.2%
Drop-out during S3	228,743	8	7.5%	58.7%
Drop-out during S4	64,808	9	2.1%	60.8%
Drop-out during S5	65,309	10	2.2%	63.0%
Drop-out during S6	64,590	11	2.1%	65.1%
Drop-out after S6	585,203	12	19.3%	84.4%
Drop-out during BD1	25,824	12	0.9%	85.3%
Drop-out during BD2	25,520	13	0.8%	86.1%
Drop-out during BD3	25,162	14	0.8%	86.9%
Drop-out during BD4	24,755	15	0.8%	87.7%
Complete BD4	371,747	16	12.3%	100.0%

### 2.3.6 Modelling the labour market and returns to education

The next step is to then model the returns to education accrued by the cohort during their working lives. The model extends far into the future, assuming that for those not still in education, paid employment begins at the age of 16. This goes to retirement, which is assumed to be the current Rwanda retirement age of 60 years old<sup>26</sup>, taking the youngest part of the cohort, aged 7 in 2013, through to their retirement in 2066. The model does not take into account periods of unemployment.

The returns to education estimates are the key variable in terms of generating benefits in the model. Returns to education estimates used in the model come from the latest wage data available from Rwanda - a survey conducted by the Wage Indicator Foundation in Amsterdam (Besamusca et al., 2013). This survey was conducted between late October and early December 2012, with a total of 2,074 persons interviewed in towns in all provinces of Rwanda. The survey found a median net hourly wage of the total sample of 450 Rwandan francs (RWF) (£0.39), with the respondents working an average of 60 hours per week and 5.9 days.

<sup>26</sup> <http://www.csr.gov.rw/content/pension-benefits>

The only published results on returns to education for Rwanda are based on data from the 1999-2001 Household Living Conditions Survey. Lassibille and Tan (2005) estimated returns to education for primary schooling of 19.4 per cent, for secondary of 29 per cent, and for higher education of 33.3 per cent. However, not only are these estimates based on old data, they are based on data from when Rwanda was more immediately a post-war country where enrolment ratios particularly for secondary and tertiary levels were significantly lower than they are today. With a lower supply of skilled labour, it is likely that the returns available then were larger than they are today.

In addition, the returns estimated by Lassibille and Tan (2005) combined with the wage data available in Besamusca et al. (2013) would indicate that the hourly wage for someone with tertiary education today would be in excess of 4,000 RWF per hour (£3.74) compared to the estimate of 1,369 RWF per hour (£1.24) as measured in the 2012 survey.

Table 9 shows some estimates of returns to education from other countries. Returns to education studies have fallen out of fashion in recent years, so these estimates themselves are also relatively out-of-date. Psacharopoulos and Patrinos (2004) found returns to education are substantial and higher for countries with lower per capita incomes. They find some evidence of diminishing returns to schooling, that is, returns being higher for primary level than for secondary level. However, evidence cited by Schultz (2004) shows returns measured by household surveys for a number of African developing countries that seem to be higher at secondary and post-secondary levels than at lower education levels.

**Table 9: Private economic rates of return to education by level and per capita income**

Per capita income group	Primary	Secondary	Higher
Low income (\$755 or less)	25.8%	19.9%	26%
Middle income (up to \$9,265)	27.4%	18%	19.3%
High income (\$9,266 or more)	25.6%	12.2%	12.3%
World	26.6%	17%	19%

Source: Psacharopoulos and Patrinos (2004) estimates

Country	Primary	Middle	Secondary	Higher
Ghana (1998)	11%	3.9%	12%	44%
Côte d'Ivoire (1987)	15%	14%	22%	16%
Kenya (1994)	-	11%	7.4%	21%
South Africa (1993)	-	1.4 - 7.3%	20 - 22%	20 - 30%
Nigeria (1999)	1.6%			12.7%
Burkina Faso (1998)	7.9%		10.9%	12.9%

Source: Schultz (2004) estimates

Combining this range of information led us to use more conservative estimates for returns to additional years of schooling. Table 10 shows the estimates used. When applying these rates to the wage for 'no education' found by Besamusca et al. (2013) of 98 RWF (£0.09), an estimate for the tertiary level hourly wage is found of 1,235 RWF (£1.12), much closer to the estimate from that study. This justifies the choice made for returns to education in the model. Sensitivity analysis is conducted on these rates of return later in the paper.

**Table 10: Returns estimates used in the model**

Level of education	Return to year of schooling
Primary	15%
Lower Secondary	15%
Upper Secondary	20%
Tertiary	20%

These rates of return to schooling are used in the model to calculate the wages in the labour market for each individual in our cohort. In addition, an assumption is made that real wages increase over time by 2.5 per cent per year. This is based on an estimate of Rwandan real wage growth from Becker (2013), who uses data from the International Monetary Fund (IMF) and International Labour Organisation (ILO).

### 2.3.7 The share of the returns to education for which one year is responsible

One of the clear complicating factors of estimating the life-time returns to a cohort for a given year of education is that the process of education takes many years. As such this year's investment in education is just a small component of the total amount received for any given child. The model therefore needs to calculate how much of the returns measured are attributable to this year's education. In order to calculate this, a measure is required that shows the number of years of education provided to all those in the cohort.

The model estimates this into the future, including repetition. Into the past, the model assumes that each individual completed all the grades prior to their current grade, without repetition. Completing this modeling shows for each grade the percentage of the overall education received that occurred this year. These are shown in Tables 20 and 21 at the end of this Annex, with averages for primary, junior secondary, senior secondary and tertiary levels applied to factor down the overall returns to education. This can be seen as the attribution of the overall benefits to this particular year.

### 2.3.8 Discount rate applied

As the model seeks to measure returns far into the future, a discount rate is essential for the model to accurately reflect the measure of costs and benefits faced today. As set out in White, Hodges and Greenslade (2013) and the HM Treasury Green book (HM Treasury, 2011), there are two approaches to thinking about the discount rate:

- **the social rate of time preference (SRTP)**, which assesses the value society attaches to present as opposed to future consumption; and
- **the social opportunity cost of capital (SOC)** which seeks to proxy the marginal social return if funds were invested privately; this is seen as more appropriate in certain developing country contexts with severe resource scarcities – including limited access to international finance markets – which mean that SRTP will understate the 'true' discount rate.

In addition the SRTP is likely to be higher in developing countries, due to the expectation that higher growth rates will occur in future and combined with a declining marginal utility of income this means the future should be discounted at a higher rate than in a lower growth country. The discount rate applied in the model is therefore 10 per cent, which also follows DFID guidance of a discount rate in the range of 8-12 per cent for developing countries (p.24 of "Guide to Investment Appraisal for DFID Economists", 2005). The sensitivity analysis undertaken below also looks at changes if the discount rate differs.

### 2.3.9 Overall results for Test A

The overall results for Test A find the PV of benefits to be £14 million, with the PV of costs simply the £1.9 million disbursed in RBA for the 2013 period. This implies a NPV of £12.1 million, and a benefit-cost ratio of 7.4. This suggests that aid to education does provide overall VfM, even when significantly discounting future returns to education. The estimates are based on the idea that this aid pays for 0.4 per cent of the benefits measured in the model, i.e. the percentage that the aid itself would represent of this amount.

One note of caution on this result relates to the assumption that all expenditure on education is equal. For various reasons, it may be that money spent by private individuals is more likely to generate returns to education, this could be because individuals are better able to make educational choices,

and because individuals are less likely to waste their own resources. If private expenditure on education generated a greater proportion of the returns, then the returns estimated in model A would be concomitantly lower.

### 2.3.10 Sensitivity analysis

In order to look at how sensitive the model developed is to variations in the assumptions made, Table 11 shows the NPVs and benefit-cost ratios for six scenarios:

1. The discount rate at the lower end of the DFID recommended range at 8 per cent, rather than 10 per cent.
2. The discount rate at the upper end of the DFID recommended range at 12 per cent.
3. A scenario with higher returns to education, based on some of the higher estimates discussed above in this paper – with 20 per cent returns for primary, 20 per cent for upper and lower secondary, and 25 per cent returns to education for tertiary level.
4. A scenario with lower returns to education, based on the lower of the estimates cited above – with 10 per cent returns for primary and lower secondary, and 15 per cent returns for both upper secondary and tertiary levels.
5. The rate of real wage growth in Rwanda at 0 per cent.
6. The rate of real wage growth in Rwanda at 5 per cent.

