

Document of
The World Bank

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Report No: PAD1436

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT
ON PROPOSED CREDITS TO

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA IN THE AMOUNT OF SDR 17.4 MILLION
(US\$24 MILLION EQUIVALENT)

REPUBLIC OF KENYA IN THE AMOUNT OF SDR 12.8 MILLION
(US\$18 MILLION EQUIVALENT)

REPUBLIC OF MALAWI IN THE AMOUNT OF SDR 8.7 MILLION
(US\$12 MILLION EQUIVALENT)

REPUBLIC OF MOZAMBIQUE IN THE AMOUNT OF SDR 4.3 MILLION
(US\$6 MILLION EQUIVALENT)

REPUBLIC OF RWANDA IN THE AMOUNT OF SDR 14.5 MILLION
(US\$20 MILLION EQUIVALENT)

UNITED REPUBLIC OF TANZANIA IN THE AMOUNT OF SDR 17.1 MILLION
(US\$24 MILLION EQUIVALENT)

REPUBLIC OF UGANDA IN THE AMOUNT OF SDR 17.1 MILLION
(US\$24 MILLION EQUIVALENT)

REPUBLIC OF ZAMBIA IN THE AMOUNT OF SDR 8.7 MILLION
(US\$12 MILLION EQUIVALENT)

AND A PROPOSED GRANT TO

INTER-UNIVERSITY COUNCIL FOR EAST AFRICA
IN THE AMOUNT OF SDR 5.8 MILLION (US\$8 MILLION EQUIVALENT)

FOR AN
EASTERN AND SOUTHERN AFRICA HIGHER EDUCATION CENTERS OF EXCELLENCE PROJECT

May 5, 2016

Education Global Practice
Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective February 29, 2016)

Currency Unit	=	United States Dollars (US\$)
Ethiopian Birr (BIR) 21.32	=	US\$1
Malawi Kwacha (MWK) 732.50	=	US\$1
Rwanda Franc (RWF) 765	=	US\$1
New Zambian Kwacha (ZMW) 11.38	=	US\$1
SDR 0.72	=	US\$1
US\$1.38	=	SDR 1

(Exchange Rate Effective March 31, 2016)

Kenya Shillings (KES) 101.45	=	US\$1
New Mozambique Metical (MZM) 50.50	=	US\$1
Tanzania Shillings (TZS) 2186.99	=	US\$1
Ugandan Shilling (UGX) 3,370	=	US\$1
SDR 0.71	=	US\$1
US\$1.41	=	SDR 1

FISCAL YEAR

Ethiopia	:	July 8 – July 7
Kenya	:	July 1 – June 30
Malawi	:	July 1 – June 30
Mozambique	:	January 1 – December 31
Rwanda	:	January 1 – December 31
Tanzania	:	July 1 – June 30
Uganda	:	July 1 – June 30
Zambia	:	January 1 – December 31
IUCEA	:	July 1 – June 30

ABBREVIATIONS AND ACRONYMS

AAU	Addis Ababa University
AAiT	Addis Ababa Institute of Technology
ACE	Africa Center of Excellence
ACE I	Western and Central Africa Higher Education Centers of Excellence Project
ACE II	Eastern and Southern Africa Higher Education Centers of Excellence Project
CBA	Cost-Benefit Analysis
CNS	College of Natural Sciences – Addis Ababa University
CIPS	Chartered Institute of Procurement and Supply
DA	Designated Account
DLI	Disbursement Linked Indicator
DLR	Disbursement Linked Result
DP	Development Partner
EAC	East African Community

