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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL GRANT

IN THE AMOUNT OF SDR 32 MILLION
(US\$45 MILLION EQUIVALENT)

TO THE

REPUBLIC OF MOZAMBIQUE

FOR THE

HIGHER EDUCATION SCIENCE AND TECHNOLOGY PROJECT

April 7, 2015

Education Global Practice
Africa Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective February 28, 2015)

Currency Unit = Metical (Pl. Meticaís)
Mt 34.20 = US\$1
US\$1.41 = SDR1

FISCAL YEAR
January 1 - December 31

ABBREVIATIONS AND ACRONYMS

ACE	African Centres of Excellence
AF	Additional Financing
ANEP	National TVET Authority - <i>Autoridade Nacional do Ensino Profissional</i>
CCSA	Cross Cutting Solution Area
CIREP	Inter-Ministerial Commission for Professional Education Reform - <i>Comissão Interministerial para a Reforma da Educação Profissional</i>
CNAQ	National Accreditation and Quality Council - <i>Conselho Nacional para a Acreditação e Qualidade</i>
CPS	Country Partnership Strategy
COREP	Executive Committee for Professional Education Reform - <i>Comissão Executiva da Reforma da Educação Profissional</i>
DfID	Department for International Development
DICES	Directorate for Coordination of Higher Education - <i>Direcção de Coordenação do Ensino Superior</i>
DINET	National Directorate for Technical Education - <i>Direcção Nacional do Ensino Técnico</i>
ES-COREP	Executive Secretariat of the Commission for Professional Education Reform - <i>Secretariado Executivo – Comissão Executiva da Reforma da Educação Profissional</i>
FASE	Education Sector Support Fund - <i>Fundo de Apoio ao Sector de Educação</i>
FDI	Institutional Development Fund - <i>Fundo de Desenvolvimento Institucional</i>
FNI	National Research and Innovation Fund - <i>Fundo Nacional de Investigação</i>
FUNDEC	Skills Development Fund - <i>Fundo de Desenvolvimento de Competências</i>
GDP	Gross Domestic Product
GoM	Government of Mozambique
HEI	Higher Education Institution
HEST	Higher Education, Science and Technology (project)
IBE	National Scholarship Institute - <i>Instituto de Bolsas de Estudo</i>

ICT	Information Communication Technology
IFC	International Finance Corporation
IFR	Interim Financial Report
INEFP	National Institute of Employment and Professional Training - <i>Instituto Nacional de Emprego e Formação Profissional</i>
ISR	Implementation Status and Results Report
MCT	Ministry of Science and Technology - <i>Ministério da Ciência e da Tecnologia</i>
MCTESTP	Ministry of Science and Technology, Higher, Technical and Professional Education - <i>Ministério da Ciência e Tecnologia, Ensino Superior, Técnico e Profissional</i>
MINED	Ministry of Education - <i>Ministério da Educação</i>
MIS	Management and Information System
MoReNet	Mozambique Research Network
MOSTIS	Mozambique Science, Technology and Innovation Strategy
PARP	Poverty Reduction Action Plan - <i>Plano de Acção para a Redução da Pobreza</i>
PDO	Project Development Objective
PEE	Education Strategic Plan - <i>Plano Estratégico da Educação</i>
PEES	Higher Education Strategic Plan - <i>Plano Estratégico do Ensino Superior</i>
PIREP	Integrated TVET Reform Program - <i>Programa Integrado de Reforma da Educação Profissional</i>
PRSP	Poverty Reduction Strategy Plan
SSA	Sub-Saharan Africa
STEM	Science, Technology, Engineering and Math
STI	Science, Technology and Innovation
TVET	Technical and Vocational Education and Training
WBG	World Bank Group

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REPUBLIC OF MOZAMBIQUE

Additional Financing for Higher Education Science and Technology Project

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ADDITIONAL FINANCING DATA SHEET

Mozambique

Additional Financing for Higher Education Science and Technology Project (P146602)

AFRICA

GEDDR

Basic Information – Parent									
Parent Project ID:	P111592	Original EA Category:	B - Partial Assessment						
Current Closing Date:	31-Dec-2015	Current EA Category:	B - Partial Assessment						
Basic Information – Additional Financing (AF)									
Project ID:	P146602	Additional Financing Type (from AUS):	Scale Up						
Regional Vice President:	Makhtar Diop	Proposed EA Category:	B - Partial Assessment						
Country Director:	Mark R. Lundell	Expected Effectiveness Date:	02-Aug-2015						
Senior Global Practice Director:	Claudia Maria Costin	Expected Closing Date:	31-Dec-2018						
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Borrower									
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Mozambique: Ministry of Economy and Finance	Mr. Adriano Ubisse	Director for Investment and Cooperation	+258 21 4999443	aubisse@mpd.gov.mz					
Project Financing Data–Parent (Higher Education Science and Technology-P111592)									
Key Dates									
Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date		
P111592	IDA-46840	Effective	25-Feb-2010	23-Jun-2010	11-Nov-2010	31-Dec-2015	31-Dec-2015		
Disbursements									
Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed

P111592	IDA-46840	Effective	XDR	24.90	24.90	0.00	22.83	2.07	91.70
Project Financing Data – Additional Financing for Higher Education Science and Technology Project (P146602)									
<input type="checkbox"/>	Loan	<input type="checkbox"/>	Grant	<input checked="" type="checkbox"/>	IDA Grant				
<input type="checkbox"/>	Credit	<input type="checkbox"/>	Guarantee	<input type="checkbox"/>	Other				
Total Project Cost:		US\$45.00 Million			Total Bank Financing:		US\$45.00 Million		
Financing Gap:		0.00							
Financing Source – Additional Financing (AF)								Amount (US\$m)	
BORROWER/RECIPIENT								0.00	
International Development Association (IDA)								45.00	
Financing Gap								0.00	
Total								45.00	
Policy Waivers									
Does the project depart from the CAS in content or in other significant respects?							No		
Explanation									
Does the project require any policy waiver(s)?							No		
Explanation									
Team Composition									
Bank Staff									
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Extended Team					
Name	Title	Location			
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Mozambique		Republic of Mozambique		X	Maputo and all provinces
Institutional Data					
Parent (Higher Education Science and Technology Project - P111592)					
Practice Area (Lead)					
Education					
Contributing Practice Areas					
Cross Cutting Topics					
[] Climate Change					
[] Fragile, Conflict & Violence					
[] Gender					
[] Jobs					
[] Public Private Partnership					

Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Education	Tertiary education	100		
Total		100		
Themes				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Human development	Education for the knowledge economy	100		
Total		100		
Additional Financing for Mozambique Higher Education, Science and Technology Project (P146602)				
Practice Area (Lead)				
Education				
Contributing Practice Areas				
Agriculture, Finance & Markets, Gender, Jobs				
Cross Cutting Topics				
[] Climate Change				
[] Fragile, Conflict & Violence				
[] Gender				
[X] Jobs				
[] Public Private Partnership				
Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Education	Tertiary education	80		
Education	Vocational training	20		
Total		100		
Themes				

Theme (Maximum 5 and total % must equal 100)		
Major theme	Theme	%
Human development	Education for the knowledge economy	100
Total		100
Consultants (Will be disclosed in the Monthly Operational Summary)		
Consultants will be required		

I. Introduction

1. **This Project Paper seeks the approval of the Executive Directors to provide an additional grant in the amount of SDR 32.0 million (or US\$45.0 million equivalent) to the Republic of Mozambique** for the Higher Education, Science and Technology Project (HEST) (P111592). The proposed AF combines activities currently implemented by two existing projects – HEST and the Technical and Vocational Education and Training (TVET) Project (P087347), and extends HEST for another three years. The Project Development Objective (PDO) of the proposed AF will retain the HEST original PDO and also reflect the additional activities to be carried out to strengthen the institutional framework of TVET.

2. **The proposed additional grant will enhance the impact of the original HEST and scale-up HEST related activities under the TVET Project, while introducing innovating elements aimed at strengthening the collaboration between the public and private sectors in skills development in Mozambique.** The original HEST was approved on February 25, 2010, with a financing amount of SDR 24.9 million (or US\$40 million equivalent) and a closing date of December 31, 2015. HEST is on track to reach its development objective and is currently rated Satisfactory. The Project has been effective in increasing the number of graduates of higher education institutions in Mozambique; it has raised the quality of higher education programs and has had a major impact on the country's research capacity linked to economically relevant sectors. Further, HEST has been important in supporting the Government of Mozambique (GoM) in the design and implementation of related policies and reforms. As of March 25, 2015, SDR 22.83 million (US\$34.72 million equivalent) has been disbursed (92 percent). The remaining funding is committed to specific beneficiaries. The TVET Project was approved on March 21, 2006 and is expected to close on September 30, 2015. Project financing amounts to SDR 44.2 million (US\$67 million equivalent), of which 82 percent was disbursed by March 25, 2015. TVET Project activities have resulted in important institutional changes and improvement in TVET in Mozambique. The Project is rated Satisfactory.

3. **The proposed AF will enhance the impact of HEST** by: (i) scaling-up important achievements such as external quality evaluation of education programs, improving teaching-learning using Information and Communication Technology (ICT) in a competitive manner, and scholarships; (ii) supporting institutionalization of policies and programs supported through the Project thus far, such as the institutionalization of the competitive funds for higher education, the Institutional Development Fund (FDI), and the National TVET Authority (ANEP); (iii) continuing to finance the design and piloting of new policies, such as introduction of a student loan scheme; (iv) promoting better articulation of higher education and TVET systems through the development of qualifications for priority economic sectors and teacher training for TVET; (v) improving the quality and relevance of TVET provision; and (vi) raising the impact through stronger collaboration with companies in education and research, and through improved project monitoring and evaluation. Further, the proposed AF includes US\$2.75 million for financing Mozambique's participation in the regional Africa Higher Education Centers of Excellence (ACE) Project (P151847). It is fully also aligned with the Mozambique *Let's Work*

Partnership contributing with skills supply to value chains in priority sectors that will also be targeted by the Partnership¹.

4. **The major change to the original HEST Project is the introduction of TVET related activities.** As a result, revisions were made to the PDO and Results Framework. A revision of the implementation arrangements was necessary due to changes in the organizational structure of the GoM resulting from the October 2014 presidential elections, namely the transfer of the mandate on higher education and TVET from the Ministry of Education (MINED) to a newly created Ministry of Science and Technology, Higher, Technical and Professional Education (MCTESTP). Lessons learned from the implementation of the HEST and TVET projects have been incorporated into the design to strengthen impact, for example prioritization of strong linkages with the private sector as a key funding criterion. Further, some of the original HEST activities will not be financed under the AF. These are either activities already completed or activities which the GoM has decided to finance under its own budget. Lastly, the project closing date of the original HEST will be extended by three years to December 31, 2018.

II. Background and Rationale for Additional Financing

A. Country context

5. **Mozambique has emerged to be one of the fastest growing economies of the world since the end of the devastating civil war in 1992.** Real growth between 1993 and 2010 averaged 7.5 percent. Moreover a recent surge in exports associated with mega-projects has allowed for a continued increase in output as well as consumption. This rapid growth has helped raise living standards with real per capita income rising rapidly, albeit from a very low base. Poverty fell from 69 percent of the population in 1996 to 56 percent in 2003. Poverty fell only slightly during the past decade, from 56 percent in 2003 to 52 percent in 2009. This is partly explained by Mozambique's growth pattern in the last decade which, as mentioned above, is driven by capital- and import-intensive mega-projects with limited linkages to the local economy. The economy remains fairly concentrated in terms of its exports. The only major change in the past decade has been the emergence of natural resource (coal, gas) and aluminum exports. Growth is driven in part by large Foreign Direct Investment linked mainly to the mining, electricity, tourism, construction and telecommunication sectors, as well as strong growth in the agriculture sector. Despite its fast growth, Mozambique's economy has not significantly diversified and inequality continues to limit the impact of overall Gross Domestic Product (GDP) growth on productivity and diversity of economic activity.