**Table 11: Sensitivity analysis for test A (GBP million)**

Scenario	PV of benefits	Cost attributable to RBA	NPV of benefits less costs	Benefit: cost ratio
Overall model	14.0	1.9	12.1	7.4
Discount rate of 8%	12.2	1.9	10.4	6.5
Discount rate of 12%	8.8	1.9	6.9	4.7
Rates of return higher (20% primary / 20% junior secondary / 20% senior secondary / 25% tertiary)	14.0	1.9	12.1	7.4
Rates of return lower (10% primary / 10% junior secondary / 15% senior secondary / 15% tertiary)	4.7	1.9	2.8	2.5
Real wage growth of 0%	5.8	1.9	3.9	3.1
Real wage growth of 5%	14.0	1.9	12.1	7.4

The analysis here shows how the model is sensitive to changes in the rates of returns to education, which generate the benefits for this model. The costs assessed remain constant as they have been assumed to be the £1.9 million disbursed in RBA for the 2013 period. There may be reasons why real wage growth would not stay at 2.5 per cent as used in the model over time, particularly if Rwandan economic growth were to slow, and/or be predominantly based in low employment industries such as those oriented to export or service industries based in Kigali, which would not necessarily benefit the average Rwandan. As such the sensitivity case for lower real wage growth should be considered a possibility.

Attempts to quantify returns to education can generate controversy in the economics literature. In particular, the distinction between quantity and quality is often seen as a critical distinction. While there is little data available for developing countries due to the paucity of data on quality measures, this finding should be taken into account, given that the model presented here is primarily focused on quantity rather than quality.

### 3 Test B: VfM of RBA compared to counterfactual of aid delivered by non-PbR method

The second test for VfM examines the additional value of providing RBA against the counterfactual of providing the aid via another non-PbR method, for example by sector budget support (SBS). This is the VfM test of the more direct theory of change of RBA – that the incentive effect will lead to greater performance against the defined metrics – in this case the completion rates for P6, S3, and S6.

The VfM approach seeks to distinguish between two ways of looking at test B, the first B1 looks at the model at face-value, that is utilising the payment mechanism design where the underlying time-trend for change is effectively zero, and any positive change is counted. This means looking at the number of ‘extra sitters’ of examinations at P6, S3 and S6, assuming these to be caused by RBA, and then measuring the results into the future.

The second version of test B, B2 looks at the RBA evaluation’s econometric model, and the specific predictions of that model for how much of the change measured can be said to be additional. Thus, ‘additional sitters’ are used for B2, and modelled to measure benefits into the future.

#### 3.1 Costs under Test B

The costs under test B differ from those for test A. The counterfactual for test B is that the aid would have been provided but by another means – therefore the aid itself is not a cost for test B. The costs for test B are instead the specific costs associated with RBA that would not be present under another instrument. This includes the cost of verification and the cost of the evaluation of the RBA pilot.

Given that the year in question in this paper is 2013, only the costs associated with this particular year are counted. Thus, the £90,000 for the cost of verifying the 2013 results forms part of the cost. The evaluation cost is split into three, to effectively attribute a third of the cost to each of the years of the RBA pilot. A third of this cost is then £144,000, and this is counted as a cost for test B.

In addition to these costs, there are costs associated with the model for test B. These costs are not borne by DFID but by the education system itself, and therefore by the Government of Rwanda as well as private expenditure on education. The model estimates the numbers of years additional finishers at each grade will continue in education. The cost of this education is then attributed to the fact they have now progressed through school (as in the counterfactual they would have left school).

The costs used by the model are those using GoR (2014a) budget data, as well as GoR (2014b) education data. This finds unit costs per person at different levels of education – these costs are £32 per primary school pupil per year, £272 per secondary school pupil per year, and £1,041 per tertiary pupil per year. These costs are uprated by an assumed inflation rate of 5 per cent per year to account for the costs demonstrated by the model. Table 12 shows the high level PV of these costs for different types of completers.

**Table 12: Present value of costs for additional completers at P6, S3, S6 (GBP millions)**

Level of completion	Present value of associated costs
1,000 additional students complete P6	1.63
1,000 additional students complete S3	1.91
1,000 additional students complete S6	1.54

#### 3.2 Benefits under test B

The benefits under test B will be those attributable to the presence of RBA as an incentive mechanism, as measured by the Upper Quartile evaluation. The key assumption here is that what happens following the introduction of RBA would not have happened anyway. There are two ways of modelling this assumption, providing two estimates for Test B, these are:

- I. The benefits from the ‘extra’ completers at P6, S3 and S6, as paid out upon through the payment mechanism of RBA as it has been designed.
- II. The benefits from ‘additional’ completers at P6, S3 and S6, estimated to be statistically significant by the econometric modelling of the evaluation.

The first option for estimating benefits is less rigorous. That is because the baseline time-trend for the RBA payment mechanism is assumed to be flat, so any increase experienced is paid out upon. The counterfactual of a flat time-trend is not particularly scientific, although it is the counterfactual on which the system has been set. This is generous to RBA in the sense that some of the improvements may have happened without RBA, but it provides a benchmark resting on fewer assumptions.

The second benefit calculation is much more rigorous and is based on looking at the underlying time-trend of previous years, and other more rigorous assumptions. Completers of P6, S3 and S6 will only be included if they can be shown to be ‘additional’ by the econometric modelling used in the evaluation.

### 3.2.1 Estimating additional years of education achieved

The three grades of interest for the RBA model as designed are P6, S3 and S6. The key step to estimate the benefits of this model of RBA is therefore to estimate the additional years of education that are likely to occur for the extra or additional completers for these grades. The methodology applied is exactly the same for both the B1 and B2 methodologies.

The same model used for test A was applied here. This includes assumptions about the repetition, drop-out and progression rates, taken from GoR data. Figure 4, Figure 5 and Figure 6 show the estimated number of years of education for additional or extra completers at each of the three grades of interest. All of the figures show a spike at 12 years of education, which is reflective of the large numbers of students who do not progress to tertiary level education despite completing secondary school.