EEP	Eligible Expenditure Program
EFY	Ethiopian Financial Year
ESA	Eastern and Southern Africa
ESMP	Environmental and Social Management Plan
EU	Egerton University
FM	Financial Management
FMM	Financial Management Manual
GDP	Gross Domestic Product
GRS	Grievance Redress Service
ICB	International Competitive Bidding
ICP	International Comparison Program
ICS	International Consultants selection
ICT	Information and Communication Technology
IDA	International Development Association
IEC	Independent Evaluation Commission
IFMIS	Integrated Financial Management Information System
IFR	Interim Financial Report
IPSAS	International Public Sector Accounting Standards
IRR	Internal Rate of Return
IUCEA	Inter-University Council for East Africa
JOUST	Jaramogi Oginga Odinga University of Science and Technology
LUANAR	Lilongwe University of Agriculture and Natural Resources
MoU	Memorandum of Understanding
MoF	Ministry of Finance
MoEST	Ministry of Education, Science, and Technology
M&E	Monitoring and Evaluation
MU	Moi University
MUST	Mbarara University of Science and Technology
NCB	National Competitive Bidding
NM-AIST	Nelson Mandela African Institute of Science and Technology
NSC	National Steering Committee
PAD	Project Appraisal Document
PASET	Partnership for Applied Sciences, Engineering and Technology
PDO	Project Development Objective
PDU	Procurement and Disposal Unit
PFA	Performance and Funding Agreement
PhD	Doctor of Philosophy
PMU	Procurement Management Unit
PPA	Project Preparation Advance
PPA 2011	Public Procurement Act No. 7 of 2011
PPDA	Public Procurement Disposal Authority
PPF	Project Preparation Facility
POM	Project Operational Manual
RFU	Regional Facilitation Unit
RPPA	Rwanda Public Procurement Authority
RSC	Regional Steering Committee
R&D	Research and Development
SADC	South African Development Community
SAI	Supreme Audit Institution
S&T	Science and Technology
SOE	Statement of Expenditure

SPIU	Single Project Implementation Unit
SSA	Sub-Saharan Africa
STEM	Science, Technology, Engineering and Mathematics
SUA	Sokoine University of Agriculture
TA	Technical Assistance
TFP	Total Factor Productivity
TTL	Task Team Leader
TVET	Technical and Vocational Education and Training
UEM	Universidade Eduardo Mondlane
UIS	United Nations Educational, Scientific and Cultural Organization Institute for Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNCITRAL	United Nations Commission on International Trade Law
UR	University of Rwanda
USD	United States Dollar

Regional Vice President:	Makhtar Diop
Country Director:	Ahmadou Moustapha Ndiaye – Regional Integration
Senior Global Practice Director:	Claudia Maria Costin
Practice Manager:	Sajitha Bashir
Task Team Leaders:	Xiaonan Cao, Arun Joshi, and Reehana Raza

AFRICA
Eastern and Southern Africa Higher Education Centers of Excellence Project

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PAD DATA SHEET

Africa

Eastern and Southern Africa Higher Education Centers of Excellence (P151847)

PROJECT APPRAISAL DOCUMENT

AFRICA

GED01

Report No.: PAD1436

Basic Information			
Project ID P151847	EA Category B - Partial Assessment	Team Leader(s) Xiaona Cao, Arun R. Joshi, Reehana Rifat Raza	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 26-May-2016	Project Implementation End Date 04-Oct-2021		
Expected Effectiveness Date 30-Sep-2016	Expected Closing Date 31-Dec-2022		
Joint IFC No			
Practice Manager/Manager Sajitha Bashir	Senior Global Practice Director Claudia Maria Costin	Country Director Ahmadou Moustapha Ndiaye	Regional Vice President Makhtar Diop
Borrower: Ministry Of Finance and Economic Planning Republic of Rwanda, Ministry of Finance and Planning United Republic of Tanzania, Ministry of Finance Planning and Economic Development Republic of Uganda, National Treasury Republic of Kenya, Ministry of Finance Economic Planning and Development Republic of Malawi, Ministry of Economy and Finance Republic of Mozambique, Ministry of Finance Republic of Zambia, Ministry of Finance and Economic Cooperation Federal Democratic Republic of Ethiopia			
Responsible Agency: Ministry of Education, Federal Democratic Republic of Ethiopia			
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Responsible Agency: Ministry of Education, Science, Technology and Sports, Republic of Uganda			