6. **Mozambique is forecast to grow at the same rate over the next decade, building on the mineral resources, energy and agriculture sectors.** Experience from natural resource-rich countries such as Norway point to the importance of investing in education as a means to maximize the benefits from an extractive resource boom. Investments in mining will create demand for skilled jobs in mining

¹ *Let's Work Partnership* is a global partnership that unites organizations dedicated to providing effective solutions to the global jobs crisis by harnessing the potential of the private sector to help create more and better jobs that are inclusive. Mozambique is a pilot country for the implementation of a Let's Work program.

and energy engineering. The indirect impact on employment in non-tradable sectors such as construction, transport and utilities is however much higher, and will also require the build-up of a skilled labor force.

7. **Countries experiencing natural resource booms tend to move towards imports to the detriment of domestic production and employment as a result of the appreciation of the domestic currency.** Thus, the resource boom may lead to a collapse of employment in other tradable sectors. This means that it is necessary to raise productivity in agriculture and other tradable goods to regain competitiveness against imports. This requires strategic investments in applied research. Consultations with companies led by the International Finance Corporation (IFC) have revealed an opportunity to increase competitiveness and productivity of local firms in order to be able to supply multinationals as part of the mega-projects. This requires improved engineering and technical skills, and a closer link between education and training institutions and the private sector. Applied research and skills will also be needed to move towards value addition in key growth sectors. These strategies are fundamental to guarantee that the economy becomes diversified and prepared for the period after the resource boom.

8. **On the labor supply side, more than 300,000 people enter the labor market each year and this number is poised to increase to about 500,000 by 2025.** Preparing this wave of young people adequately for a productive life through education, including TVET and higher education options, is critical to job creation, productivity, competitiveness and poverty reduction. Rates of return to higher education have been increasing in Mozambique from a low of 6 percent in 2002 to 18 percent in 2008 (latest year available and comparable). This implies that a higher education degree increases wages by 148 percent compared to those with secondary education. In addition, workers with higher education in Mozambique face lower unemployment. Given Mozambique's high level of inequality, and in particular inequality in access to post-basic education, promoting more equitable access for the bottom 40 percent of the population is critical to raise their income and hence promote shared prosperity. Improved access to TVET and higher education, in particular short term professional-oriented higher education, therefore promotes both shared prosperity and overall economic growth.

B. Sector context

9. **In the education sector there have been noticeable improvements, such as enrollment rates, but the overall quality of education remains a concern.** In primary education, net enrollment rates have been consistently improving from 33 percent in 2002 to 82 percent in 2014, but completion rates have not kept pace during 2007-2010; recent data showed that only approximately 70 percent of all students who attended grade 1 in 2012 entered grade 3 in 2014, with 5 out of 10 children completing primary education. It is expected that primary completion rates will improve from 2016 onward, reflecting improvements to promotion rates since 2011. However, the completion rate is below regional peers (52 percent for Mozambique compared to the Sub-Saharan average of 72 percent). The same picture prevails in secondary education, where the gross enrollment rate to lower secondary has increased from 7 percent to 34 percent.

10. **The majority of funding and reform efforts of the GoM and development partners, including the World Bank Group (WBG), is focused on pre-primary, primary and secondary education with good results.** Through a sector wide approach, the WBG and the Global Partnership for Education are currently supporting these levels of education with US\$201 million, and a further additional financing of US\$120 million is under preparation.

11. **The massive increase in those completing primary education and increasing secondary education creates significant pressure to expand TVET and higher education opportunities.** Both due to education progress and high population growth rates, the number of upper secondary graduates has increased from less than 8,000 in 2004 to 41,500 in 2012. In 2016, the GoM estimates that the number of graduates of secondary education will be 148,000, doubling again to around 280,000 in 2020.

12. **Higher education has expanded rapidly in Mozambique.** Between 1992 and 2014, the higher education system has evolved from only three to 48 institutions, from an entirely public system to a mixed system with public and private providers, and from a system almost completely concentrated in Maputo to a system that is present in all provinces. Starting with just about 3,750 students in 1990, higher education enrollment has grown to 13,600 students in 2000 and to 123,800 in 2012, of which 34 percent are in private institutions.

13. **The rapid expansion of higher education has not yet impacted negatively on the employability of graduates.** Rapid economic growth seems to have increased demand for graduates even further than supply, especially for graduates within applied sciences and engineering, and skilled technicians. Rates of return and employment of graduates therefore remain high as mentioned above.

14. **But quality and relevance have reportedly declined.** The doubling of institutions and the faculty body has led to lowering of faculty qualifications. Only 7 percent have a doctorate degree and 24 percent a masters degree. Around two-thirds of teachers in higher education are bachelor's degree (*licenciatura*) holders. Expansion has also led to overcrowding in classrooms and a lack of learning resources, most importantly access to laboratories, modern technological tools, and computers. Also, the competences of the admitted students have deteriorated, especially in math and science subjects, due to the expansion and decrease in the quality of secondary education. Further, curricula are infrequently reviewed and teaching methods focus too much on memorizing theoretical learning. This explains partially the frequent complaint from employers of lack of concrete hands-on technical competencies, which especially affects the quality of Science, Technology, Engineering and Math (STEM) students. **The way forward is to support institutions and faculty to reform curricula in collaboration with employers and introduce more experimental and student focused teaching-learning in combination with investments in modern learning equipment.**

15. **Higher education does not benefit sufficiently low and middle income families.** The high tuition fee of private education, as well as high living costs, make higher education unaffordable for many youth from poor families. Moreover the competition to enter public low-fee education is increasing. More access to higher education for youth from middle and low-income families is a central policy to promote shared prosperity by qualifying youth from these families for a well-paid job in the formal economy. In addition to continued improvements in basic education, improving access for low income youth requires: (i) **scaling up student financial aid in a sustainable manner**, for example through student loans; (ii) **allowing for TVET students to access higher education**, and (iii) **expanding and improving the quality of education in the Central and Northern provinces of Mozambique.**

16. **Linking higher education with TVET is a priority for equity and quality of TVET.** The GoM has established four polytechnic colleges in underrepresented regions in the country. These polytechnics produce tertiary graduates who combine high level theoretical knowledge with practical and entrepreneurial skills and competencies, making them particularly well-equipped to support

development in key economic sectors (agriculture, mining and energy). As this type of tertiary education is promising due to its potential impact on equity (region and income-wise) and its economic relevance, the Government is seeking to add seven new polytechnics. Two critical challenges remain: (i) the connection between secondary education TVET institutions and the polytechnics (higher education institutions) to allow graduates of TVET institutions to procure higher education diplomas, which increases both the incentives for TVET education and improves access to higher education for middle and low income youth; and (ii) a shortfall in qualified TVET teachers due to the expansion of the sub-sector. **The linkages between the two levels of education will help build job-relevant technical skills and will also streamline the access from technical secondary education into higher education.**

17. **There is little support from development partners to the higher education sector.** Other than the WBG HEST Project, only the Dutch Government supported technical assistance to higher education within the extinct Ministry of Higher Education, Science and Technology (MCT). For science, technology and innovation, the GoM receives support from other financiers such as China, Finland and Sweden. However, some of this support is due to be phased out, and some has been substantially reduced.

18. **Skilled human resources are one of the most important pillars of the GoM Poverty Reduction Strategic Plan (PARP in Portuguese) and the WBG Mozambique Country Partnership Strategy (CPS) for the period of 2011-2015** (endorsed by the Board on February 8, 2012). Sector policies and plans deriving from the PARP being supported by the proposed AF include the Science and Technology Policy (2003), the Mozambique Science, Technology and Innovation Strategy (MOSTIS, 2006), the Education Strategy (PEE 2012-2016), and the Higher Education Strategic Plan (PEES 2012-2020). The proposed AF contributes to the implementation of Pillar 1 of the CPS, Competitiveness and Employment, by supporting the development of a better educated and skilled workforce, which is one of main objectives of this Pillar.

C. Original Financing Description and Performance

19. **The HEST Project, financed by a credit in the amount of SDR 24.9 million (equivalent to US\$40 million), was approved on February 25, 2010.** It became effective on November 11, 2010. The *PDO is to increase the number and raise the quality of graduates at the undergraduate and graduate levels, and strengthen the national research capacities to produce research outputs of relevance to the country's strategic economic sectors.* The project has been implemented by two ministries: MINED and MCT, implementing activities under the three components/parts below:

- Component A: System Governance, Quality and Management Strengthening
- Component B: Improving Quality of Teaching, Learning and Research through Competitive Funds
- Component C: Equity and Competitiveness Scholarships

HEST Project Performance

20. **Three out of the four PDO outcome indicators are already achieved, and there is substantial progress towards the achievement of the fourth PDO indicator** (see Table 1). The accreditation activities under the National Accreditation and Quality Council² (CNAQ) have progressed substantially since the GoM changed the leadership of the quality assurance agency. CNAQ has organized an external evaluation of 20 programs in 10 higher education institutions (HEI). Important intermediate outcome indicators have also already been achieved, such as the number of scholarships provided to needy students per year. In addition, among others, HEST has contributed to the successful completion of the strategic plan for higher education, and the strategy for the financial reform of higher education which introduces changes in the way higher education will be funded. As of March 25, 2015, SDR 22.83 million (US\$34.72 million equivalent) has been disbursed (92 percent of the total funding) and the remaining funding is committed to specific beneficiaries, such as scholarships for needy students and HEIs. HEST is rated Satisfactory for both Implementation Progress and PDO.

Table 1. HEST: Progress Made towards Achievement of Outcome Indicators

Indicator	Target (December 31, 2015)	Status (March 25, 2015)
Number of graduates	9,100	10,929
Number of Master's degree graduates in Science, Technology, Engineering, and Health sciences	40	188 graduates
Academic programs in Higher Education Institutions accredited by CNAQ	20%	35% evaluated and in final stages of accreditation process
Share of approved research projects financed achieve the intended outcomes	75%	75%

Source: HE statistics.

Project Financing Description for the TVET Project

21. **The TVET Project was approved on March 21, 2006** with World Bank financing through an original IDA credit in the amount of SDR 20.8 million (or US\$30 million equivalent), co-financing from Government of The Netherlands in the amount of US\$6.25 million, and an additional IDA credit of SDR 23.4 million (or US\$37 million equivalent) in 2011. By March 25, 2015, 82 percent of project funds were disbursed. *The PDO is to improve the quality and relevance of technical and vocational training in Mozambique, with a focus on selected key TVET institutions and programs.* The TVET Project financed the first phase of the Integrated Program for the TVET Reform (PIREP), a fifteen-year reform program with the objective to improve the quality and responsiveness of TVET to labor market needs by

² Conselho Nacional para a Acreditação e Qualidade.

providing training that is delivered in a sustainable, integrated, effective, and equitable manner. PIREP has been implemented and managed through an interim 3-level institutional arrangement consisting of a political body, the *Comissão Interministerial para a Reforma da Educação Profissional*³ (CIREP), composed exclusively of seven ministers from relevant portfolios, and chaired by the Prime Minister, and two executive bodies, namely the *Comissão Executiva da Reforma da Educação Profissional*⁴ (COREP) composed of 12 members, six from the Government and six from the private sector, and the Executive Secretariat (*Secretariado Executivo*) for the National Commission for Professional Education Reform (SE-COREP) that also oversees PIREP's monitoring and evaluation. The Project has four components, namely:

- Component A: Development of an Institutional Framework
- Component B: Development of a Standards-Based Qualification and Training System
- Component C: Quality Improvement in Training Institutions
- Component D: Skills Development Fund (FUNDEC)

TVET Project Performance

22. **The Project is rated Satisfactory both for Implementation Progress and Development Objectives.** Most PDO and intermediate indicators have been achieved. The percentage of graduates of targeted programs that find a job or create a job that is directly related to the field of study within 6 months from graduation is currently 52 percent. Even though slightly below the target of 55 percent, this is a significant improvement compared to the baseline of 27 percent in 2007.