Figure 4: Years of education for additional progression to end of P6

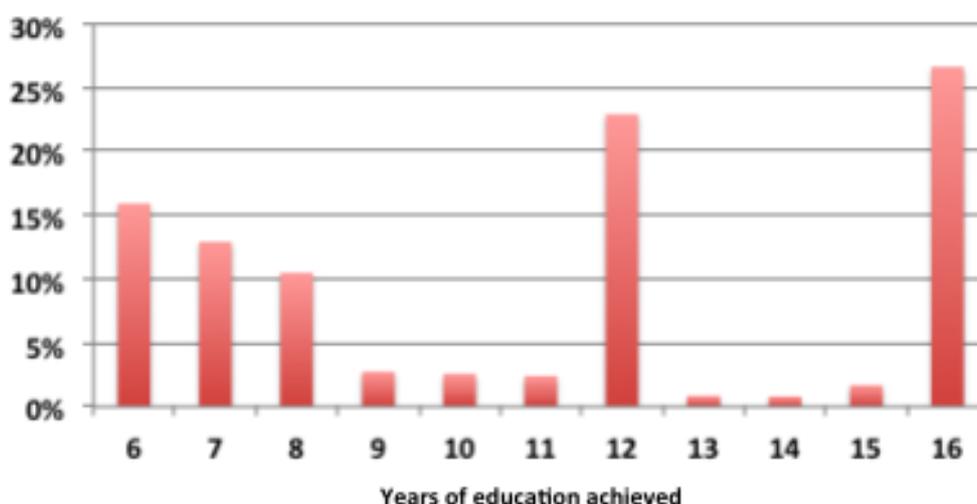


Figure 5: Years of education for additional progression to end of S3

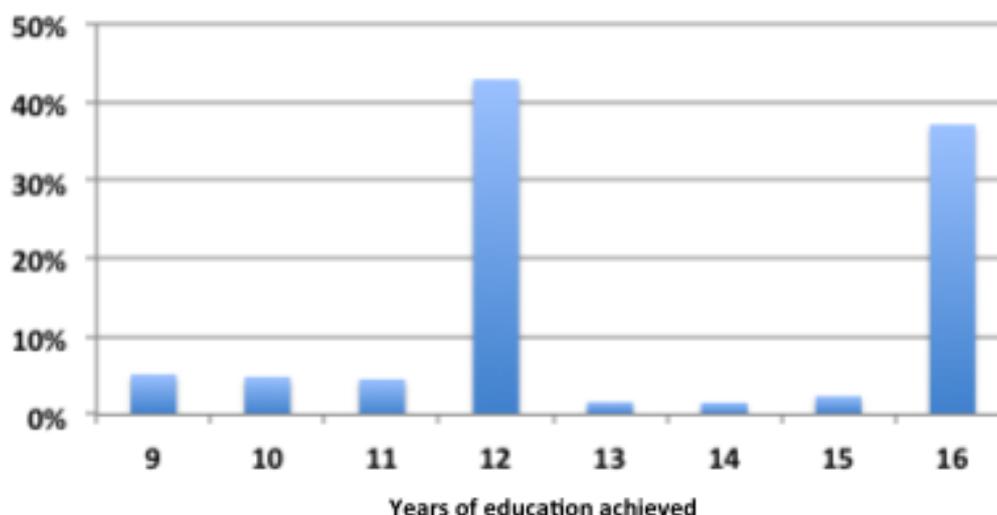
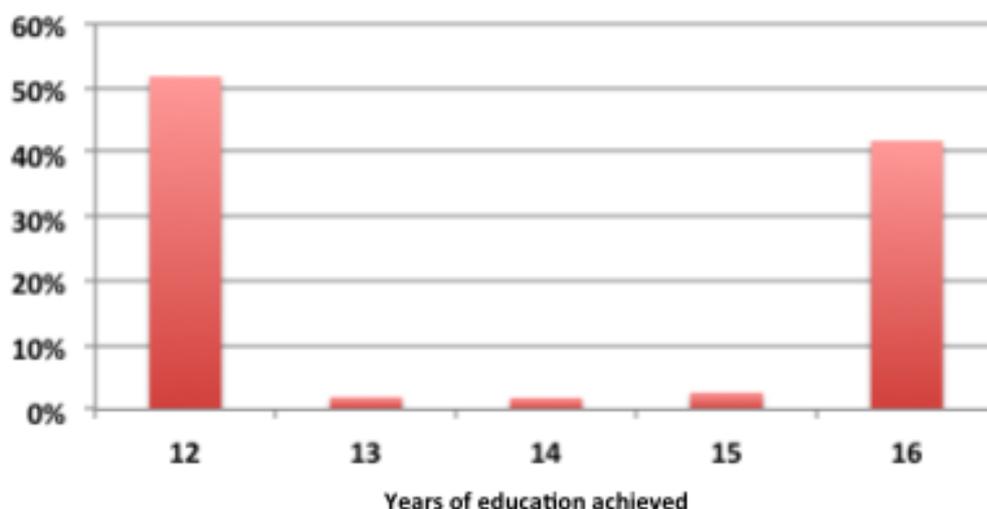


Figure 6: Years of education for additional progression to end of S6



### 3.2.2 Modelling labour market outcomes for test B

The assumptions underlying test A are again applied to test the labour market outcomes of additional completers at P6, S3 and S6. Notably, this includes the assumption that individuals enter employment at 16 years of age if they are no longer in school, and that all individuals end work at 60 years of age. In addition, the same returns to education estimates are used.

Table 13: Present value of returns to education for additional progression at P6, S3 and S6

Cohort	Counterfactual	Present value of returns to education if continue in school	Present value of counterfactual if leaving school	Present value of cohort less counterfactual
1,000 additional progressing at P6	1,000 dropping out at P6	£10.3 million	£3.6 million	£6.7 million
1,000 additional progressing at S3	1,000 dropping out at S3	£18.3 million	£8.2 million	£10.1 million
1,000 additional progressing at S6	1,000 dropping out at S6	£24.6 million	£15.9 million	£8.6 million

The model also measures the benefits of additional progression at P6, S3 and S6 in the labour market as returns to education. This is measured against the counterfactual of them dropping out of education at these stages. Crucially, they would also of course be earning income in the labour market, but less due to the lower returns to education with less years. Table 13 shows the PV of the benefits for different levels against the counterfactual. These are a good measure of the different levels of benefits achievable in the labour market with different outcomes, and while returns are lower for P6 individuals, compared to the alternative of dropping-out they are proportionately higher than for drop-outs at S3 or S6.

### 3.2.3 Extrapolating using 2013 results

The above methodology is then applied to the actual numbers from 2013. In terms of the test for B1, this is simply the extra number of sitters at P6, S3 and S6 (with negative numbers counted as zero). This is shown in Table 14, with over 13,000 extra sitters for S3, and over 3,000 for S6. These numbers are the increases experienced in 2013 over 2012.

**Table 14: Number of 'extra sitters' for 2013 – used for B1**

Number of extra sitters at P6 (compared to 2012)	<b>0</b>
Number of extra sitters at S3 (compared to 2012)	<b>13142</b>
Number of extra sitters at S6 (compared to 2012)	<b>3489</b>

Table 15 then shows the number of estimated 'additional sitters', with only a number represented for S3 at over 10,000. This draws on the evaluation econometric report and model. Specifically the model 2b is used from that report.

**Table 15: Number of 'additional sitters' for 2013 – used for B2**

Number of additional sitters at P6 (compared to 2012)	<b>0</b>
Number of additional sitters at S3 (compared to 2012)	<b>10608</b>
Number of additional sitters at S6 (compared to 2012)	<b>0</b>

### 3.2.4 Overall findings of Test B1

The test B1 finds very large benefits, with the 13,000 extra sitters at S3 and over 3,000 sitters at S6 generating a PV of benefits of over £160 million. This is offset against the additional costs of this education of over £30 million, as well as the small evaluation and verification costs, generating a NPV for test B1 of over £130 million, with a benefit-cost ratio of 5.3. While built on a large number of assumptions, these returns would suggest that the RBA appears to be very good VfM. However, this is only if these sitters can be viewed as additional to a counterfactual of providing aid through another mechanism. For test B1 this finding is not likely to be robust, so the large finding here should probably be discounted relative to test B2.

**Table 16: Overall findings summary for test B1 (GBP millions)**

Extra sitters for grade	PV benefits	PV costs	NPV	B:C ratio
<b>P6</b>	-	-	-	-
<b>S3</b>	132.8	25.1	107.7	5.3
<b>S6</b>	30.1	5.4	24.7	5.6
<b>2013 evaluation costs</b>		0.2		
<b>Total</b>	162.9	30.7	132.4	5.3

### 3.2.5 Overall findings of Test B2

The overall findings for the test B2 are that the PV of benefits generated by the 10,608 additional sitters at S3 come to over £107 million. This is offset against the £20 million cost of their additional years of education, as well as the evaluation cost, generating a NPV of £87 million, and a benefit-cost

ratio of 5.2. This is a smaller NPV than for test B1, but is much more robust, as the numbers are built on econometric modelling designed to calculate how much of the change can be viewed as additional. Even B2 provides a strong case that RBA provides good VfM on its own theory of change, i.e. that the incentive mechanism from the PbR generates large results in terms of future returns to a better-educated population.

**Table 17: Overall findings summary for test B1 (GBP millions)**

Additional sitters for grade	PV benefits	PV costs	NPV	B: C ratio
<b>P6</b>	-	-	-	-
<b>S3</b>	107.2	20.2	87.0	5.3
<b>S6</b>	-	-	-	-
<b>2013 evaluation costs</b>		0.2		
<b>Total</b>	107.2	20.5	87.0	5.2

A note of caution to the findings for both B1 and B2 is that the model assumes stability in underlying variables. This includes the repetition, drop-out and progression rates discussed above, but also includes the quality of education. If it was the case that those students who were now additionally sitting the final tests for P6, S3 and S6, were of a lower quality than other students, then they may face higher drop-out rates in future and therefore be less likely to progress through education as the model would predict.

