



## 1. Project Data

Project ID P098496	Project Name TZ-Sci.&Tech. High Educ. Prog-Ph.1 (FY08)	
Country Tanzania	Practice Area(Lead) Education	Additional Financing P149464
L/C/TF Number(s) IDA-44540,IDA-55350	Closing Date (Original) 30-Jun-2013	Total Project Cost (USD) 115,000,000.00
Bank Approval Date 27-May-2008	Closing Date (Actual) 31-Jan-2016	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	115,000,000.00	0.00
Revised Commitment	114,997,585.34	0.00
Actual	108,212,394.84	0.00

Sector(s)  
Tertiary Education(88%):Central Government (Central Agencies)(12%)

Theme(s)  
Education for the knowledge economy(100%)

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## 2. Project Objectives and Components

### a. Objectives

According to the Program Appraisal Document (PAD, page 9) and the Financing Agreement (page 5), the project objective was as follows:

- To increase the quantity and quality of higher education graduates, with special emphasis on science, technology and education, through an improved learning environment.

At the time of approval of Additional Financing (July 2014), the following second objective was added:



- To lay the foundations for improved responsiveness of tertiary education to the labor market.

Due to the addition of a project objective, the project is considered "restructured" and therefore a split rating is assessed in this Review.

b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

10-Jul-2014

c. Components

1A. Investments in Priority Disciplines for Economic Growth (Appraisal: US\$ 47.3 million; AF: US\$ 3.7 million; Actual: US\$ 51.0 million): This component aimed to support higher education institutions to increase enrollment and capacity to delivery quality education in science and technology fields. During project preparation, 60 subproject proposals were submitted by higher education institutions to finance investments such as: upgrading physical facilities; procuring "quality-enhancing" inputs (i.e. equipment and curricula); and training for teachers and staff. The Government, with assistance from the Bank team, evaluated and selected 24 proposals according to criteria which included the extent to which the proposed activities would lead to an acceleration of growth in key sectors. The component also included plans to develop a Flexible Financing Facility (FFF) operational manual, to ensure continuity of this institutional mechanism to make public funds available on a competitive basis.

1B. Expanded Capacity for Teacher Preparation and for Graduate Studies in Education (US\$ 35.0 million; AF: US\$ 5.6 million; Actual: US\$ 40.6 million) This component aimed to support the preparation of degree-holding teachers in secondary schools for the teaching of math, science, and languages. Activities included: provision of teaching materials; information and communication technology (ICT) networks; provision of distance learning training for upgrading skills of "A" level graduates to be employed as secondary school teachers; and development of graduate studies in education programs.

2A. Strengthening Key Higher Education Agencies and Institutions (Appraisal: US\$ 8.5 million; AF: US\$ 4.6 million; Actual: US\$ 13.1 million): This component aimed to strengthen capacity of relevant higher education oversight agencies such as the Ministry of Education and Vocational Training (MoEVT); Ministry of Communication, Science and Technology; Tanzania Commission on Universities; Higher Education Student Loans Board; National Council on Technical Education; and the Tanzania Education Authority. Activities included: provision of equipment; staff training; and technical assistance on financial modeling, national assessments, tracking student loans, targeting loan assistance, and academic audits.

2B. Investments in System-wide ICT and Libraries (Appraisal: US\$ 7.0 million; AF: US\$ 1.0 million; Actual: US\$ 8.0 million): This component aimed to strengthen information communication networks and quality of data for the education sector. Activities included: provision of ICT equipment to higher education institutions and to oversight agencies; development of a higher education management information system at the MoEVT; and development of an electronic library management system.

Under the Additional Financing (2014), the following activities were added:

- ICT-based pilot program to "retool" secondary school science and math teachers to teach more challenging subject material.
- Operationalization of the Flexible Financing Facility (FFF).
- Strategy and operational plan for human capital and skills development in priority growth sectors.

d. Comments on Project Cost, Financing, Borrower Contribution, and Dates

**Project Cost**

- The appraised project cost was US\$ 100.0 million, with an additional financing amount of US\$ 15.0 million. The actual project cost was US\$



115.0 million.

### Financing

- The project was originally financed by an IDA Credit of US\$ 100.0 million. Additional Financing of US\$ 15.0 million was subsequently approved, for total IDA financing of US\$ 115.0 million.

### Borrower Contribution

- There was no planned Borrower contribution.