23. **The relevance of the Project is high,** and the following key project results are worth mentioning: (i) the continued involvement of the private sector in the definition of standards and curricula validation; (ii) increased private sector participation in the support to selected institutions; and (iii) the recent approval of a law that establishes a new regulatory framework for the TVET system indicating Government commitment to the reform and its willingness to introduce institutional changes to strengthen the governance and financing of the system. In this regard ANEP was created and its operationalization is expected to take place in 2015-2016. This body will replace the existing COREP and SE-COREP.

24. **The reform addressed the primary weaknesses in the TVET system:** (i) training institutes and schools typically operating in inadequate facilities, lacking equipment and applying outdated teaching curricula that no longer responded to labor market demands; (ii) a public system characterized by weak involvement on the part of employers and industry in defining occupational standards and curricular content; and (iii) an absence of a system for evaluating and accrediting private training. In order to address these challenges, the combined investments under PIREP have been instrumental in establishing some of the key elements of the TVET system (governance structure, system of

³ Inter-Ministerial Commission for Professional Education Reform.

⁴ Executive Committee for Professional Education Reform.

occupational standards, modularized curricula, and external assessment and certification). The Project has contributed in a targeted manner to improvements in quality and relevance of TVET course programs, and has begun addressing problems of access and equity. The proposed AF would contribute to strengthen the current TVET project achievements and provide support for the second phase of PIREP, which includes improving the mechanisms for administration and management of the system.

25. **The HEST and TVET projects together have contributed to a substantial increase in the number of skilled technicians and professionals in Mozambique.** In addition, the two projects raised the country's research capacity in key expanding sectors, such as Agriculture, Health, Animal Science, Industrial Maintenance, Tourism and Hospitality, Mining, and ICT. Both projects have successfully supported, on a continual basis, reforms in the TVET and higher education systems, including building closer linkages with the private sector, and focusing on quality technical and engineering training through competency based training.

D. Rationale for Additional Financing

26. **The proposed AF is a needed response to meeting the goal of shared prosperity, given Mozambique's current economic and educational challenges, and it is fully aligned with the GoM approach to tertiary education development.** Firstly, Mozambique's rapidly transforming and expanding economy faces serious skill shortages, in particular at the professional level and within the STEM areas. This AF supports the preparation of the high quality workers needed for the resource boom. Secondly, the continued massive expansion of higher education makes it necessary to scale-up investments in governance and quality of teaching and learning to avoid future graduate unemployment. In addition, by sustaining employment in key growth sectors, this AF will contribute to growth of ancillary sectors (such as construction and other services) that generate employment for lower skilled poorer workers. Finally, by supporting a connection between higher education and TVET, the proposed AF responds directly to the new institutional approach to this system as demonstrated by the creation of the MCTESTP after the October 2014 presidential elections.

27. **The proposed AF will scale up the impact of the parent project in higher education and science and technology related activities.** Overall, the AF will support the GoM and higher education institutions to raise the number of higher education graduates from 11,000 to an estimated 14,700 in 2018 in a higher quality and more equitable manner through improved institutional capacity by: (i) accrediting and independently evaluating at least 45 education programs in more than half of the country's higher education institutions; (ii) increasing the number of master graduates of STEM and agricultural sciences to 340 (a tenfold increase from the start of the project) and introduce private sector partnerships to raise relevance; (iii) supporting teaching and learning with curriculum and equipment improvements in 30 STEM and agriculture programs benefiting 15,000 students; (iv) strengthening national research capacities to produce research outputs of relevance to the country's strategic economic sectors; and (v) providing financial support to help 1,900 poor students attend higher education and build a more sustainable financial aid system in the future.

28. **The proposed AF will contribute to strengthening the institutional framework and development of TVET** through (i) better linking TVET education to higher education through competency based curricula. This allows for graduates of TVET to continue into higher education. This is especially important for low and middle-class families who more often attend TVET; (ii) scaling up

coordination between the governmental entities involved in post-basic education; and (iii) supporting the newly created ANEP. This safeguards important capacity built over the last decade in the TVET Project.

29. **The operation takes advantage of proven delivery capacity and ownership, while institutionalizing past pilot reforms and supporting new reforms.** First, the AF will use the same proven delivery partners (agencies and departments originally under MINED and MCT, and now under the MCTESTP, and the ES-COREP) which have repeatedly demonstrated implementation capacity and high ownership. Second, the AF will allow for the institutionalization of the reforms piloted and capacity built under HEST and the TVET projects over the last 5 years. For instance, the TVET Project reform unit would be institutionalized under the recently approved ANEP, and the competitive fund, Institutional Development Fund (IDF) which supports grants and loans of higher education institutions, will equally be institutionalized as part of the implementation of the GoM's recently approved financing strategy for higher education. Third, new reform initiatives would be piloted. For example, the student financial aid program would develop and pilot a targeted student loan program.

30. **For the World Bank, the AF offers an opportunity to continue to support an effective and important government strategy, enhance synergies across WBG interventions, and increase cost-efficiency.** In particular the AF will respond to the Government's demand for continued World Bank support to post-basic education and reduce shortage of skills, which is an objective of several WBG units, including the Trade and Competitiveness Global Practice, the IFC and the Cross Cutting Solution Area (CCSA) on Jobs. In fact, the proposed AF is fully aligned with and contributes to the activities to be developed under the *Let's Work Partnership* (led by the CCSA Jobs) of which Mozambique is a pilot country for joint World Bank and IFC activities. The operation allows for synergies across these interventions. Finally, the AF consolidates the WBG's support to post-basic education within one operation, thus reducing its administration costs.

31. **The AF design is informed by lessons learned from implementation of HEST and TVET projects** such as (i) the importance of having a sector wide approach to strengthen and establish synergies across institutions; (ii) the need for a continuous dialogue to mobilize and strengthen private sector linkages in education and research programs; and (iii) the need to strengthen monitoring and evaluation of the project-supported programs.

III. Proposed Changes

Summary of Proposed Changes	
<p>The impact of the HEST Project will be substantially scaled up. The main changes introduced to the Project are additions to the PDO, results framework, two new activities, and implementation arrangements following the inclusion of the TVET elements into the Project, and required adjustments resulting from the GoM reorganization of Ministries after the elections of October 2014. Further, there are minor changes to intermediate indicators in the results framework. Minor adjustments are undertaken to the competitive funds in Component B to ensure responsiveness to new economic and sector priorities. These minor changes reflect continual improvement under the Project based upon lessons learned. Lastly, the Project closing date will be extended by 3 years to December 31, 2018.</p>	
Change in Implementing Agency	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Project's Development Objectives	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Results Framework	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Safeguard Policies Triggered	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change of EA category	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Other Changes to Safeguards	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Legal Covenants	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Loan Closing Date(s)	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Cancellations Proposed	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Disbursement Arrangements	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Reallocation between Disbursement Categories	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Disbursement Estimates	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change to Components and Cost	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Institutional Arrangements	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Financial Management	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Procurement	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Implementation Schedule	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Other Change(s)	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Development Objective/Results	
Project's Development Objectives	
<p>Original PDO</p> <p>The objectives of the Project are to: (a) increase the number and raise the quality of graduates at the undergraduate and graduate levels; and (b) strengthen the national research capacities to produce research outputs of relevance to the Country's strategic economic sectors.</p>	

Change in Project's Development Objectives

Explanation:

The AF combines activities currently implemented by two existing projects and extends HEST for another three years. The proposed PDO will retain the HEST original PDO and also reflect the additional activities to be carried out to strengthen the institutional framework of TVET.

Proposed New PDO - Additional Financing (AF)

The objectives of the Project are to: (a) increase the number and raise the quality of graduates at the undergraduate and graduate levels; (b) strengthen the national research capacities to produce research outputs of relevance to the Recipient's strategic economic sectors; and (c) strengthen the institutional framework for TVET.

Change in Results Framework

Explanation:

The following higher targets to the existing Outcome Indicators reflect the scaled up impact:

- Number of students graduating from higher education institutions: The target will be increased from 10,929 in 2015 to 14,700 in 2018.
- Number of Master's degree graduates in math, sciences, engineering and agriculture: The target will be raised from 188 in 2015 to 340 in 2018.
- Number of programs at HEIs accredited by CNAQ: The Target will be raised from 20 to 45 by 2018
- Number of project beneficiaries. The target will be increased from 50,000 to 80,000.

One new Outcome Indicator will be introduced to reflect the TVET part of the PDO:

- "The development of a qualification system connecting medium level TVET with tertiary education"

Further, the results framework will be strengthened to include new Intermediate Indicators in order to better monitor project outputs of existing and new activities:

- Number of teachers at TVET institutions who have received training on the new qualifications framework: 200 by 2018 (reflect a new activity)
- Publication of higher education statistical yearbooks: 6 by 2018 (reflects project activity output)
- Data on STI indicators published regularly: 2 by 2018 (reflects project activity output)
- Standardized and verified targeting mechanisms for selecting students for scholarships (reflects project activity output)
- Research institutions/organizations or companies partnering with supported researchers: 4 by 2018 (reflects improved selection process)
- Number of citable and non-citable documents published by Mozambican researchers: 220 by 2018 (reflects change in the quality of research output at country level)
- Design of alternative scenarios for the introduction of new financing modalities in the provision of scholarships: to be completed by 2016 (reflects a new activity)

An indicator was added to assess participation and civic engagement:

- Percentage of beneficiaries that feel project investments reflected their needs (measured by yearly beneficiary surveys): 85% by 2015

Compliance

Covenants - Additional Financing for Mozambique Higher Education Science and Technology Project - P146602

Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
IDA						

Conditions

Source Of Fund	Name	Type
IDA	Operational Manual	Effectiveness

Description of Condition

The Operational Manual has been updated and adopted by the Recipient in form and substance acceptable to the Association.

Risk

Risk Category	Rating (H, S, M, L)
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Low
5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Moderate
7. Environment and Social	Low
8. Stakeholders	Substantial
9. Other	
OVERALL	Moderate

Finance

Loan Closing Date - Additional Financing for Mozambique Higher Education Science and Technology Project - P146602

Source of Funds	Proposed Additional Financing Loan Closing Date
International Development Association (IDA)	31-Dec-2018

Loan Closing Date(s) - Parent (Higher Education Science and Technology - P111592)

Explanation:
The closing date would be extended to December 31, 2018. The current closing date of the original HEST Project is December 31, 2015. This AF would extend the closing date to December 31, 2018 to ensure an adequate period for continued implementation of selected activities.

Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)
IDA-46840	Effective	31-Dec-2015	31-Dec-2015	31-Dec-2018	

Change in Disbursement Arrangements

Explanation:
The disbursement arrangements will be changed: (i) to respond to the recent GoM reorganization that resulted in the creation of the MCTESTP. The ongoing HEST Project has been implemented by two implementing agencies: MINED and MCT. As a result of the GoM restructuring, the mandate over higher education and TVET is now transferred to the newly created MCTESTP; (ii) A new entity, in charge of the implementation of the reform in TVET is now introduced to assist with implementation of the TVET related activities under this AF. This is the ES-COREP.