In addition, the VfM findings here should very much be taken together with the econometric findings, and the qualitative findings from the overall evaluation of RBA. The findings for test B in particular are only really relevant if the overall evidence suggests that the GoR are responding to the incentive mechanism provided by RBA, and in a way that does not mean that perverse incentives have been generated and the general quality of education has diminished.

### 3.2.6 Running model B2 with the assumption of drop-out after finishing S3

Perhaps the most stringent version of the test that can be done is to control for the idea that the additional sitters at S3 may have been generated by ensuring children that would have dropped out anyway get to the end of the year. In this case they may drop out afterwards, and therefore not follow the predictions of the model in terms of progressing to S4. In such a case, the comparison is between someone who has finished S3, and hence has 9 years of education, with someone who has not, who just has 8 years of education. The PV of the returns to education for the 10,608 additional additional sitters is £105.9 million, compared to economic returns of £86.6 million if they drop out. This gives a NPV for the test, offsetting RBA evaluation costs, of £19.1 million.

### 3.2.7 Non-economic benefits: health and child mortality

Other benefits that can be partly quantified are those to health, as well as the transmission of education benefits to future generations. In developing country contexts data on these ‘non-economic’ returns can be sparse – however the likes of Gakidou et al. (2010) estimate strong links between education levels and reductions in child mortality across countries, attributable to the education of more girls and the decisions they then make as women. One commonly cited statistic is that for each additional year of school mothers complete, child deaths drop by more than 8 per cent<sup>27</sup>. This estimate comes from international data rather than a rigorous cohort based approach, nevertheless it gives an indication of the scale of the benefits that are possible from greater education of women.

Here we provide an estimate for model B2, based on the number of additional sitters at S3 and the additional years of education this implies. The model predicts that additional progression from S3 leads to the average number of years of schooling to increase from 9 years to 12.8 years, so a 3.8-

<sup>27</sup> See <http://dhsprogram.com/pubs/pdf/WP1/WP1.pdf> and [http://www.southampton.ac.uk/medicine/news/2014/05/02\\_sharp\\_decline\\_in\\_maternal\\_and\\_child\\_deaths\\_globally.page](http://www.southampton.ac.uk/medicine/news/2014/05/02_sharp_decline_in_maternal_and_child_deaths_globally.page)

year increase. Applying the statistic related to child mortality would imply a 27 per cent reduction in child mortality for the children of these females when they become mothers.

Of the additional sitters at S3 as measured by the evaluation's econometric model, 6,546 of them are female. Child mortality rates were at 76 out of 1,000 in Rwanda in 2010 (WHO, 2014) and on a declining trend. If that trend continues it could be expected to reach 30 per 1,000 by 2019. If each woman had three children (the current average in Rwanda is higher than that), then that would imply the additional years of education generated from RBA could see over 150 under-5 year olds surviving who might otherwise not have done.

This finding should be taken with very high levels of caution, as a number of trends are utilised to extrapolate into the future – notably that the 8 per cent figure is accurate, and that other assumptions in the model hold.

### 3.2.8 Sensitivity analysis

Given the scale of the model used to assess the VfM of RBA, it is important not to ignore the large part played by some of the key assumptions around model variables. We have therefore conducted sensitivity analysis to observe how the value created by the model responds to changes in the variables. Notably for test B, we have looked at ten additional scenarios:

1. The discount rate at the lower end of the DFID recommended range at 8 per cent, rather than 10 per cent.
2. The discount rate at the upper end of the DFID recommended range at 12 per cent.
3. The school drop-out rate for primary, lower secondary and upper secondary reduced by 5 percentage points (making it 6.1 per cent, 12.7 per cent and 1 per cent respectively for the three levels).
4. The school drop-out rate for primary, lower secondary and upper secondary increased by 5 percentage points (making it 16.1 per cent, 22.7 per cent and 11 per cent respectively for the three levels).
5. The transition rate between upper secondary and tertiary level education increased by 10 percentage points (up to 51.1 per cent).
6. The transition rate between upper secondary and tertiary level education reduced by 10 percentage points (down to 31.1 per cent).
7. A scenario with higher returns to education, based on some of the higher estimates discussed above in this paper – with 20 per cent returns for primary, 20 per cent for upper and lower secondary, and 25 per cent returns to education for tertiary level.
8. A scenario with lower returns to education, based on the lower of the estimates cited above – with 10 per cent returns for primary and lower secondary, and 15 per cent returns for both upper secondary and tertiary levels.
9. The rate of real wage growth in Rwanda at 0 per cent.
10. The rate of real wage growth in Rwanda at 5 per cent.

The results of the scenario analysis for the different benefits of P6, S3 and S6 completers is shown below in Table 18. This shows that the variables of the discount rate and the rate of return to education have very large impacts on the measured benefits from the model. Changes to the average rate of drop-out, as well as transition from upper secondary to tertiary level education also see significant changes to the PV of benefits estimated by the model.

Table 18: Sensitivity analysis on results of the model test B1, (GBP millions)

Scenario	PV benefits	PV costs	NPV	B:C ratio
Overall	163.1	30.7	132.7	11.1
Discount 8%	231.4	30.7	201.0	15.4
Discount 12%	118.0	30.7	87.6	8.3
Drop-out rate 5 percentage points lower (school)	179.6	30.7	149.2	11.8
Drop-out rate 5 percentage points higher (school)	148.0	30.7	117.6	10.5
Transition from upper secondary to tertiary 10 percentage points higher	176.9	30.7	146.5	12.3
Transition from upper secondary to tertiary 10 percentage points lower	149.2	30.7	118.8	10.0
Rates of return higher (20% primary / 20% junior secondary / 20% senior secondary / 25% tertiary)	282.1	30.7	251.7	19.5
Rates of return lower (10% primary / 10% junior secondary / 15% senior secondary / 15% tertiary)	70.3	30.7	39.8	4.8
Real wage growth of 0%	102.6	30.7	72.1	7.3
Real wage growth of 5%	265.9	30.7	235.5	17.6

Table 19: Sensitivity analysis on results of the model test B2, (GBP millions)

Scenario	PV benefits	PV costs	NPV	B:C ratio
Overall	107.2	20.5	87.0	5.3
Discount 8%	153.6	20.5	133.4	7.6
Discount 12%	76.7	20.5	56.5	3.8
Drop-out rate 5 percentage points lower (school)	120.5	20.5	100.3	6.0
Drop-out rate 5 percentage points higher (school)	95.0	20.5	74.8	4.7
Transition from upper secondary to tertiary 10 percentage points higher	115.2	20.5	95.0	5.7
Transition from upper secondary to tertiary 10 percentage points lower	99.2	20.5	79.0	4.9
Rates of return higher (20% primary / 20% junior secondary / 20% senior secondary / 25% tertiary)	183.2	20.5	163.0	9.1
Rates of return lower (10% primary / 10% junior secondary / 15% senior secondary / 15% tertiary)	46.5	20.5	26.3	2.3
Real wage growth of 0%	66.4	20.5	46.1	3.3
Real wage growth of 5%	177.0	20.5	156.8	8.8

The key thing to note about the sensitivity analysis is that it shows that the model is sensitive to variations in a number of variables. The model has needed to make a number of assumptions, often this constitutes an assumption that current trends will continue into the future. In reality change can be discontinuous. Particularly with respect to RBA, it is very important to note again that the assumption that RBA itself is not a discontinuity is key – i.e. RBA does not change behaviour around other aspects of the system that would impact on educational outcomes. This is particularly relevant with respect to the quality of education, which is likely to be the main underlying driver of economic and non-economic returns to education. The models presented here can only be meaningful if quality is either stable or improving over time.