### Dates

- *April 2012*: The project was restructured to reallocate funds among different categories, as well as to modify the results framework such that the key outcome indicator measuring improved quality was replaced by three alternate indicators.
- *April 2013*: The project closing date was extended from June 2013 to February 2014, in order to allow completion of activities.
- *January 2014*: The project closing date was extended from February 2014 to July 2014, in order to prepare and process the Additional Financing.
- *July 2014*: Additional Financing in the amount of US\$ 15.0 million was approved to implement remaining activities that could not fully funded due to an exchange rate loss amounting to US\$ 6.6 million (including construction); to pilot two programs aimed at sustaining reform efforts in teacher training and performance-based financing; and to develop a strategy and operational plan for human capital and skills development at the tertiary level. The project development objective was modified such that a second objective was added.

## 3. Relevance of Objectives & Design

### a. Relevance of Objectives

With steady development and macroeconomic stability in recent years, the government of Tanzania is now seeking to accelerate economic growth through scaled up investments in infrastructure and human capital. However, low productivity and inadequate skills remain barriers to accelerated development. At the time of project appraisal, the participation rate in higher and technical education was only 2% (PAD, page 1), of which 34% were enrolled in science and engineering programs (ICR, page 2). To help create a pipeline of secondary school students prepared to enter the targeted fields, higher quality instruction is needed in secondary school. However, university degree-holders comprised only 20% of secondary school teachers (PAD, page 3), with particular shortages in math, science and English. The country's long-term development strategy (Tanzania Vision 2025) prioritizes development of a relevant and quality work force, particularly in the key sectors of science, technology, math, and English. The medium-term development strategies (National Strategy for Growth and Reduction of Poverty) for 2005-2010 and also 2010-2015 specifically aimed to increase investment in quality science and technology education as a means to increase the amount and quality of human capital. The Bank's Joint Assistance Strategy for 2007-2010, in place at the time of project appraisal, supports the key pillar of economic growth, including through a stronger focus on improving labor force skills. The most recent Country Assistance Strategy (FY 2012-2015) also identifies building a skilled population base that is better prepared for the changing economy as a primary aim, reflecting the added objective of labor market responsiveness. The relevance of objectives under both the original and restructured project is High.

Rating  
High

Revised Rating  
High



b. Relevance of Design

The project responded to the immediate need for improved skills in the workforce, namely in the areas of science, technology, math and English. The project design employed a competitive financing mechanism (utilized by the Bank in several other countries) to provide direct funding to higher education institutions to expand enrollment and capacity, the latter of which entailed both better-equipped facilities and an increase in teaching staff with relevant (upgraded) qualifications. The project design also aimed to develop a cadre of qualified secondary school teachers that could help develop a "pipeline" of qualified students entering higher education. Key higher education agencies with varying oversight responsibilities (i.e. accreditation, student loans) were also to receive capacity building support as part of broader efforts to establish a strong institutional framework for tertiary education. These activities were likely to lead to the intended outcomes of improved quantity and quality of higher education students, although improved quality as measured by learning outcomes may have been beyond the timeframe of the project period.

For the added second objective to lay the foundation for improved responsiveness to the labor market, the project design supported several activities that strengthened linkages between higher education institutions and the public and private sectors. These activities were also likely to lead to the intended outcome.

Rating  
Substantial

Revised Rating  
Substantial

## 4. Achievement of Objectives (Efficacy)

### Objective 1

#### Objective

To increase the quantity of higher education graduates, with special emphasis on science, technology and education, through an improved learning environment.

#### Rationale

The ICR (page 11) notes that the participating agencies were not receiving support from other donors during the project period, and therefore achievements are attributable to Bank support.

#### Outputs

There were 59,889 direct project beneficiaries, of whom 38.8% were females.

- Provision of 273 new courses (not previously offered) in science and technology disciplines at participating institutions (target: 224). Examples of new courses include: Environmental Studies, English and Communication Skills, Biotechnology, Sustainable Energy, Computer Systems Engineering, and Food Quality and Control. The availability of these courses contributed to the enrollment of 9,738 students in science and technology disciplines (target: 8,742). The ICR (page 12) reports that these courses were made possible by the return from abroad of new MSc and PhD graduates.
- Provision of training for teaching science and technology subjects at the secondary school level. 5,178 participants enrolled in the training courses (target: 5,150).
- Conducting of teacher "re-tooling" pilot program to upgrade skills to teach challenging subjects. 1,920 O-Level science teachers participated in the pilot program (target: 2,000).
- Development of a Central Admissions System at the Tanzania Commission for Universities. According to the ICR (page 16), the system has minimized admissions obstacles, as well as costs incurred by applicants. By 2014, over 44,000 students had applied to higher education institutions using the system.
- Development of online loan application system. According to the ICR (page 16), the system has reduced travel, application and processing costs, as well as improved accuracy of data (which has reduced number of cases of cheating) and targeting. The processing time for an online loan application has been reduced from three months to four weeks and the student loan recovery rate has increased from 5.6% in 2007 to 35% in 2015. This fell short of the target of 80%, although the ICR (page 16) notes that this target "may not have been practical owing to the fact that Tanzania does not issue national identity cards" which makes it difficult to trace students once employed.