Change in Disbursement Estimates (including all sources of Financing)

Explanation:
The disbursement estimates will be modified to reflect the AF.

Expected Disbursements (in USD Million)(including all Sources of Financing)

Fiscal Year	2015	2016	2017	2018	2019
Annual	6.00	12.00	12.50	9.96	4.54
Cumulative	6.00	18.00	30.50	40.46	45.00

Allocations - Additional Financing for Mozambique Higher Education Science and Technology Project - P146602

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement % (Type Total)
			Proposed	Proposed
IDA	XDR	Goods, consultant's services, Training, Operating Costs, grants, loans, and scholarships for Parts A.1, B.1, and C.1 of the Project	25,300,000.00	100.00
IDA	XDR	Goods, consultant's services, Training, Operating Costs, grants, loans, and scholarships for Parts A.2, B.2, and C.2 of the Project	4,800,000.00	100.00
IDA	XDR	Unallocated	1,900,000.00	100.00

		Total:	32,000,000.00	
Components				
Change to Components and Cost				
Explanation: The components remain the same but the costs will be revised to reflect the scale-up of ongoing activities and inclusion of new activities.				
Current Component Name	Proposed Component Name	Current Cost (US\$M)	Proposed Cost (US\$M)	Action
System Governance, quality and management strengthening	System Governance, quality and management strengthening	14.10	23.25	Revised
Improving quality of teaching, learning and research through competitive funds	Improving quality of teaching, learning and research through competitive funds	15.80	28.80	Revised
Equity and Competitive Scholarships	Equity and Competitive Scholarships	10.10	30.20	Revised
	Unallocated	0.00	2.75	New
	Total:	40.00	85.00	
Other Change(s)				
Change in Implementing Agency				
Explanation: The AF will be implemented by two new agencies: the MCTESTP and the ES-COREP. The change is to cater for the restructuring that took place in GoM as a result of the October 2014 presidential elections, and the addition of the ES-COREP. The latter agency will be responsible for the implementation of activities aimed at strengthening the current achievements financed through the TVET Project including support to ensure the smooth transition of the ES-COREP to the recently created ANEP.				
Implementing Agency Name	Type		Action	
Ministry of Science and Technology, Higher, Technical and Professional Education (MCTESTP)	Implementing Agency		New	
Executive Secretariat of the Commission for Professional Education Reform (ES-COREP)	Implementing Agency		New	
Change in Institutional Arrangements				
Explanation:				

The number of implementing agencies will be two. The proposed AF is requested for the continuation of successful activities under the current HEST Project and to support the completion of selected activities financed under the TVET Project aiming for greater synergies between TVET and higher education. Under HEST, IDA funds have supported the ongoing reform of the higher education and science and technology sectors in the country. This was done using as implementing agencies MINED and MCT. Given the governmental restructuring, HEST AF activities will now be implemented by the MCTESTP and ESCOREP. Under the TVET Project, the Bank has financed the ongoing TVET reform. The current TVET Project is due to close in September 30, 2015. The AF is set to consolidate achievements at the levels of institutional development and sector governance, the quality of education and research, and the training of human resources in the priority STEM areas, and promote the development of synergies across higher education and TVET. Therefore to ensure smooth and timely implementation of activities, the Project will have two implementing agencies.

Change in Implementation Schedule

Explanation:

This AF would extend the closing date to December 31, 2018 to ensure an adequate period for continued implementation and consolidation of selected activities, and to address the inclusion of new activities to respond to the need for alignment with current sectoral realities and priorities.

IV. Appraisal Summary

Economic and Financial Analysis

Explanation:

The economic analysis examines the economic rationale for the proposed scale-up impact and the proposed changes of the AF. In particular, the economic analysis briefly documents:

- The continued high returns to investments in higher education: wages and therefore returns to higher education have more than doubled from 8 percent in 2002 to 17 percent for 2008, the latest available estimates. The returns are equally high for females as for males.
- Increasing cost-effectiveness of research: the project aims to encourage research collaborations with the private sector and internationally. Research that involves collaboration is found to have a greater impact, and by focusing resources towards such research, the project will increase the cost effectiveness of research grants.
- Economic rationale for supporting a student loan scheme: student financial aid is critical for low-income students to shoulder the living and studying costs, including tuition fees. However, the cost to the Government is very high without an element of repayment from the students and graduates, which is greatly facilitated by student loans. That being said, public support to student loans is necessary, since market failures inhibit commercial banks from offering long term student loans on a large scale, in particular to families with no assets to pose as collateral.

Technical Analysis

Explanation:

The AF will use the already proven mechanisms of combining competitive funding with strategic support to strengthen the capacity to govern the complex systems of higher education, science, technology and innovation, and TVET. The proposed AF aims at consolidating such mechanisms and introducing innovative elements such as new windows to existing funds, closer linkages between the public and private sectors, and piloting a student loan scheme.

Implementation arrangements for the proposed AF are designed to respond to the new organizational

structure of the education, science and research sectors, as defined by the creation of the MCTESTP. Implementation of project activities is expected to bring closer the original departments involved in the HEST and TVET projects which responded to different ministries before.

Social Analysis

Explanation:

The AF would consolidate equity in access to relevant quality education already initiated under HEST and TVET projects. It will open up opportunities for skilled employment in particular in the STEM areas, supporting the developing natural resource based economy, and bolstering the transfer of the benefits from the resource boom into sectors that will guarantee future sustainable development.

The *Fundo Nacional de Investigaçao* (FNI) has left a track record with projects supporting the technical innovation in SMEs in particular in value chain development in the agricultural sector. This kind of investment is crucial to enhance rural livelihoods. Further, through the equity scholarships program, the proposed AF will also be contributing to improve social mobility and inclusion. Preference will be given to disadvantaged but qualified students, in particular female students from the provinces. This focus on women will also play an important contribution to move forward gender equity in the country.

Environmental Analysis

Explanation:

The parent project was classified as Category B, and triggered Operational Policy 4.01 Environmental Assessment owing to the construction and rehabilitation of the Distance Education Resource Center in Manica province. No new land was acquired for major construction and no resettlement was expected and therefore OP4.12 was not triggered. The proposed AF will therefore also be classified as Category B and will continue to utilize the existing Environmental and Social Management Framework (ESMF), which has been deemed satisfactory by the Bank. No new safeguards will be triggered. The Government prepared under the parent-project an Environmental and Social Institutional Assessment including an ESMP that provides the basic steps to be followed to ensure safeguards compliance throughout the project life-cycle. The same safeguards instrument will be used to further guide the implementation of this new AF while ensuring project safeguards compliance. In the case of TVET, the environmental and social screening process as outlined in the ESMF adequately addresses any potential negative impacts of future rehabilitation activities, and therefore, project alternatives did not have to be considered.

Risk

Explanation:

The overall risk rating for the proposed AF is Moderate. The GoM restructuring which created the MCTESTP and thus brought together to a new ministry science, higher education and TVET can pose additional risks to implementation of sector strategies and policies. However, given the actors involved in the implementation of HEST and TVET projects have not changed (and just under a new ministry), implementation of the proposed AF is expected to proceed at a similar pace as that of the parent project.

V. World Bank Grievance Redress

Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB’s Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB’s independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints

may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring
Results Framework

Project Development Objectives

Original Project Development Objective - Parent:

The objectives of the Project are to: (a) increase the number and raise the quality of graduates at the undergraduate and graduate levels; and (b) strengthen the national research capacities to produce research outputs of relevance to the Country's strategic economic sectors.

Proposed Project Development Objective - Additional Financing (AF):

The objectives of the Project are to: (a) increase the number and raise the quality of graduates at the undergraduate and graduate levels; (b) strengthen the national research capacities to produce research outputs of relevance to the country's strategic economic sectors; and (c) strengthen the institutional framework for TVET.

Results

Core sector indicators are considered: Yes

Results reporting level: Project Level

Project Development Objective Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Number of students graduating from higher education institutions increased to 14,700	<input type="checkbox"/>	Number	Value	7,000	10,929	14,700
				Date	24-Nov-2008	01-Mar-2015	31-Dec-2018
				Comment			
Revised	Number of male graduates from higher education	<input type="checkbox"/>	Number Sub Type Breakdown	Value	4,500	7,202	9,702
				Date	24-Nov-2008	01-Mar-2015	31-Dec-2018
				Comment			
Revised	Number of female graduates from higher education	<input type="checkbox"/>	Number Sub Type Breakdown	Value	2,500	3,727	4,998
				Date	24-Nov-2008	01-Mar-2015	31-Dec-2018
				Comment			
Revised	Number of Master's degree graduates in Math, Science and	<input type="checkbox"/>	Number	Value	34	188	340
				Date	29-Jan-2010	01-Mar-2015	31-Dec-2018

	Engineering and Agriculture			Comment	Math, Science (5) Grads, Engineering, Others (29): i.e. Commercial Law, Juridical Science, Economy and Development, Public Health, Population Development and Education		
Revised	Number of male Master graduates	<input type="checkbox"/>	Number Sub Type Breakdown	Value	17	122	221
				Date	29-Jan-2010	01-Mar-2015	31-Dec-2018
				Comment			
Revised	Number of female Master graduates	<input type="checkbox"/>	Number Sub Type Breakdown	Value	17	66	119
				Date	29-Jan-2010	01-Mar-2015	31-Dec-2018
				Comment			
Revised	Number of academic programs accredited by CNAQ	<input type="checkbox"/>	Number	Value	0	0	45
				Date	29-Jan-2010	01-Mar-2015	31-Dec-2018
				Comment		CNAQ provided the instruments to all HEI to conduct their self-evaluation and has conducted the external evaluation in 10 HEI and 20 education programs a final step for an	

						accreditation decision.	
No Change	Research projects (approved) achieve the intended outcomes	<input type="checkbox"/>	Percentage	Value	0	76	75
				Date	31-Jan-2010	01-Mar-2015	31-Dec-2015
				Comment			
Revised	Direct project beneficiaries	<input checked="" type="checkbox"/>	Number	Value	0	50,000	80,000
				Date	29-Jan-2010	01-Mar-2015	31-Dec-2018
				Comment			
No Change	Female beneficiaries	<input checked="" type="checkbox"/>	Percentage Sub Type Supplemental	Value	0	41	45
				Date			
				Comment			
New	The development of a qualification system connecting medium level TVET and tertiary education	<input type="checkbox"/>	Yes/No	Value	No	No	Yes
				Date	01-Jan-2015	01-Mar-2015	31-Dec-2018
				Comment			

Intermediate Results Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	National Higher Education Qualifications Framework Developed	<input type="checkbox"/>	Text	Value	No	Yes	Yes
				Date	29-Jan-2010	01-Apr-2014	31-Dec-2015
				Comment			
Revised	INED fully operational	<input type="checkbox"/>	Text	Value	No	Partially	Yes
				Date	29-Jan-2010	01-Mar-2015	29-Dec-2017
				Comment		INED is operational with a strategy and activities.	
Revised	Proposals to improve teaching and learning increased	<input type="checkbox"/>	Number	Value	0	22	42
				Date	30-Dec-2010	01-Mar-2015	31-Dec-2018