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## Additional tables

Table 20: Cohort split assumed for each grade by age

Grade	Cohort size	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
P1	664161	45%	20%	15%	10%	6%	4%														
P2	507092		35%	20%	15%	10%	10%	7%	3%												
P3	406487			30%	20%	15%	15%	10%	7%	3%											
P4	341454				30%	20%	15%	15%	10%	7%	3%										
P5	301957					30%	20%	20%	15%	10%	5%										
P6	181013						30%	20%	20%	15%	10%	5%									
S1	147547							30%	25%	20%	15%	10%									
S2	120001								30%	25%	20%	15%	10%								
S3	93974									30%	25%	20%	15%	10%							
S4	78300										30%	25%	20%	15%	10%						
S5	73026											30%	25%	20%	15%	10%					
S6	53522												30%	25%	20%	15%	10%				
BD 1	21999													30%	25%	20%	15%	10%			
BD 2	20754														30%	25%	20%	15%	10%		
BD 3	19579															30%	25%	20%	15%	10%	
BD 4	18471																30%	25%	20%	15%	10%

**Table 21: Calculating the share of years for Model 1 for which education in 2013 is responsible**

Grade	Person-years of education pre-2013	Person-years of education 2013 or later	Person-years of education Total	Person-years of education in 2013	2013 % of total
P1	2,385,177	759,041	3,144,218	664,161	21.1%
P2	1,878,085	1,242,285	3,120,370	507,092	16.3%
P3	1,471,598	1,549,249	3,020,846	406,487	13.5%
P4	1,130,144	1,742,949	2,873,092	341,454	11.9%
P5	828,187	1,866,937	2,695,124	301,957	11.2%
P6	647,174	1,836,975	2,484,148	181,013	7.3%
<b>Primary average</b>			<b>17,337,798</b>	<b>2,402,164</b>	<b>13.9%</b>
S1	499,627	1,653,513	2,153,140	147,547	6.9%
S2	379,626	1,469,429	1,849,055	120,001	6.5%
S3	285,652	1,292,335	1,577,986	93,974	6.0%
<b>Lower secondary average</b>			<b>5,580,181</b>	<b>361,522</b>	<b>6.5%</b>
S4	207,352	1,080,129	1,287,480	78,300	6.1%
S5	134,326	1,088,489	1,222,815	73,026	6.0%
S6	80,804	1,076,498	1,157,301	53,522	4.6%
<b>Upper secondary average</b>			<b>3,667,596</b>	<b>204,848</b>	<b>5.6%</b>
BD 1	58,804	430,404	489,208	21,999	4.5%
BD 2	38,050	425,332	463,382	20,754	4.5%
BD 3	18,471	419,387	437,858	19,579	4.5%
BD 4	-	412,673	412,673	18,471	4.5%
<b>Tertiary average</b>			<b>1,803,121</b>	<b>80,804</b>	<b>4.5%</b>

## Annex 7 – Qualitative research tools

Prepared by Brendan Whitty, June 2014

### National level interviews

#### Completion

##### A: Articulated Strategic Priorities

#### A1. Has there been a change in the attitude to completion since the ESSP 2010?

- Does the ESSP 2013-18 treat completion differently to the ESSP 2010?
- How is completion prioritised against other values like access and quality (the commitment to 12YBE, investment in TVET and in ECCD and increased quality)?
- Why has the government decided to introduce a Quality Improvement Strategic Plan?
- *[For those with knowledge of girl's Education Strategy]:* Has there been a shift in prioritisation of girls' education?

#### A2. Do you think the RBA agreement has had any influence in any changes in how completion was prioritised?

#### A3. Can you indicate any *specific policy debates/discussions* when RBA made a difference? Are there any *specific reforms* that were triggered by RBA?

- Do you think it would have been different if the £9m was part of the DFID fixed tranche?

##### B: Implementation Plans

#### B1. How has improved completion been addressed in the annual planning documents since February 2012?

- Can you show specific actions or budget lines in the plans?
- To what extent has the need to achieve better completion rates been prioritised in the operational plans - against the other priorities? (e.g. TVET, ECCD, Higher Ed., 12YBE)
- *[For those with knowledge of girl's Education Strategy]:* Has there been a shift in prioritisation of girls' education on the plans?

[If there is a change:]

#### B2. Do you think the RBA agreement has had any influence in any changes in how completion was treated in implementation plans?

#### B3. Can you indicate any specific points in implementation plans when RBA has made a difference?

- Do you think it would have been different if the £9m was part of the DFID fixed tranche?

##### C: Execution of Completion-focus

#### C1. What is the linkage between District and MINEDUC / REB in:

- Responsibility against the action plans?
- Budget execution?
- Monitoring and accountability for delivery?

#### C2. Can you talk me through specific actions and activities since February 2012 at the District level to improve completion? (e.g. to reduce drop-out, improve retention, stop repetition, improve teaching and learning processes)

- Were these in any operational plans? Which ones?
- Can you refer me to any like circulars, briefing papers, website announcements, changes in guidance or policies for teachers or principals?
- Were they consistently enacted across all types of school and all Districts?

**C3. Last year we were told that REB visited the Districts to communicate the need for completion. Can you describe the process?**

- Will you do (or have you done) the same this year?
- Is this a specific visit, or a routine visit?

**C4. Do you know if the results-based aid agreement changed these implementation strategies?**

- Can you indicate any specific policy discussions or instances when RBA has made a difference?
- Do you think it would have been different if the £9m was part of the DFID fixed tranche?

*D: Budget Environment*

**D1. How are you using the RBA funds? Are they being used for education?**

**D2. Are there any resources or funds being dedicated specifically to improve completion rates?**

- What impact has the introduction of other priorities (12YBE, TVET and higher education) as priorities had on school resources – and on completion?

**D3. The first year evaluation suggested big differences across schools and districts in levels of school funding might account for the differences in completion: is there any proposal to respond to that?**

**D4. Are there any financial incentives being offered to improve completion rates?**

- During negotiations, the Government of Rwanda asked if funds could be funnelled directly to schools. Why did they do that?
- Did the Government of Rwanda eventually put that in place themselves? If not, why not?

**D5. Is there any other change in budgeting or resource-allocation referring specifically to completion?**

[If a positive answer to D1-D5:]

**D6. How were such changes decided upon?**

**D7. Has the RBA influenced how funds will be used and allocated?**

*E: Monitoring and Evaluation*

**E1. How is 'completion' included in the sector M&E framework embodied in the ESSP? Has it become more important in the JRES since February 2012?**

**E2. Do you think the way completion is addressed has changed significantly since February 2012? If so, how?**

**E3. How is completion addressed in the government monitoring system?**

- How are teachers and principals assessed on delivering completion at the school level?
- Does the EMIS track drop-outs and non-attendance?
- Are exam results published? We heard about a move towards publishing numbers of sitters rather than grades – is that right?
- Does the assessment Framework for Monitoring and Evaluation of Teachers emphasise completion?
- Does completion work at level of the EMIS?

[If they identify any relevant policies, then:]

**E4. What was the process by which these changes were designed and implemented?**

**E5. What was the role of DFID and the RBA in that change?**

*G: General Closing Questions*

**G1. What are the other main drivers putting completion on the agenda?**

- What about the Global Partnership for Education, which has completion at its core?

- What about the Common Performance Accountability Framework, and budget support conditions?

**G2. Is there anything else that you think we should be taking into account in the context of the focus on completion?**

**G3. What do you know about RBA?**

### Teachers' Proficiency in English

#### *A: Priorities and plans*

**A1. Do you think the importance of Teachers' Proficiency in English has changed as a priority since February 2012?**

**A2. How has that change been manifested in particular strategies or plans?**

- School Based Mentoring Programme was passed in 2012?
- What about reforms to Teachers Management Policy?

**A3. Did the RBA agreement have any role in these reforms?**

#### *B: Execution of plans*

**B1. Have there been changes in the way measures to improve teachers' proficiency have been implemented since February 2012?**

- Have there been practical changes in the way the SBMP is implemented?
- Have there been changes in the way teachers are licensed and assessed?
- Have there been any English-proficiency linked changes in terms and conditions?

**B2. What was the process by which these changes were designed and implemented?**

**B3. What was the role of DFID and the RBA in that change?**

#### *C: Budget Environment*

**C1. Are there any resources or funds being dedicated specifically to enhance teachers' proficiency in English?**

- Have they increased or reduced in funding recently?
- Is there any way that teachers' improvement is incentivized through additional funds?
- Anything to the School Based Mentoring Programme or improvements in teachers' training in English?

[In the event there was a change:]

**C2. What was the process by which these changes happened?**

- How does MINECOFIN link with MINEDUC and its priorities?