- Provision of 3,975 technology workstations at higher education institutions (target: 1,878).
- Provision of "last mile connectivity" to participating institutions, which facilitated access to information.
- Development of National Qualifications Network, which forms the basis for registration and accreditation of technical institutions.

However, the planned higher education management information system and e-library network were not implemented. According to the project team, a main contributing factor to this implementation shortfall was exchange rate fluctuations that resulted in a loss of significant project funds. Following a series of re-prioritization exercises by the government and participating institutions, these two activities were dropped.

#### Outcomes

- The number of graduates from science and technology degree programs increased 1,312 in 2007 to 6,698 in 2015. This surpassed the target of 3,700.
- The number of PhD- and MSc-holding lecturers in priority disciplines increased from 564 in 2012 to 2,573 in 2015. This surpassed the target of 1,650.
- The number of degree-holding secondary school teachers relevantly employed (in math, science and English) increased from 181 in 2007 to 6,215 in 2015. This surpassed the target of 4,150.

Achievement is rated Substantial due to evidence of high achievement in increasing quantity of higher education graduates in targeted disciplines.

Rating  
Substantial

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Revised Objective  
No change for this objective

Revised Rationale  
n/a

Revised Rating  
Not Rated/Not Applicable

## **Objective 2**

Objective  
To increase the quality of higher education graduates, with special emphasis on science, technology and education, through an improved learning environment.

Rationale  
*See outputs listed above.*

#### Outcomes

- The scores of science teachers participating in the retooling pilot increased by 22%, according to pre- and post-training assessments.



- The number of technical institutions accredited increased from 55 in 2009 to 108 in 2013.
- The number of scientific publications published by PhD- and MSc-holding lecturers increased from 784 in 2012 to 1,397 in 2015. This surpassed the target of 980.
- 47.1% of students surveyed were satisfied with the teaching and learning environment. However, the survey did not focus only on the project's target disciplines (i.e. science and technology) or only on project-supported institutions.
- The original key outcome indicator on improved quality - improvement in scores on formal assessments of learning of science and technology students in their final year of first degree studies - was dropped due to the absence of reliable assessments.

Achievement is rated Modest due to limited evidence of actual improved quality of graduates.

Rating  
Modest

Revised Objective  
No change for this objective.

Revised Rationale  
n/a

Revised Rating  
Not Rated/Not Applicable

### Objective 3

Objective  
To lay the foundations for improved responsiveness of tertiary education to the labor market.

Rationale  
Outputs

- Development of operational manual for FFF.
- Training for Tanzania Education Authority staff on planning, finance, M&E, resource mobilization and loan administration.
- Development of National Skills Development Strategy (2016-2026), for skills development in priority growth areas.
- Conducting of various studies, including: rapid assessment of the technical and vocational education and training (TVET) system; human resource needs and gaps in particular fields; Flexible Financing Facility; M&E assessment; quality assessment; tertiary labor market observatory; and development of higher education hubs.

Outcomes

The outputs reported above are strongly likely to have contributed to laying the foundation for improved responsiveness of tertiary education. In addition, the outcome reported above - the number of degree-holding secondary school teachers relevantly employed (in math, science and English), which increased from 181 in 2007 to 6,215 in 2015 - can also be considered a measure of outcomes for this objective.

Rating  
Substantial



Revised Objective  
This objective was added at the time of Additional Financing

Revised Rationale  
n/a

Revised Rating  
Not Rated/Not Applicable

## 5. Efficiency

The PAD (Annex 9) included a brief discussion of the linkages between higher education and economic growth, namely in terms of expected lifetime earnings stream and productivity benefits for the economy. It does not provide project-specific estimates of cost effectiveness or net present value.

The ICR (Annex 3) provides a cost-benefit analysis of the project. Costs are calculated as total project costs for Components 1A, 1B and 2B (Component 2A on capacity building is not included due to difficulties in quantifying capacity development), household expenses for education, and opportunity costs. Benefits are calculated as wage premiums for enrollment in tertiary (vs. secondary) education institutions. Basing the analysis on the number of enrolled students and the number of graduates during the project period, the project's net present value is estimated at US\$ 2.3 million and the internal rate of return at 36.5%.