				Comment			
New	Research institutions/organizations or companies partnering with supported researchers	<input type="checkbox"/>	Number	Value	0	0	4
				Date	17-Mar-2015	01-Mar-2015	31-Dec-2018
				Comment			
New	Data on STI indicators published regularly	<input type="checkbox"/>	Number	Value	1	1	2
				Date	30-Jun-2009	01-Mar-2015	31-Dec-2018
				Comment			Project funds will finance the publication of 2 books of STI data.
New	Standardized and verified targeting mechanisms for selecting students for scholarships	<input type="checkbox"/>	Text	Value	Tools for assessing the eligibility of students with regard to their social and economic conditions designed	Revision of the targeting mechanisms is ongoing	Improved targeting and verification mechanisms for award of scholarships
				Date	30-Dec-2010	01-Mar-2015	30-Mar-2016
				Comment			
New	Publication of higher education statistical yearbooks	<input type="checkbox"/>	Number	Value	0	3	6
				Date	01-Mar-2009	01-Mar-2015	31-Dec-2018
				Comment		The project financed the publication of data for the years 2010, 2011, 2012.	
New	Number of citable and non citable documents published by	<input type="checkbox"/>	Number	Value	150	180	220
				Date	30-Nov-2010	01-Mar-2015	31-Dec-2018

	Mozambican researchers			Comment			
New	Design alternative scenarios for the introduction of new financing modalities in the provision of scholarships	<input type="checkbox"/>	Text	Value	N/A	N/A	Completed
				Date	01-Mar-2015	01-Mar-2015	30-Mar-2016
				Comment			
Revised	CNAQ is Operational	<input type="checkbox"/>	Text	Value	No	Partially	Yes fully operational
				Date	29-Jan-2010	01-Mar-2015	30-Dec-2016
				Comment		CNAQ is yet to be fully staffed but launched the process of self-evaluation which was completed.	
Revised	At least 25% of research institutes receive funding from National Research Fund	<input type="checkbox"/>	Percentage	Value	0	60	70
				Date	25-Jun-2010	01-Mar-2015	31-Dec-2018
				Comment		60% of research institutes received funds from FNI and 75% of research institutes that apply for FNI receive funding.	
Revised	Scholarships to needy students to pursue a first degree in MZ institutions	<input type="checkbox"/>	Number	Value	0	1,068	1,900
				Date	06-Jan-2010	01-Mar-2015	31-Dec-2018
				Comment			
New	Number of teachers in TVET institutions who have received training on the new qualification framework	<input type="checkbox"/>	Number	Value	0	0	200
				Date	01-Mar-2015	01-Mar-2015	31-Dec-2018
				Comment			
New	Percentage of beneficiaries that	<input type="checkbox"/>	Percentage	Value	0	0	85

	feel project investments reflected their needs			Date	01-Mar-2015	01-Mar-2015	31-Dec-2018
				Comment	Surveys to assess beneficiary and citizen engagement		
New	Beneficiaries that feel project investments reflected their needs – female	<input type="checkbox"/>	Number Sub Type Supplemental	Value	0	0	3,723
New	Beneficiaries that feel project investments reflected their needs – male	<input type="checkbox"/>	Number Sub Type Supplemental	Value	0	0	9,484
New	Total beneficiaries – female	<input type="checkbox"/>	Number Sub Type Supplemental	Value	0	0	5,729
New	Total beneficiaries – male	<input type="checkbox"/>	Number Sub Type Supplemental	Value	0	0	11,158

Annex 2: Systematic Operations Risk-rating Tool

Risk category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Low
5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Moderate
7. Environment and Social	Low
8. Stakeholders	Substantial
9. Other	
OVERALL	Moderate

The ratings for risks associated with the Political and Governance and Macroeconomic categories are common to all WBG financed operations and are informed by the WBG analysis on Mozambique’s performance in such categories. The GoM restructuring, which brought about a new ministry – the MCTESTP - combining higher education, TVET and science and technology can pose additional risks to policy development and implementation of sector strategies, thus the rating of Substantial. Project activities target a variety of stakeholders including institutions and individual beneficiaries. Although criteria for loans, grants and scholarships are clearly defined and public, there is always potential for discontent among those who may not be able to benefit from Project supported activities. In line with this, the risk category associated with stakeholders is classified as Substantial. However, the implementing agencies are expected to keep their staff and have substantial proven experience in successful implementation of similar activities under the HEST and TVET projects. Social impacts are expected to continue to be positive and there are no expected environmental impacts as the proposed AF does not include civil works. The overall risk rating proposed for the operation is Moderate.

Annex 3: Detailed Description of Modified or New Project Activities

1. The AF is proposed to allow for an increased impact of the original HEST Project and scaling-up HEST related activities under the TVET Project, while strengthening the institutional framework for TVET, and introducing innovative elements aimed at developing the collaboration between the public and private sectors in skills development in Mozambique. Under the parent project, IDA funds financed the ongoing reform of the higher education and science and technology sectors in the country. Under the TVET Project, the Bank financed the first phase of the TVET reform. The proposed operation is set to consolidate achievements at the levels of institutional development and sector governance, quality of education and research, training of human resources in the priority STEM areas and support the second phase of TVET reform.

2. **The objectives of the Proposed AF** are to: (a) increase the number and raise the quality of graduates at the undergraduate and graduate levels; (b) strengthen national research capacities to produce research outputs of relevance to the Recipient’s strategic economic sectors; and (c) strengthen the institutional framework for TVET. The first two elements reflect the original PDO whereas the third includes TVET in the AF. The AF continues to support activities developed by key agencies and departments related to education, science and technology originally under MINED and MCT. Some activities will no longer be financed as it is deemed that they should now have been sufficiently institutionalized to be part of the regular activities of the sector (e.g., distance education, science councils and the Academy of Science). Other activities will be more narrowly focused (e.g., capacity building for the production of science and technology indicators) and are aligned with the new institutional setup supported under the parent project (consolidation of ANEP). Innovative elements have been introduced to some activities. Table 1 indicates the main activities and agencies benefiting from support from the parent project and the proposed AF⁵. The structure of the parent project is maintained with three main components.

Table 1: Activities in Parent Project and Proposed AF

Parent Project	Proposed AF
Component A: System Governance, Quality and Management Strengthening	
<ul style="list-style-type: none"> • Support to institutional development <ul style="list-style-type: none"> ✓ Directorate for the Coordination of Higher Education ✓ National Council of Quality Assurance ✓ National Institute of Distance Education ✓ Academy of Sciences and Scientific Councils ✓ Mozambique Research Network (MoReNet) ✓ Ministry of Science and Technology • <i>Institutional development and quality assurance TVET (under the TVET project)</i> 	<ul style="list-style-type: none"> • Support to institutional development <ul style="list-style-type: none"> ✓ Ministry of Science and Technology, Higher and Technical and Professional Education (including the Directorate for the Coordination of Higher Education) ✓ National Council of Quality Assurance ✓ Scholarships Institute ✓ ANEP ✓ Mozambique Research Network (MoReNet) ✓ TVET Governance, Qualifications and Quality ✓ M&E capacity building • Basic Science Program

⁵ TVET related activities were included under the parent project and highlighted in italic for ease reading.

Component B: Improving Quality of Teaching, Learning and Research through Competitive Funds	
<ul style="list-style-type: none"> • Institutional Development Fund for Higher Education • National Research Fund • <i>FUNDEC (under the TVET project)</i> 	<ul style="list-style-type: none"> • Institutional Development Fund for Higher Education • National Research Fund • Establishment of the National Training Fund for Professional Education
Component C: Equity and Competitiveness Scholarships	
<ul style="list-style-type: none"> • Undergraduate Scholarships • Post-graduate scholarships for Researchers 	<ul style="list-style-type: none"> • Undergraduate Scholarships • Post-graduate scholarships for Researchers, Faculty and TVET Lecturers

3. **The proposed AF will safeguard the financing of Mozambique’s participation in the Africa Higher Education Centres of Excellence Program (ACE) (P151847).** Mozambique has expressed interest in being part of the ACE network and it is expected that a Mozambican HEI will be selected to benefit from the ACE program. This institution will be a provider of STEM or agriculture courses and will see its academic and research capacity strengthened as a result of its participation in ACE and inclusion in the ACE network. Funding for Mozambique ACE is under the category of unallocated and amounts to US\$2,750,000.

Box 1: Africa Higher Education Centres of Excellence

The Africa Higher Education Centres of Excellence program, supported by the World Bank Group, aims at contributing to meet labor market demands for skills within specific areas where there are skills shortages affecting development, economic growth and poverty reduction. The project invests on a demand basis in well performing universities that can start building a foundation for Africa to increase knowledge and technology absorption and build knowledge-based competitive advantages. The program aims at: (i) creating a pattern of regional specialization among African universities; (ii) assisting African higher education institutions to tightly link their education and research with the region's development needs; (iii) using results-based financing; (iv) developing dynamic institutions that gradually become more independent financially, managerially, and administratively; and (v) helping African institutions meet international quality standards. Several western African countries have joined the program and southern and eastern African countries are in the process of joining it.

4. **Activities in Components 2 and 3 will be implemented in association with the implementation of the Mozambique Let’s Work pilot.** Mozambique was chosen to be one of the pilot countries of the Let’s Work Partnership. A program is being prepared by the WBG Let’s Work team at the CCSA Jobs. This program aims at increasing the number of jobs in 3 to 4 priority sector value chains in Mozambique, and skills development will be a key component, within a framework of public-private partnerships. The proposed AF will contribute to the supply of skills for the priority sector value chains targeted by Let’s Work.

Box 2: Let's Work Partnership

Let's Work Partnership is a global partnership that unites organizations dedicated to providing effective solutions to the global jobs crisis by harnessing the potential of the private sector to help create more and better jobs that are inclusive. The program's mission is to work with countries, private sector companies and development practitioners to support private-sector-led job growth by focusing on removing the main constraints to job creation and strengthening value chains. Mozambique was selected by the Let's Work Steering Committee as a pilot country along with Zambia, Tanzania and Bangladesh. Let's Work will partner with several entities including local partners in Mozambique, the Mozambican Government, and the private sector to develop practical approaches that help catalyse private sector investments and job creation, working in specific sectors and put together a comprehensive package of interventions to strengthen the jobs situation in the country.

Component A: System Governance, Quality and Management Strengthening (US\$9.15 million equivalent)

Sub-Component A1: Support to MCTESTP (US\$5.4 million equivalent)

5. **In higher education, HEST provided support to the following areas:** (a) technical assistance, training, and goods for the staff of the newly created regulatory institutions, namely the National Council of Accreditation and Quality, and the National Institute of Distance Learning; (b) development of policy and regulatory framework for higher education including the design of the strategic plan for HE for the period 2012-2020 and the financial reform for higher education; (c) development of the national higher education qualifications framework; and (d) design of the higher education information management system and publication of statistical yearbooks. In addition, HEST has strengthened capacity for policy development, monitoring, and evaluation within the National Directorate of Higher Education through training and technical assistance.

6. **In science and technology, HEST financed:** (a) technical assistance and goods to improve the administrative and technical capacity of MST scientific councils and National Academy of Science; (b) technical assistance and goods to strengthen the implementation of MST research and education network; (c) the design of a national math and science camp for secondary school students participating in MST's *Scientists for Tomorrow* program; and (d) collection of data on STI indicators and overall capacity building of MST key managers and officers including those posted in the Regional Centres of Science and Technology.