**C3. Was there any role for the RBA agreement in that change?**

#### *G: General Closing Questions*

**G1. Is there anything else that you think we should be taking into account in the context of the focus on teachers' proficiency in English?**

**G2. The first year evaluation suggests that the presence of female teachers was an important aspect to completion rates amongst girl students. How is that addressed?**

**G3. What do you think the differences might have been if DFID had channelled funds through the fixed tranche?**

## Qualitative Evaluation Year 2: District and School Level Interview Guides

### DISTRICT EDUCATION OFFICER INTERVIEW GUIDE

#### What you need:

Before conducting the interview, you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

#### Pre-interview guidance:

The purpose of this interview is to understand how the DEO sets priorities around completion and English proficiency. It will seek to understand the role of central government in setting the agenda and its relationship with the District. It also explores the way English proficiency is being addressed.

Please familiarise yourself with basic changes in completion rates and English Proficiency at the District level before the interview.

Make a note of any shifts in emphasis, or remarks outside the specific parts of the question schedule.

#### The interview:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [the District you are in], we are looking at two schools, [name them]. We would like to ask you about your priorities and the measures you have taken to achieve these priorities within your District. The interview will take an hour or slightly more. Are you happy to give the interview? “**

At this stage, don't mention completion or English: an important part is for them to articulate their priorities without skewing by mentioning particular areas.

Please provide an information sheet and ask for a signature for permission. Provide a business card, with contact details. Ask if they have any questions. Make sure you get the name, date. Include your own names and the name of the District in the heading of your notes.

Note: the interview may take more than an hour – some of the answers may be quite brief, but if the DEO is knowledgeable, then some answers may take some time.

#### A. General priorities

**“We want to ask about your priorities and successes in the context of Education over the past years, and for the coming years – in this District. We also wanted to understand a little bit more where these priorities are coming from.”**

1. What are the District's priorities for improving education in schools?
2. Have the priorities in your District changed over the past two years?
3. What have been the reasons for choosing these priorities in this District, above other priorities?
4. How does the District take into account Central Government (MINEDUC and REB) priorities?
5. Have you heard about the DFID results-based aid support? If so, can you give any detail?
6. What resources do you have available to deliver these priorities?

## **B. Completion**

**“We are now going to turn to some questions specifically on completion, drop-out and repetition of years. This has been a government priority for some time (acknowledge if the DEO has mentioned it) and it is a key target of the DFID aid programme that we are evaluating.”**

7. Can you describe how schools' completion rates have changed over the past two years in your District at different levels (P6, S3, S6) and for different genders?
8. To what do you attribute that change?
9. What have been the measures taken by your District in the past two years to improve completion through reducing repetition, drop-outs and encouraging children to stay in school at these different levels?
10. How do you specifically work to encourage schools to improve completion, reduce drop-outs and repetition?
11. How have the schools reacted to this work? Have there been challenges?
12. Has the central government communicated to you that improved completion is a key priority? If yes - how?
13. Are you held to account and how are you rewarded for supporting completion, through the imihigo contract or in other ways?

## **C. English Proficiency**

14. How would you assess changes in the quality of English proficiency among the teachers in the District over the past two years at primary, junior secondary and senior secondary level?
15. What measures have been adopted in the past two years in your District to seek to improve English proficiency?
16. Have there been sufficient resources and mentors allocated?
17. How have the schools reacted to the efforts to improve teacher's proficiency in English?
18. Has the central government communicated its priorities to improve English Proficiency to you? If yes - how?
19. Are you held to account or rewarded for increasing English proficiency of teachers in your District through your imihigo contract, or other mechanism?

**Closing:** thank the DEO for his/her time. Say that the information will be used to inform the evaluation. Ask if the DEO has any questions, and refer again to the contact details if further questions arise.

## SECTOR EDUCATION OFFICER INTERVIEW GUIDE

### What you need:

Before conducting the interview, you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

### Pre-interview guidance:

The purpose of this interview is to understand how the SEO implements priorities around completion and English proficiency. It will also seek to understand the link between the District and the Schools and the way English proficiency is being addressed.

Please familiarise yourself with basic changes in completion rates and English proficiency at the District level before the interview.

Make a note of any shifts in emphasis, or remarks outside the specific parts of the question schedule.

### The interview:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [the District you are in], we are looking at two schools. We would like to ask you about your priorities and the measures you have taken to achieve these priorities within your Sector. The interview will take up to an hour. Are you happy to give the interview?”**

At this stage, don't mention completion or English: an important part is for them to articulate their priorities without skewing by mentioning particular areas.

Please provide an information sheet and ask for a signature for permission. Provide a business card, with contact details. Ask if they have any questions. Make sure you get the name, date. Include your own names and the name of the Sector and District in the heading of your notes.

Note: the interview may take more than an hour – some of the answers may be quite brief, but if the SEO is knowledgeable, then some answers may take some time.

### A. General priorities

**“We want to ask about your priorities and successes in the context of Education over the past years, and for the coming years – in this Sector, in the light of the wider District priorities. We also wanted to understand a little bit more where these priorities are coming from.”**

1. What are the Sector's priorities for improving education in schools?
2. Have the priorities in your Sector changed over the past two years?
3. What have been the reasons for choosing these priorities in this Sector, above other priorities?
4. How does District government play a role in setting these priorities? What about central government?
5. How do you work with the DEO to deliver these priorities?
6. What resources do you have available to deliver these priorities?

### B. Completion

**“We are now going to turn to some questions specifically on completion, drop-out and repetition of years. This has been a government priority for some time (acknowledge if the DEO has mentioned it) and it is a key target of the DFID aid programme that we are evaluating.”**

7. Can you describe how schools' completion rates have changed over the past two years in your Sector at different levels (P6, S3, S6)?
8. To what do you attribute that change?
9. What have been the measures taken by the Sector/District administration to improve completion (e.g. through reducing repetition, drop-outs and encouraging children to stay in school)?
10. Have they differed across primary, junior secondary and senior secondary – and for boys and girls?
11. How do you specifically work to encourage schools in your Sector to improve completion, reduce drop-outs and repetition?
12. How have the teachers in your Sector reacted to pressure to improve completion?
13. Have there been challenges in implementing this priority?
14. Has the District or the central government communicated to you that improved completion is a key priority? If yes - how?
15. Are you held to account or rewarded for supporting completion, through the imihigo contract or in other ways?

### **C. English Proficiency**

16. How would you assess changes in the quality of English proficiency among teachers in the Sector over the past two years at primary, junior secondary and senior secondary level?
17. What measures have been adopted in the past two years in your Sector to seek to improve English proficiency?
18. Have there been sufficient resources and mentors allocated in your sector?
19. How have the schools reacted to the efforts to improve teacher's proficiency in English?
20. Has the District or central government communicated its priorities to improve English proficiency to you? If yes - how?
21. Are you held to account or rewarded for increasing English proficiency of teachers in your Sector through your imihigo contract, or other mechanism?

**Closing:** thank the SEO for his/her time. Say that the information will be used to inform the evaluation. Ask if the SEO has any questions, and refer again to the contact details if further questions arise.

## DISTRICT VICE MAYOR FOR SOCIAL AFFAIRS INTERVIEW GUIDE

### What you need:

Before conducting the interview, you should have:

4. Information Sheet
5. Permission Sheet
6. Business Card, providing contact details

### Pre-interview guidance:

The purpose of this interview is to understand how the Vice Mayor helps implement the priorities for the education sector set by the District, and in particular the role of completion and English proficiency within that. It will also seek to understand the role of central government in setting the agenda and its relationship with the District.

Please familiarise yourself with basic changes in completion rates and English Proficiency at the District level before the interview, and also look through the EICV3 report for the District.

Please make a note of any shifts in emphasis, or remarks outside the specific parts of the question schedule.

### The interview:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [the District you are in], we are looking at two schools. We would like to ask you about your priorities and the measures you have taken to achieve these priorities within your District. The interview will take up to an hour. Are you happy to give the interview?”**

At this stage, don't mention completion or English: an important part is for them to articulate their priorities without skewing by mentioning particular areas.

Please provide an information sheet and ask for a signature for permission. Provide a business card, with contact details. Ask if they have any questions. Make sure you get the name, date. Include your own names and the name of the school and District in the heading of your notes.