Almost all planned activities were implemented with only a one-year extension of the original project period, and several output and outcome targets were surpassed within the original project costs. Also, several project activities that were explicitly aimed at improving efficiency of the tertiary education sector (i.e. the central admission system and online loan processing system) were effectively implemented and likely contributed to increased access to higher education and increased loan recovery.

Efficiency Rating  
Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal		0	0 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	36.50	86.67 <input type="checkbox"/> Not Applicable

\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome



### **Original project - Moderately Satisfactory**

Relevance of the project objectives is rated High and relevance of the project design is rated Substantial. Achievement of the objective to increase the quantity and quality of higher education graduates is rated Substantial for quantity due to meeting and exceeding some targets for increasing quantity, but Modest achievement for quality due to limited evidence. Efficiency in the use of project resources over the entire project period is rated Substantial.

### **Restructured project - Satisfactory**

The ratings are the same as above, with the addition of the following: achievement of the objective to lay the foundation for improved responsiveness to the labor market is rated Substantial. Efficiency in the use of project resources over the entire project period is rated Substantial.

### **Overall outcome - Moderately Satisfactory**

According to OPCS/IEG harmonized guidelines, the overall outcome rating for a restructured project is determined according to the proportion of the Credit that was disbursed before and after restructuring. US\$ 100.0 million, or 87.0%, had disbursed before restructuring. Therefore, the combined outcome rating is Moderately Satisfactory.

- a. Outcome Rating  
Moderately Satisfactory

## **7. Rationale for Risk to Development Outcome Rating**

A follow up Bank operation, the Education and Skills for Productive Jobs project (P152810), was approved by the Bank in June 2016 and builds on the reforms initiated under this project, including strengthening the institutional capacity of the skills development system and continuing operations of the FFF. The government is likely to continue its support for these reforms to further develop the tertiary education sector and has also provided for an increase in the tertiary education budget. A number of the key project activities were institutionalized within the participating agencies, although capacity/budget for operations and maintenance of facilities and equipment is uncertain.

- a. Risk to Development Outcome Rating  
Modest

## **8. Assessment of Bank Performance**

### **a. Quality-at-Entry**

The project design drew upon sector analyses of human capital and institutional capacity, including rapid assessments of the capacity of the key oversight agencies. It was built upon the existing higher education institutional framework, which contributed to ownership and sustainability of operations. The overall risk rating was determined to be modest/substantial, with weak capacity of MoEVT to coordinate activities and failure to implement ICT systems identified as substantial risks. Both risks subsequently materialized, and while mitigation measures were identified, they were only partially effective and led to implementation delays and shortfalls. The multitude of participating institutions (including seven higher education institutions that had submitted subproject proposals and five higher education oversight agencies that were receiving capacity building support) complicated coordination, reporting and feedback (ICR, page 6). The M&E design was overall satisfactory, with one notable shortcoming in formulating the key outcome indicator for improved quality.

Quality-at-Entry Rating  
Moderately Satisfactory

### **b. Quality of supervision**

There were significant implementation delays at the start of the project period, which the ICR (page 5) attributes to "low capacity, poor coordination, inadequate communication, and a lack of understanding of Bank procedures among the project implementers resulting from



inattention to the sector and institutions for decades." However, the Bank team was proactive in addressing implementation problems that arose, for example recommending one higher education institution to prepare civil works designs in-house rather than outsourcing, which likely prevented an additional six to eight month delay. The Bank team provided intensive support on fiduciary issues, which led to improved procurement performance by the end of the project, albeit with some minor shortcomings. M&E information was effectively utilized, although the failure to implement the higher education management information system may have been a lost opportunity to integrate higher education monitoring data into the sector-wide monitoring system.

Quality of Supervision Rating  
Moderately Satisfactory

Overall Bank Performance Rating  
Moderately Satisfactory

## 9. Assessment of Borrower Performance

### a. Government Performance

The government was strongly committed to the project objectives, including supporting critical reforms in the higher education sector to support achievement of the objectives. The government is sustaining financial support to higher education institutions, as well as moving forward with the newly developed skills development strategy.

Government Performance Rating  
Satisfactory

### b. Implementing Agency Performance

There were initial implementation delays due to weak capacity of the multiple participating institutions. However, strong leadership at the MoEVT, once in place, contributed to improved implementation performance. Most project activities under the responsibility of the MoEVT were completed as planned, and enrollment targets were not only met but surpassed in a number of areas. Fiduciary performance was overall satisfactory, despite the varying capacities of the participating higher education institutions, and M&E was effectively carried out.

The Ministry of Communications, Science and Technology was the primary implementing agency for Component 2B - Investment in System-wide ICT. Delivery of outputs fell short, although the project team notes that this was primarily due to the need to drop activities once the exchange rate losses led to reduced project funding.