7. **The AF will be used to strengthen the institutional capacity of MCTESTP in higher education and science and technology through the support to the following activities:** (i)

inspection; (ii) quality assurance of HEI institutions; (iii) digitalization of the *Instituto de Bolsas de Estudio*⁶ and (iv) training of staff from IBE, CNAQ, DICES and the STI statistical department. Support will continue to be provided to piloting and evaluating the financing instruments associated to the new financing of higher education reform. With the rapid expansion of higher education institutions – number of admissions, course programs, and geographic coverage – quality assurance is becoming more and more urgent. Quality is assured by two mechanisms: evaluation and accreditation of programs and institutions, and verification and control. The former is executed by the CNAQ, a semi-autonomous body that organises self- and external evaluations and recognizes courses, programs and institutions on the basis of outcomes. The latter is done through the Inspection of MCTESTP and involves site visits to check whether HEI comply with the basic conditions established in the HE law and the decree that creates them. In this sense, the following support is to be provided by the AF:

- (i) **Inspections** tend to be done in response to complaints and are not-proactive, which means that HEIs may fail to comply with their basic obligations for a long time, as long as complaints do not reach the MCTESTP. In addition, the GoM has only allocated limited funds to HEI inspection which does not allow for much pro-activity. The allocation of AF funds to support the MCTESTP in carrying out HEI inspections is expected to contribute to change this situation.
- (ii) **Improve internal and external quality evaluation.** CNAQ has proven over the last year to be capable of achieving the targets that had been set under the original HEST. It has also formulated a clear and feasible agenda for the upcoming period. Thus, under the proposed AF, CNAQ is expected to benefit from funds to complement GoM funding to support the following activities:
 - Promotion of a culture of quality in higher education through the dissemination of the higher education quality assessment and accreditation system, involving stakeholders, including students and professional associations; support the participation of HEI in international accreditation systems, and other partnerships.
 - Assessment of courses, programs and institutions with improved manuals, guides and other tools; self-evaluations, training of external evaluators; implementation of external evaluations and the dissemination of the results.
 - Accreditation of institutions, programs and courses including the dissemination of the main conclusions of evaluation reports.
 - Ex-ante evaluation of proposals for new courses, programs and institutions, and technical assistance for course preparation and appraisal.

⁶ National Scholarship Institute, IBE.

- Institutional capacity building of CNAQ including training, equipment, ICT, website, etc.

(iii) **Strengthening IBE to improve efficiency and expand scholarship programs in an equitable manner is fundamental.** The IBE has been managing the provincial scholarship program which is financed under HEST. Student financial aid is one of the three key elements in the reform of higher education financing. To avoid negative impacts on access, for particular candidates from low socio-economic backgrounds, a student scholarship system needs to be created which is more comprehensive than the current one. Currently undergraduate scholarships are managed by a range of institutions, including HEIs. A stronger centralized administration will guarantee more equity and transparency, as well as assure the incorporation of scholarships in the above mentioned reform. Loans may also be introduced in such system. The current Management Information System (MIS) is still mostly paper based with documents located in different provinces and needs to be modernized and digitized, so as to allow for improved targeting of beneficiaries. The completion of this MIS with an appropriate digital component with adequate software and communication channels between the IBE offices in Maputo and its provincial delegations is essential to its efficiency and effectiveness. The proposed AF will allocate funds to establish the MIS (2015-2016) and for its roll-out, technical support and maintenance (2017-2018). The system is expected to gradually cover all undergraduate scholarships at HEI and graduate and postgraduate scholarships to faculty. In the future, IBE should also coordinate with MCTESTP management of post-graduate scholarships to researchers at the research institutions to avoid duplication. Finally, the MIS should be linked to pilot work on a loan system currently being studied with support of the Dutch Government.

(iv) **Capacity building of key staff and institutions in science, technology and research related areas through:**

- Financing of timely production and dissemination of STI including capacity building to MCTESTP statistical staff; capacity building and support to the collection of data and publishing of indicators; and data collection and publication – surveys on scientific research and one survey on innovation and their publication on the web and on paper.
- Promotion of science in secondary schools and civil society through funding to science clubs, four annual competitions in mathematics and IT, and four annual science fairs; STEM capacity building for five teacher training institutes; and equipment such as science kits and mobile laboratories.
- **Expanding internet connection through the Mozambique Research Network (MoReNet).** Funding will be provided to increase the number of connected institutions and to raise the quality of connection and data storage.

Sub-Component A2: Support to ES-COREP (US\$3.75 million equivalent)

8. **The TVET Project supported institutional strengthening aimed at the provision of more relevant quality TVET in Mozambique. The proposed AF will consolidate the institutional reform** by supporting the consolidation of ANEP, the governance reform of schools and training institutes, and activities related to qualifications and quality control of teaching and learning in TVET. In particular, the following activities will be financed:

- (i) Upgrade of the data management information system. This system should be designed to cover all TVET training institutions, course programs, trainers and learners.
- (ii) Development of a qualifications framework and about 15 qualifications, including those that connect TVET medium level with higher education so that learners have a full educational career perspective.
- (iii) Design and implementation of certification and accreditation mechanisms.
- (iv) Preparation and implementation of reallocation of functions and competences from INEFP and DINET to ANEP by doing functional analyses, preparing the necessary ministerial decrees, and rolling out the transfer of competences and staff.
- (v) TA to the establishment and operationalization of ANEP by core staff (former ES-COREP) assisting with the drafting and approval of statutes, establishment of the management board, capacity building and knowledge transfer, training of external verifiers, monitoring and evaluation for the professional education reform process, and other activities that will assure the consolidation of ANEP.
- (vi) Capacity building to allow for the successful implementation of the decentralized management model in at least 5 TVET institutions.

Component B: Improving Quality of Teaching, Learning and Research through Competitive Funds (US\$13 million equivalent)

Sub-Component B1: Improving Quality of Higher Education Teaching, Learning and Research through Competitive Funds (US\$12 million equivalent)

9. **HEST has been financing competitive funds for higher education (IDF), and science and technology (FNI). The proposed AF will continue financing these competitive funds while consolidating their achievements and increasing results.** The following is expected to be financed under the AF: (i) technical assistance, training and goods to support MCTESTP's IDF for purposes of developing information communication applications for education; and (ii) provision of grants to public and loans to private higher education institutions to enhance the quality of their teaching and learning processes and better link their provision with labor market demands in association with the Let's Work framework.

10. The IDF continues to play a key role in strategic investments in the improvement of teaching and learning in HEI. Its operating mechanism is competition. It has manuals and other operational procedures in place. Over the last two years it has focused its attention on financing laboratory

equipment and improving learning in science institutions. The Directorate for the Coordination of Higher Education is also addressing challenges in implementation capacity such as improvements in the electronic archive and recruitment of additional staff to monitor the implementation of activities. As part of the HE financing reform, the IDF will be institutionalized. IDF has until now operated with only Project financing. The fund is underserved in terms of MIS and staff. For this reason, the AF allocates a substantial amount of funding to strengthening the fund's management capacity, in the expectation that in the long run government budget will assume that responsibility. The following activities will be financed under the AF:

- The design, installation and maintenance of an adequate management information system that will allow for real time monitoring of sub-grants without the risk of loss of data due to inadequate back-up.
- Support to IDF operations including the equipment of office space and training of staff in grant management and the use of the MIS, and the improvement of manuals and management procedures.
- Grant making to support improvement in teaching and learning. Examples of activities likely to be funded include remedial education, equipment, internship programs, and curricula development, and the establishment of post-graduation programs. This will be done in an aligned manner with the priority skills needs identified under Mozambique Let's Work. Therefore the allocation of AF will be structured in the following way:
 - Proposals by HEI aimed at mitigating against problems of quality of higher education candidates, such as projects that connect the individual results of admission exams to remedial courses and in response to the results of quality assessment and assurance, and the establishment of post-graduate programs.
 - Grants for training equipment, e.g., the equipment of teaching labs. These grants are basically a continuation of the current support under IDF.
 - Professional internships programs that will allow the integration of higher education graduates of higher education institutions in the labour market, as well as support the creation of a feedback communication mechanism between HEI course management and the employers about contents and organization of course programs (linked to Let's Work).

11. Eligibility will remain unchanged with private HEIs being obliged to repay any grant received. Surveys will be held to measure the level of satisfaction of the beneficiaries. Priority will be given to support partnerships with the private sector that will support middle-term strategic skills development.

12. **FNI has been institutionalized.** The administration board is functional and the fund is operated with the support of relevant technical staff including managers, finance, procurement, and monitoring and evaluation staff. FNI has actively sought to improve quality, reach out to researchers and spread result outcomes. Currently the review of proposals and its evaluation follows a fixed set of rules laid down in Bank approved manuals. A review of proposals received over the last 7 years of implementation of FNI indicates increased quality of proposal writing and also of results, but it also

notes that proposals under international (regional) partnerships are of higher quality. The fund has financed 177 projects including research and innovation and technology transfer, and 149 student dissertations. One area of weakness is that sub-projects rarely result in publications in international, peer-reviewed journals.

13. The additional financing will continue to support the FNI. Grants will be differentiated so that FNI may be able to support large-scale research efforts within regional networks, as well as more conventional research activities by departments and groups of researchers within institutions. Training of graduate and post-graduate students as part of the research will be an important aspect of support, as well as the demand that research results are published at an international level. Other activities to be covered under AF are technology transfer, as well as build-up of partnerships and strengthening of the FNI.

14. The National Research Fund (NRF/NFI) will continue to provide grants to research institutions, departments and researchers. The thematic priorities remain as before aligned with Mozambique's Science, Technology and Innovation Strategy (MOSTIS). In order to respond to the needs felt by FNI management to differentiate the kinds of grants that are given so that smaller and larger scale projects can be accommodated, the following grant types will be implemented:

- Research funding to three groups of research projects:
 - **A:** At least 4 international partnerships and multiannual projects led by PhDs based at Mozambican institutions which include training of Mozambican PhDs and with budgets up to US\$250,000.
 - **B:** At least 16 grants to national partnerships between researchers based in Mozambique or departments of Mozambican HEI or research institutes lead by PhDs involving training of MSc students, and with budgets up to US\$100,000.
 - **C:** At least 40 individual researchers and departments with projects led by MScs based at Mozambican HEI or research institutes involving training of undergraduates, and with budgets up to US\$25,000.
- Support to publication of existing not yet published research results. Eligible costs include those of translation or editing, and publication fees covered by peer-reviewed journals. Typical maximum grants are US\$5,000.
- Support to incidental expenditures of PhDs which are crucial for the conclusion of their research. Typical maximum grants are US\$50,000.
- At least 10 grants to technology transfer activities to researchers, innovators, businesses and NGOs involving proven technologies which are not typically covered by other ministries.
- At least 12 training workshops and dissemination seminars including the publication of proceedings.
- Operational costs including the costs of two beneficiary satisfaction surveys and of external evaluators.

Sub-Component B2: Improving Quality of TVET Institutions through Competitive Funds (US\$1 million equivalent)

15. **The TVET project has been financing TVET supply through FUNDEC.** This competitive fund financed innovative training initiatives in technical schools, vocational training institutions, local initiatives of community-based organizations, NGOs and local governments, and the private sector. **Under the AF, FUNDEC funding will target improvement of teaching and learning in technical and vocational education** with a particular focus on skills supply for the priority sectors. Institutions are expected to bid through the submission of proposals. ES-COREP/ANEP will benefit from cooperating with FDI for the drawing of the manuals and other operative tools, given that both funds will be operating with similar objectives and target skills supply although at different skills level. AF funds are expected to allow for strategic investments in at least 5 institutions. Typical eligible items will be: curricula development, the acquisition of equipment, staff training, partnership development with the private sector, and the hiring of technical assistance for on the job training of teaching staff.