### A. General priorities

**“We want to ask about your priorities and successes in the context of Education over the past years, and for the coming years – in this District. We also want to understand a little bit more about where these priorities are coming from.”**

1. What are the District's priorities for improving education in school?
2. Are these in a District Development Plan formulated in the last two years?
3. What has been the reason for the District choosing these priorities, above others?
4. How does the District take into account Central Government (MINEDUC and the REB) priorities?
5. How do you ensure that Schools take up these priorities?
6. What resources or budget do you have to deliver these priorities?
7. Does the District receive support from any NGOs or Development Partners? Can you describe the nature of the support that you get?

### B. Completion

**“We are now going to turn to some questions specifically on completion, drop-out and repetition of years. This has been a government priority for some time (acknowledge if the Mayor has mentioned it) and it is a key target of the DFID support to the education sector.”**

8. Can you describe how schools' education outcomes have changed over the past two years in your District at the different levels – primary, junior secondary and senior secondary?
9. To what do you attribute that change?
10. What have been the measures taken by your District in the past two years to improve completion at these different levels?
11. How are these measures resourced? Where do these resources come from?
12. Has the central government communicated to you that improved completion is a key priority? If yes - how?
13. Are you held to account or rewarded specifically for increasing completion (i.e. reducing drop-outs and repetition and encouraging children to stay in school)? How?

### **C. English Proficiency**

14. How would you assess changes in the quality of English proficiency among teachers over the past two years at primary, junior secondary and senior secondary level?
15. What measures have been adopted in the past two years in your District to seek to improve English proficiency?
16. Has the central government communicated its priorities to improve English proficiency to you? If yes - how?
17. How are you held to account for increasing English proficiency of your teachers?

**Closing:** thank the Mayor for his/her time. Say that the information will be used to inform the evaluation. Ask if the Mayor has any questions, and refer again to the contact details if further questions arise.

## INSPECTOR INTERVIEW GUIDE – PROVINCE LEVEL, REB EMPLOYED

### What you need:

Before conducting the interview, you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

### Pre-interview guidance:

The purpose of this interview is to understand how the Inspector’s work includes reviews of completion and English proficiency. It will also seek to understand the role of inspections in supporting the achievement of the central government’s broader goals.

### The interview:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [the District you are in], we are looking at two schools, [name them]. We would like to ask you about your priorities and the measures you have taken to achieve these priorities within your Province more generally, and that District in particular. The interview will take an hour or slightly more. Are you happy to give the interview? “**

At this stage, don’t mention completion or English: an important part is for them to articulate their priorities without skewing by mentioning particular areas.

Please provide an information sheet and ask for a signature for permission. Provide a business card, with contact details. Ask if they have any questions. Make sure you get the name, date. Include your own names and the name of the school and District in the heading of your notes.

### A. General priorities

**“We wanted to ask about how your work as an inspector has reflected the government priorities for education, and how it helps to support and hold schools to account in achieving these goals.”**

1. Can you give a quick outline of the work that you do?
2. Can you give a brief outline of how your inspection work is trying to support the government’s priorities in improving education?
3. What are the key inspection criteria? Have they changed in the past two years?
4. How are the results of your inspections used, and by whom?
5. How does your work track and hold school principals or teachers to account?

### B. Completion

**“We are now going to turn to some questions specifically on completion, drop-out and repetition of years. This has been a government priority for some time (acknowledge if the Inspector has mentioned it) and it is a key target of the DFID support to education in Rwanda. We are trying to understand how this features in your inspection work.”**

6. Do completion rates – repetition and drop-outs – play a role in the inspection work that you are doing? If so, how?
7. Have there been changes in this focus, in the past two years?
8. Does your work track and hold schools to account for improving completion rates? If so, how?
9. From what you have seen, what measures have been taken by District Administrations (specifically

[Name District] in the past two years to improve completion?

10. Then, if necessary: Have there been measures adopted to reduce repetition and drop-outs?

**C. English Proficiency**

11. How does your inspection work review teachers' proficiency in English at different levels (i.e. primary, junior secondary, senior secondary)?

12. How would you assess changes in the quality of English proficiency among teachers over the past two years in the Districts and Schools you have inspected?

13. Is that different at different levels?

14. What have been the challenges?

15. Has the central or district government communicated its priorities to improve English Proficiency to you? If yes - how?

16. Are your findings on English proficiency used? If so, how?

**Closing:** thank the Inspector for his/her time. Say that the information will be used to inform the evaluation. Ask if the Inspector has any questions, and refer again to the contact details if further questions arise.

## COMMUNITY EDUCATION OFFICER INTERVIEW GUIDE

### What you need:

Before conducting the interview, you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

### Pre-interview guidance:

The purpose of this interview is to understand how the CEO understands his/her role.

### The interview:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [District X] we are looking at two schools, one is this school. We would like to ask you about your role as Community Education Officer. The interview will take 30-45 minutes. Do you have the time?”**

Please provide an information sheet and ask for a signature for permission. Provide a business card, with contact details. Ask if they have any questions. Make sure you get the name, date. Include your own names and the name of the school and District in the heading of your notes.

### Questions:

1. When did you start your role in this school?
2. What was your reason for volunteering?
3. How would you describe your role?
4. Why did you volunteer to do this?
5. Are your responsibilities in your imihigo contract? How are you held to account, if so?
6. What, in your experience, are the reasons for children dropping out of school?
7. What about repeating years?
8. Are the schools taking measures to try and reduce them?
9. What are the major challenges in achieving these goals?
10. What is your understanding of what the central, district and local government are doing to reduce children dropping out or repeating?
11. How did you learn about them?

**Closing:** thank the CEO for his/her time. Say that the information will be used to inform the evaluation. Ask if the CEO has any questions, and refer again to the contact details if further questions arise.

## MENTOR INTERVIEW GUIDE

### What you need:

Before conducting the interview you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

### Pre-interview guidance:

The purpose of this interview is to understand how the Mentor understands his/her role.

### The interview:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [District X], we are looking at two schools, one is this school. We would like to ask you about your role in improving teachers’ proficiency in English. The interview will take 30-45 minutes. Do you have the time?”**

Please provide an information sheet and ask for a signature for permission. Provide a business card, with contact details. Ask if they have any questions. Make sure you get the name, date. Include your own names and the name of the school and District in the heading of your notes.

### Questions:

1. When did you start to work at this school?
2. Do you divide your time between this and other schools? What is the time division?
3. To whom do you report?
4. How is your position funded?
5. How would you assess changes in the quality of English proficiency among the teachers in the School since you arrived / over the past two years?
6. What are the challenges that you have faced in improved proficiency in English?
7. What does your job entail? How do you divide your time between English and pedagogy more broadly?
8. Have there been any additional measures adopted since you arrived in your school to improve the English proficiency? What are they?
9. What is your understanding of the central or district government in improving English Proficiency to you?
10. How did you learn about them?
11. How are you held to account or rewarded for increasing English proficiency of your teachers?

**Closing:** thank the Mentor for his/her time. Say that the information will be used to inform the evaluation. Ask if the Mentor has any questions, and refer again to the contact details if further questions arise.

## SCHOOL PRINCIPAL INTERVIEW GUIDE

### What you need:

Before conducting the interview, you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

### Pre-interview guidance:

The purpose of this interview is to understand how the Principal sets priorities, and in particular where completion lies in the ranking of these priorities, and how these priorities have been followed through on. It will also seek to understand the role of the central state and the District in setting the agenda. Finally, it will explore the way English proficiency is being addressed. Please collect as much detail and as high quality as possible qualitative information. Make a note of any shifts in emphasis, or remarks outside the specific areas of the topic guide. Please make a note as well how comfortable the Principal is talking about these matters, and any other impressions that you think are relevant.

### The interview:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [District X], we are looking at two schools. We would like to ask you about your priorities and the measures you have taken to achieve these priorities. The interview will take about an hour? Do you agree to give the interview?”**

At this stage, don't mention completion or English: an important part is for them to articulate their priorities without skewing by mentioning particular areas.

Please provide an information sheet and ask for a signature for permission. Provide a business card, with contact details. Ask if they have any questions. Make sure you get the name, date. Include your own names and the name of the school and District in the heading of your notes.