Implementing Agency Performance Rating  
Moderately Satisfactory

Overall Borrower Performance Rating  
Moderately Satisfactory

## 10. M&E Design, Implementation, & Utilization

### a. M&E Design

The M&E design was detailed and comprehensive, although a notable shortcoming was the original key outcome indicator measuring quality ("improvement in scores on formal assessments of learning of science and technology students in their final year of first degree studies"). The PAD results framework (Annex 3) notes that "a review of current assessment tools will be performed during the first year of project implementation with a view to improving/using it." The existing assessment tools were subsequently deemed unreliable, and therefore the indicator was dropped and replaced by three alternative indicators that were not as robust in measuring improved quality. The project design included development of a higher education management information system. Compilation of project-specific data



from the multiple participating agencies was the responsibility of the MoEVT, which was to receive technical assistance to carry out M&E.

b. M&E Implementation

There was no comprehensive M&E system developed for the project, which the ICR (page 7) reports was identified as a weakness throughout implementation. Instead, an M&E consultant was hired following approval of the Additional Financing period to collect and compile data that had been collected by individual consultants from the multiple participating institutions. The ICR (page 7) also reports that project data was verified in some of the institutions visited during the ICR mission.

c. M&E Utilization

The ICR (page 7) notes that "although data from the project does not seem to be integrated in the overall MoEVT education information, MoEVT has utilized it well." For example, results from project studies informed the country's development plans, and project data informed the design of the AF and resource mobilization decisions by various agencies. Despite these examples of how M&E data was utilized, this may be considered a lost opportunity to develop a sector-wide monitoring system.

M&E Quality Rating  
Substantial

## 11. Other Issues

a. Safeguards

The project was classified as a Category "B" project due to civil works, triggering the safeguard policy on Environmental Assessment (OP/BP 4.01). An Environmental and Safeguards Management Framework (ESMF) was prepared, which included screening processes for infrastructure activities and arrangements for monitoring.

An environmental audit was conducted in July 2014 to assess adherence to the ESMF. According to the ICR (page 7), the audit concluded that the beneficiary institutions "generally adhered" to the requirements, although it also identified the need to more fully align with Tanzania's Environmental Management Act provisions. No major problems in safeguards compliance were reported in the ICR.

b. Fiduciary Compliance

Procurement: Procurement capacity among the participating higher education institutions was weak during the initial project period but improved following intensive support from the MoEVT and the Bank. Despite these initial delays, all main procurements were carried out with some shortcomings reported such as lack of complete bidding documents, lack of timely bid evaluations, and issues with proper contract management and records keeping (ICR, pages 7-8).

Financial management: Project arrangements included a dedicated and qualified financial management officer in MoEVT. The ICR (page 8) reports that interim financial reports were submitted in a timely manner, and project audits were up to date (with the final project audit due December 2016) and accepted by the Bank. The ICR does not report on whether there were any qualifications to audits.

c. Unintended impacts (Positive or Negative)

None reported.



d. Other  
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## 12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	---
Risk to Development Outcome	Modest	Modest	---
Bank Performance	Satisfactory	Moderately Satisfactory	There were moderate shortcomings in quality at entry (ineffective mitigation measures for identified risks, complex institutional arrangements) and also in supervision (significant delays attributed to weak capacity).
Borrower Performance	Satisfactory	Moderately Satisfactory	There were moderate shortcomings in implementing agency performance due to initial weak capacity, and implementation shortfalls for activities of the Ministry of Communication, Science and Technology.
Quality of ICR		Substantial	---

### Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

## 13. Lessons

Lessons drawn by the ICR (pages 22-23), adapted by IEG:

- The use of a competitive financing mechanism to provide support to higher education institutions can contribute to ownership and sustainability of activities, as well as draw upon comparative advantages. The mechanism employed by this project was developed into a financing facility that will be used by the government to continue support to the tertiary education sector.
- Key outcome indicators require careful consideration at the start of the project design, including the feasibility of collecting quality data. In the case of this project, the source of data for learning outcomes was deemed unreliable, and therefore the indicator needed revision. However, the alternate indicators did not adequately measure the intended outcome of improved quality.

## 14. Assessment Recommended?

No

## 15. Comments on Quality of ICR



The quality of evidence and analysis are satisfactory with regard to data on increased enrollment and evidence of improved institutional capacity. However, as noted above, data on improved quality of graduates is inadequate. The ICR is concise and overall consistent with guidelines, although a split outcome rating is not needed in this case.

- a. Quality of ICR Rating  
Substantial