Component C: Equity and Competitiveness Scholarships (US\$20.1 million equivalent)

Sub-component C1: Higher Education Equity and Competitiveness Scholarships (US\$18.1 million equivalent)

16. **Scholarships have been an important component of HEST.** HEST investment in science and technology has contributed to building-up human capital in research, but this is still not sufficient to create the necessary critical mass. **This sub-component would provide two types of scholarships:** one for economically constrained but qualified students to pursue undergraduate studies in a Mozambique university, and the other for qualified graduates to pursue Master or PhD studies. Eligibility criteria for these two types of scholarship will be detailed in the operational manual and will take into account the skills requirements of priority sector value chains.

17. The HEST undergraduate scholarship program would provide approximately 350 scholarships a year for study in either public or private universities. Preference will be given to disadvantaged but qualified students, in particular female students from the provinces. The postgraduate scholarships would enable existing faculty and researchers to upgrade their qualifications to Master and PhD degrees in strategic areas with an emphasis on science, engineering, and technology.

18. Under the responsibility of MCTESTP, IBE will manage two types of scholarships: graduate and post-graduate scholarships for HEI lecturers, and undergraduate and graduate scholarships for higher education students. There is still a significant shortage of lecturers with a graduate or post-graduate degree. Higher education lecturers teaching in the STEM areas (including agriculture, forestry and health) will be able to apply for scholarships through IBE for trainings abroad or in Mozambique. Eligibility will depend on performance records during previous trainings and on professional evaluations. The allocated funds should benefit at least 100 lecturers. Most lecturers will be selected during the first two years of the AF so that their scholarships will be completely covered by the AF funds.

19. The second type of scholarships are for under-graduate and graduate students of HEI in Mozambique. These scholarships will also be managed by IBE. Eligibility will take into account academic performance, age (under 35 for MSc), socio-economic background, geographic origin and

gender in agreement with the national criteria for eligibility. In addition, at least 50 percent of the students should be enrolled in the STEM areas (including agriculture, forestry, and health). With regard to all scholarships the Government has agreed to continue to support the students expected to graduate beyond the lifetime of the AF. The AF final disbursement will take into consideration satisfactory incorporation of this commitment into the government budget. AF funds should result in at least 500 undergraduates financed from 2015 to 2018 with the first graduates in 2017.

20. The AF will also continue to finance post-graduate scholarships. The funds should be used to train at least 100 researchers to MSc or PhD level. Eligibility will be according to the same criteria as for the graduate scholarships to lecturers with the age limit for PhD scholarships being 45 years. Research scholarships will exclusively be allocated to candidates in the expanded STEM areas. Again, a commitment from the Government will be required that costs after the end of AF, in 2018, will be covered so that the students will be able to graduate without any disturbances. The first MSc graduates should be expected in 2017; the first PhD in 2019, i.e., after the life-span of the AF.

Sub-component C2: TVET Lecturer Training Scholarships (US\$2 million equivalent)

21. ES-COREP/ANEP will manage a scholarship fund aiming at training of TVET lecturers. Staff will be eligible for practical short term training or masters courses in Mozambique and abroad. The total number of scholarships should be 40 with the first graduates in 2017. Commitment from the Government will be sought so that costs after the end of AF in 2018 will be covered for those students still completing their training.

Annex 4: Updated Economic Analysis

1. The proposed AF will scale-up the impact of the HEST Project, while supporting new reforms and introducing a few changes based upon lessons learnt. The economic analysis presented in this Annex examines the economic rationale for the scale-up impact and the proposed changes, and it constitutes an extension of the economic analysis included in the parent project. In particular, the economic analysis briefly documents:

- ***The continued high returns to investments in higher education:*** Wages and therefore returns to higher education have more than doubled from 8 percent in 2002 to 17 percent for 2008, the latest available estimates. The returns are equally high for females as for males.
- ***Increasing cost-effectiveness of research:*** The Project aims to encourage research collaborations with the private sector and internationally. Research that involves collaboration is found to have a greater impact and by focusing resources towards such research the project will increase the cost effectiveness of research grants.
- ***Economic rationale for supporting a student loan scheme:*** Student financial aid is critical for low-income students to shoulder the living and studying costs, including tuition fees. However, the cost to the Government is very high without an element of repayment from the students and graduates, which is greatly facilitated by student loans. That being said, public support to student loans is necessary, since market failures inhibits commercial banks from offering long term student loans on a large scale, in particular to families with no assets to pose as collateral.

Analysis of returns to Tertiary Education

2. Investments in education can increase people's productivity over their entire lifetime. In project evaluation it is useful to compute the present value of the increase, assessed at the time of graduation for each cohort of project beneficiaries. The calculation typically involves two steps: (a) estimating the relevant age-earnings profiles to obtain the increment in earnings at each age, and (b) discounting the stream of incremental earnings to the time of graduation using an appropriate discount rate. In the absence of project level data on returns to education, we make use of sector level data to highlight that returns to tertiary education are high and are increasing. Rates of returns to tertiary education have gone up from 6.1 to 17.7 percent from 2002 to 2008, and are higher than those for secondary education. Further, the returns to tertiary education for females are almost the same as those for males. However, the returns to tertiary education are slightly lower than the regional average of 21.1 for Sub-Saharan Africa (SSA) countries (See Table 1)⁷.

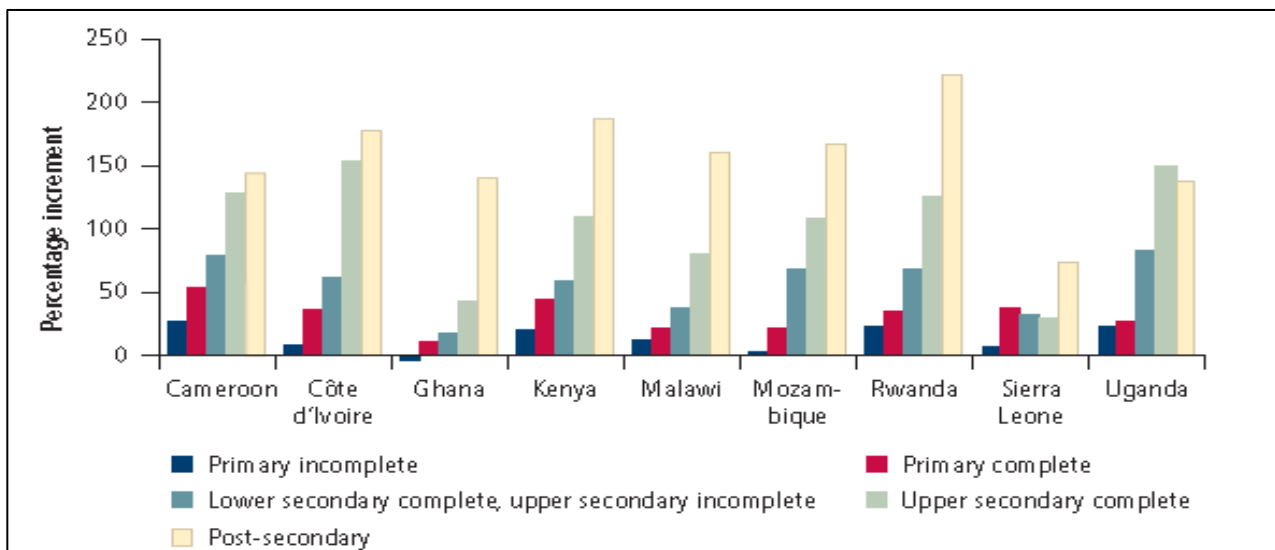
⁷ Comparable Estimates of Returns to Schooling Around the World by Claudio E. Montenegro and Harry Anthony Patrinos,

Table 1: Rates of returns to education

Year	Total primary	Total secondary	Total tertiary	Male primary	Male secondary	Male tertiary	Female primary	Female secondary	Female tertiary
Moz 2002	23.6	5.9	6.1	22.2	6.1	3.8	29.9	5.4	15.9
Moz 2008	20.2	13.3	17.7	19.5	13.2	17.6	22.5	14.3	17.7
SSA Average	14.4	10.6	21.0	12.5	10.1	21.0	17.5	12.7	21.3⁸

3. Furthermore, Mozambique is amongst the SSA countries where the percentage increment in wages is much higher for post-secondary education than any other level of education, similar to Ghana Malawi, Kenya and Rwanda. (See Figure 1).

Figure 1: Percentage increment in wages based on completion of different levels of education⁹



Increasing Cost-Effectiveness of Research

4. Analysis of research quality in Africa shows that enhanced collaboration with the private sector and enhanced international collaboration increases the quality of the research and thus the efficiency of the invested funds. The AF will strengthen two aspects of support to applied research: (i) enhance collaboration with the private sector, and (ii) enhance international collaboration. Component B of the project supports in a competitive and merit-based manner universities and research institutions to undertake applied research on topics critical to Mozambique’s development. A recent study¹⁰ examines

⁸ SSA averages are based on the most recent data available for each country.

⁹ Source: Growth and Equity in Tertiary Education in Sub-Saharan Africa by Peter Darvas, Sonali Ballal, and Kebede Feda

Note: Hourly wages among wage workers by level of education, contrasted to workers without education (Filmer & Fox, 2014, p. 73).

¹⁰ “A Decade of Development in Sub Saharan African Science, Technology, Engineering and Mathematics Research” by World Bank and Elsevier (2014).

the impact of research as measured in terms of scientific citations to the specific study, the most common impact measurement of scientific material. The study finds that the impact of scientific collaboration between the private sector and academic institutes is higher than other types of collaboration (See Table 2). Collaboration with the private sector increases scientific impact by a factor 3-6 over scientific work conducted by research individually without any type of collaboration. Further, research shows that the key rationale for supporting private sector collaboration of the research is the impact that such collaboration has on the relevance of research and the probability of the findings to translate into improved products or methods.

Table 2: Impact (adjusted FWCI) associated with different types of cross-sector collaboration

Region	Academic – Corporate	Academic – Government	Academic – Medical
East Africa	2.81	2.00	2.69
Southern Africa	3.71	2.01	2.43
West & Central Africa	6.09	2.67	2.48
South Africa	2.88	2.07	3.71

5. Similarly, the World Bank study finds that the impact of research conducted through international collaborations in Southern Africa is three-times more than the impact of single-author papers (Table 3). International collaboration thus increases the quality of outcomes and cost-effectiveness of the investment.

Table 3: Impact (adjusted FWCI) associated with different types of collaboration

Region	Single-Author	Institutional	Intra-Regional	International
East Africa	1.08	1.00	1.03	3.23
Southern Africa	1.07	1.00	1.24	3.82
West & Central Africa	1.13	1.00	0.92	3.64
South Africa	0.95	1.00	1.12	2.67

Economic rationale for supporting the introduction of a student loan scheme

6. Under Component C, the project successfully supported the piloting and institutionalization of a scholarship program providing targeted scholarships for low-income students to pursue higher education. The proposed AF will scale-up this impact, and support the development and piloting of a student loan scheme.

7. **The level of tuition fees and the availability of financial assistance can greatly influence the access to and equity in tertiary education.** Financial aid is a critical tool for ensuring expansion of tertiary education in a financially sustainable and equitable manner. It enables expansion of the tertiary education system by reducing the requirement for public financing, while also allowing for equitable access to higher education through well-targeted financing mechanisms. As described in OECD (2014) Education at a Glance, student aid is an important means to provide access to higher education, especially in countries with a large share of full fee paying students.

8. **To promote equity, Mozambique invests in student financial aid.** In 2010, IBE, Mozambique’s agency for student financial aid was allocated a budget of MT 130,800,000 for student aid, while the annual higher education budget was MT 3,465 million. This accounts for 3.7 percent of the annual

budget of higher education. This compares to 20 percent for OECD countries and 13 percent for middle-income countries for which there is information, Source OECD (2014).