### A. General priorities

**“We wanted to ask about your priorities and successes over the past years, and for this coming year. We also wanted to understand a little bit more where these priorities are coming from.”**

1. What have been your priorities for improving education in your school? Do they differ at different grades?
2. What has been the reason for choosing these priorities, above others?
3. What are the key factors that guide school priorities?
4. How does guidance and policy from the District or central government influence your priorities?
5. How are government priorities communicated to you, either District, Central or Local?
6. What budget do you have to deliver these priorities – and how is it constituted (i.e. how are funds earmarked beforehand)?
7. How do you use your capitation grant?

### B. Completion

**“We are now going to turn to some questions specifically on completion, drop-out and repetition. This has been a government priority for some time (acknowledge if the Principal has mentioned it) and it is a key target of the DFID Results-Based Aid in Education Programme.”**

8. Can you describe how your schools' completion rates have changed over the past two years at primary and junior secondary? What about gender differences?

9. To what do you attribute these changes?
10. What have been the most important measures taken at your school in the past two years to improve completion?
11. How were these measures resourced?
12. Has the district or sector government communicated its priorities to reduce drop-out and repetition and improve completion to you? If yes - how?
13. What about the central government?
14. Are you held to account or rewarded for increasing completion, reducing drop-out and repetition? If so, how?

**C. English Proficiency**

15. How would you assess changes in the quality of English proficiency among the teachers whose medium of instruction is English in the school over the past two years?
16. What measures have been adopted in the past two years to seek to improve the English proficiency of teachers?
17. Has your school been allocated a full-time or part-time Mentor? When were they appointed?
18. Who manages the Mentor?
19. If they have been allocated a mentor: Have you been satisfied with the English support that your school has been given by the Mentor?
20. Has the district or local government communicated its priorities to improve English Proficiency to you? If yes - how?
21. How are you held to account or rewarded for increasing English proficiency of your teachers?

**Closing:** thank the principal for his/her time. Say that the information will be used to inform the evaluation. Ask if the principal has any questions, and refer again to the contact details if further questions arise.

## TEACHER FOCUS GROUP

### What you need:

Before conducting the interview, you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

### Pre-focus group guidance:

The purpose of this focus group is to understand how the teachers understand their schools' priorities and the messages that are being received from the central and the district government.

Please gather between 6-10 teachers, representing different levels of responsibility from P4-S3 ideally. Important that we get a gender mix – both men and women teachers. If the discussion turns to more general satisfaction or discontent with the resources they are provided, or with the administration, please do note these down. We are looking for as complete as possible qualitative data from this. The focus group should be facilitated by the researcher and the assistant takes notes. Please take as full notes as possible, as near to verbatim as can be achieved.

### The focus group:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [the District you are in], we are looking at two schools, [name them]. We would like to ask you about the changes in schooling priorities and objectives in the past two-three years.”**

At this stage, don't mention completion or English: an important part is for them to articulate their priorities without skewing by mentioning particular areas. Say it will be anonymised, that none of them will be quoted.

Ask if they have any questions. Make sure you get the name, date, include your own names and the name of the school and District in the heading of your notes.

### Focus group questions

1. **What are the two or three main objectives to improving learning outcomes?**
2. **How – and how much – does the District government influence school priorities?**
3. **What about the Central government?**

*“I want to turn now and look at student completion specifically.”*

4. **Have the rates of completion – students staying in class and not repeating or dropping out - changed in the past two years in your school?**
  - *How do these differ depending on the gender of the children, and the stage of schooling that they are at?*
5. **What measures are being taken in your school at different levels to reduce drop-outs?**
6. **What about reducing repetition?**
7. **Are you given any incentives or resources to improve the completion rates of your students?**
  - *Interested in how success is construed: is it in their imihigo contracts, might they be more likely to get promoted, etcetera.*

*“I want to turn now to look at English”*

8. **What measures are being taken in your school to improve English proficiency?**
9. **How are teachers held to account or rewarded for improving their English proficiency? What do you think about these?**

## PARENT FOCUS GROUP

### What you need:

Before conducting the interview, you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

### Pre-focus group guidance:

The purpose of this focus group is to understand how parents understand their children's' schools' priorities and the broader messages that are being received from the central, district or local leaders around education.

Please gather between 6-10 parents, representing children at different levels from P4-S3 ideally. If the discussion turns to more general satisfaction or discontent with the resources they are provided, or with the administration, please do note these down. We are looking for as complete as possible qualitative data from this. The focus group should be facilitated by the researcher and the assistant takes notes. Please take as full notes as possible, as near to verbatim as can be achieved.

### The focus group:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [the District you are in], we are looking at two schools, [name them]. We would like to ask you about the priorities and objectives in the education system of Rwanda, and the degree to which you have seen changes.”**

At this stage, don't mention completion or English: an important part is for them to articulate their priorities without skewing by mentioning particular areas. Say it will be anonymised, that none of them will be identifiably quoted. Ask for their names and ask if they have any questions. Make sure you get the name, date, and include your own names and the name of the school and District in the heading of your notes.

### Focus group questions

1. **What have you been told about the priorities in the education system in Rwanda?**
2. **What, if anything, has changed in your school during that time?**
3. **What do you think have been the reasons for these changes?**

*“I want to turn, now, and look at student completion specifically.”*

4. **What causes children to drop out or repeat years?**
  - *Is there a difference between girls and boys, or between different levels of education – primary, secondary, and so forth*
5. **How are you being encouraged by the school to keep your children in school?**
6. **Has the government – local or District – attitude to children's dropping out or repetition changed in the last two years?**
7. **Why would you say have these changes happened?**
8. **How are you told about such changes? What mechanism does the government use to communicate?**

*“I want to turn now, to look at English”*

9. **Have you seen changes in the English skills of teachers?**
  - *What do you attribute these changes to?*

## STUDENTS FOCUS GROUP

### What you need:

Before conducting the interview you should have:

1. Information Sheet
2. Permission Sheet
3. Business Card, providing contact details

### Pre-focus group guidance:

The purpose of this focus group is to understand how children in S3 understand their schools' priorities and the broader messages that are being received around completion, repetition and drop-outs.

Please gather between 6-10 children, who are of a similar age, around 14-15 – we have chosen them since we can only do one focus group and they must be of a similar age. Ideally they would be mixed gender. This should include some in S3 but several in lower years, thereby targeting the most interesting group (being the one which, (1) has shown the most changes in the past year and (2) since they can reflect on experiences in P6, unlike younger children).

If the discussion turns to more general satisfaction or discontent with the resources they are provided, or with the administration, please do note these down. We are looking for as complete as possible qualitative data from this. The focus group should be facilitated by the researcher and the assistant takes notes. Please take as full notes as possible, as near to verbatim as can be achieved.

### The focus group:

Introduce yourself and the reason you are there:

**“We are from IPAR, and are part of a team working on an evaluation of a DFID-funded project supporting the Education system in Rwanda. We are working in four Districts. In [the District you are in], we are looking at two schools, [name them]. We would like to ask you about your experiences in school in Rwanda, and the degree to which you have seen changes in various aspects.”**

At this stage, don't mention completion or English: an important part is for them to articulate their priorities without skewing by mentioning particular areas.

Say it will be anonymised, that none of them will be quoted in a way that identifies them on their school.

Ask for their names and ask if they have any questions.

Make sure you get the name, date, and include your own names and the name of the school and District in the heading of your notes.

### Focus group questions:

Rather than asking several specific questions, I've identified three main questions, which can be developed by themes.

#### 1. What causes children to drop out or repeat a year?

*Notes: Try to ask probing questions over the following themes:*

- Interested in the discussion of how this works at different levels of education
- What about gender differences?

#### 2. What are the ways in which their school encourages them to stay in school?

*Notes: Try to ask probing questions over the following themes:*

- What are the differences in the ways drop-outs and repetition are treated?
- How have these ways changed over the past two years? What do they think about that?

- *How are the school's attitudes to drop-out and repetition being communicated by the school?*
- *Where are they getting the messages from – is it in fact the school, or is it other factors as well?*

**3. What do you think of the quality of teachers' English in your classes?**

*Notes: Try to ask probing questions over the following themes:*

- *Have they seen any changes in the quality of the English of teachers in the last two years?*
- *What have been the challenges for you in learning in the English language?*

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