9. There are strong economic arguments for students to contribute to the costs of higher education, particularly through a student loan scheme. Given the high per unit cost of tertiary education, as compared to primary and secondary education, a policy of universal free tertiary education with student financial aid is very costly to the Government and taxpayers. The rationale for cost sharing is based on the following arguments:

- Individuals benefit substantially from education in terms of higher salaries. They can therefore contribute to the costs of it, especially if the timing of the costs/contributions is aligned with the benefits, which a student loan scheme does.
- Contributing to the costs of education makes students aware of the costs and gives a personal incentive for completion on time. This also makes them more demanding as consumers of education and thus institutions become better and more relevant providers.

10. No large scale student loan scheme can exist in Mozambique without public support. So far, even small, exclusive, loans schemes in private institutions in Sub-Sahara Africa have failed to be sustainable. As in the rest of the world, large scale access to student loans based upon academic qualifications regardless of family background has to be publicly supported. There are substantial market failures such as high social returns, information asymmetries, and uncertainties. Further, in contrast to a mortgage or a car loan, the underlying asset (a well-trained brain) cannot be repossessed in case of loan default, thereby making education loan a much riskier type of loan. Therefore, a well-managed student loan program merits (and requires) substantial public subsidies.

Annex 5: Project Costs for the Additional Financing

Project Costs by Component, Implementing agency, and Activity

Ministry	Budget	Ministry	Budget	Agency	Budget
MCTESTP – Higher Education	US\$	MCTESTP- Science and Technology	US\$	ES-COREP / ANEP	US\$
Component A: System Governance, Quality and Management Strengthening					
Project management	1,000,000.00	Project management	750,000.00	Project management (including 200,000 for management of scholarships)	650,000.00
Support to HEI inspections and Quality Assurance	500,000.00	Indicators	600,000.00	Upgrade data management Information system to support ANEP operation	400,000.00
Implementation of Quality Assurance and Accreditation	1,150,000.00	Basic science	1,000,000.00	Qualification frame and the development of qualifications including curriculum development	800,000.00
Development of IBE	400,000.00			Development and implementation of certification and accreditation	400,000.00
				Preparation and implementation of reallocation of functions and competences from INEFP and DINET to ANEP	200,000.00
				TA to the establishment and operationalization of ANEP by core staff former ES-COREP	1,000,000.00
				Capacity building to allow for the successful implementation of the decentralized management model of TVET institutions	300,000.00
Subtotal	3,050,000.00	Subtotal	2,350,000.00		3,750,000.00

Ministry	Budget	Ministry	Budget	Agency	Budget
MCTESTP – Higher Education	US\$	MCTESTP- Science and Technology	US\$	ES-COREP / ANEP	US\$
Component B: Improving Quality of Teaching, Learning and Research through Competitive Funds					
IDF: data management system	250,000.00	NRF – general research funding	3,600,000.00	FUNDEC: Improvement of teaching in learning in technical and vocational education including partnerships with private sector	1,000,000.00
IDF: operation	250,000.00	NRF - Support to publications	375,000.00		
IDF: Grants for remedial course programmes, curriculum adaptations in response to QAA, post-graduate programs	1,750,000.00	NRF - Support to ongoing PhD work	50,000.00		
IDF: Grants for training equipment	1,750,000.00	NRF - Technology transfer	100,000.00		
IDF: professional internship programmes	1,500,000.00	NRF - seminars, trainings, partnership building	1,800,000.00		
		NRF – operational costs	575,000.00		
Subtotal	5,500,000.00	Subtotal	6,500,000.00	Subtotal	1,000,000.00
Component C: Equity and Competitiveness Scholarships					
Scholarships for lecturers	4,940,000.00	Scholarships for researchers	4,000,000.00	Scholarships for TVET lecturers	2,000,000.00
Scholarships for HE students	9,160,000.00				
Subtotal	14,100,000.00	Subtotal	4,000,000.00		2,000,000.00
Total	22,650,000.00	Total	12,850,000.00	Total	6,750,000.00
Unallocated					
					2,750,000.00
Grand Total					45,000,000.00

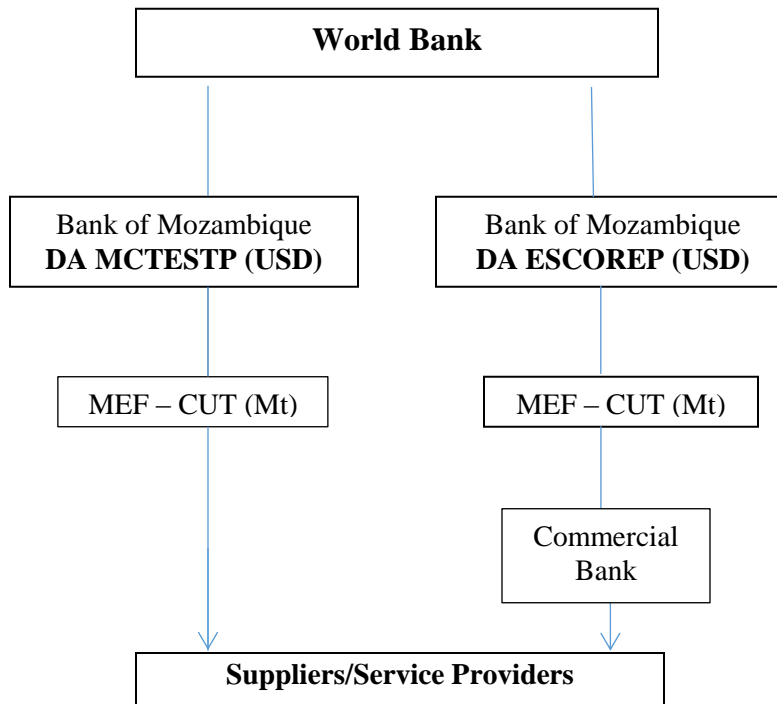
Annex 6: Changes to Implementation Arrangements

Financial Management

1. The Financial Management performance of the parent project is *Satisfactory*. Interim Financial Reports (IFRs) have been submitted on time and in a satisfactory manner. There are no overdue audit reports and the two implementing agencies have remained staffed with experienced and qualified personnel. MINED has appropriately followed up on the most recent audit report, while no significant issues were reported on ES-COREP's audit report. The audits of the AF will follow similar arrangements under the TVET and on-going HEST, where they will be under the responsibility of the Administrative Court (*Tribunal Administrativo*) for MCTESTP. ES-COREP will contract an acceptable audit firm under Bank procurement guidelines.

2. There are no alterations to the FM arrangements under the on-going projects; each implementing agency will produce its own quarterly reports, and each implementing entity will be managing its own Designated Account held at the *Banco de Moçambique*. These segregated accounts may only be used to finance activities from the project. The project will continue to make use of similar reporting arrangements, where MCTESTP will also disburse through IFRs, while ES-COREP will make use of a transaction based disbursement mechanism. The chart below indicates the flow of funds under the Project.

Figure 1: Summary of Disbursement Flow

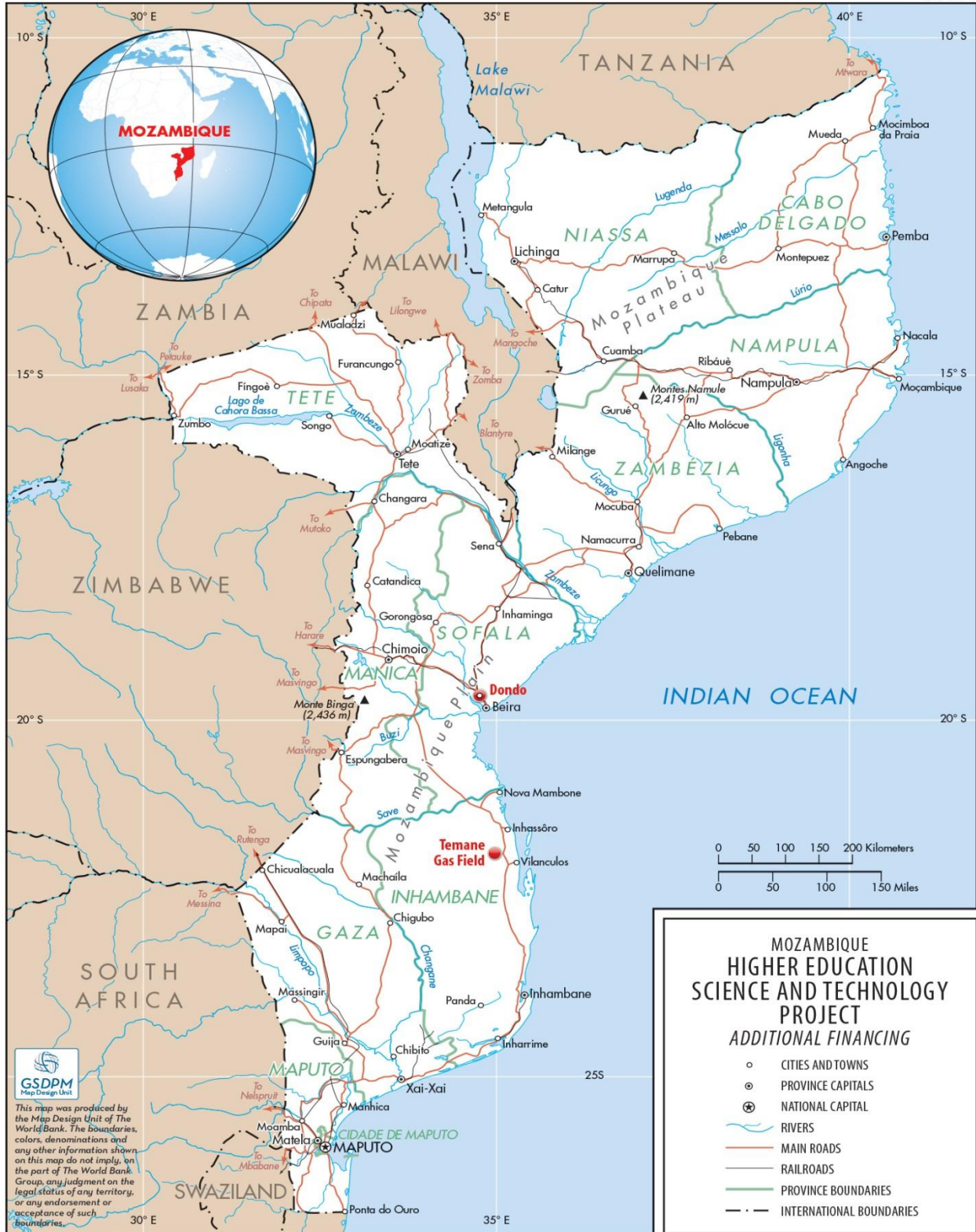


Procurement

3. With the AF the ES-COREP will be added as an implementing agency for selected activities under Components A, B and C of the Project.
4. The capacity of the ES-COREP was reviewed and assessed to be satisfactorily resourced to implement the envisaged activities. The procurement function under the ES-COREP is headed by a Procurement Manager supported by a Procurement Officer. The team possesses adequate qualifications and experience to successfully implement the AF activities, in addition to the remaining activities under the TVET Project.
5. No changes will be made to the implementation arrangements for the MCTESTP activities, with the AF other than the migration of the activities previously managed by MINED and MCT to MCTESTP. The team within the MCTESTP has the necessary capacity in place for managing the Project activities.
6. With the envisaged measures and with the proposed changes, the overall risk for Procurement is rated as Moderate.

Annex 6: Map of Mozambique

IBRD 41545



MARCH 2015