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Responsible Agency: Ministry of Education and Vocational Training, United Republic of Tanzania			
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Telephone No.:	255-75-4481450	Email:	sylviatemu2014@gmail.com
Responsible Agency: Ministry of Higher Education, Republic of Zambia			
Contact:	Owen Mgemezulu	Title:	Permanent Secretary
Telephone No.:	260977584864	Email:	mgemezulu@hotmail.com
Responsible Agency: Ministry of Science & Technology, Higher, Technical & Professional Education, Republic of Mozambique			
Contact:	Celso Laice	Title:	Permanent Secretary
Telephone No.:	25821352800	Email:	Celso.Laice@metestp.gov.mz
Responsible Agency: Ministry of Education, Science and Technology, Republic of Kenya			
Contact:	Collette A. Suda	Title:	Principal Secretary, State Department of Higher Education
Telephone No.:	254-020-318581	Email:	pshigher@education.go.ke
Responsible Agency: Ministry of Education, Republic of Rwanda			
Contact:	Mike Hughes	Title:	Adviser, Science, Technology and Innovation
Telephone No.:	250788301157	Email:	mikehughesuk@gmail.com
Responsible Agency: Inter-University Council for East Africa			
Contact:	Alexandre Lyambabaje	Title:	Executive Secretary
Telephone No.:	256414256251	Email:	alyambabaje@iucea.org
Project Financing Data(in USD Million)			
<input type="checkbox"/> Loan	<input checked="" type="checkbox"/> IDA Grant	<input type="checkbox"/> Guarantee	
<input checked="" type="checkbox"/> Credit	<input type="checkbox"/> Grant	<input type="checkbox"/> Other	
Total Project Cost:	148.00	Total Bank Financing:	148.00
Financing Gap:	0.00		
Financing Source			Amount
BORROWER/RECIPIENT			0.00
International Development Association (IDA)			140.00
IDA Grant			8.00
Total			148.00

Expected Disbursements (in USD Million)										
Fiscal Year	2016	2017	2018	2019	2020	2021	2022	2023	0000	0000
Annual	0.00	28.00	30.00	30.00	25.00	20.00	15.00	0.00	0.00	0.00
Cumulative	0.00	28.00	58.00	88.00	113.00	133.00	148.00	148.00	0.00	0.00
Institutional Data										
Practice Area (Lead)										
Education										
Contributing Practice Areas										
Agriculture, Energy & Extractives, Health, Nutrition & Population, Trade & Competitiveness										
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	60								
Health and other social services	Health	5								
Agriculture, fishing, and forestry	General agriculture, fishing and forestry sector	15								
Energy and mining	General energy sector	10								
Information and communications	Information technology	10								
Total		100								
<input checked="" type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.										
Themes										
Theme (Maximum 5 and total % must equal 100)										
Major theme	Theme	%								
Human development	Education for the knowledge economy	80								
Trade and integration	Technology diffusion	10								

Rural development	Other rural development	10
Total		100
Proposed Development Objective(s)		
To strengthen selected Eastern and Southern African higher education institutions to deliver quality post-graduate education and build collaborative research capacity in the regional priority areas.		
Components		
Component Name	Cost (USD Millions)	
Component 1: Strengthening Africa Centers of Excellence (ACEs) in Regional Priority Areas	140.00	
Component 2: Capacity Building Support to ACEs through Regional Interventions	3.00	
Component 3: Facilitation, Coordination and Administration of Project Implementation	5.00	
Systematic Operations Risk- Rating Tool (SORT)		
Risk Category	Rating	
1. Political and Governance	Substantial	
2. Macroeconomic	Moderate	
3. Sector Strategies and Policies	Moderate	
4. Technical Design of Project or Program	Moderate	
5. Institutional Capacity for Implementation and Sustainability	High	
6. Fiduciary	Substantial	
7. Environment and Social	Moderate	
8. Stakeholders	Moderate	
9. Other		
OVERALL	High	
Compliance		
Policy		
Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]
Does the project require any waivers of Bank policies?	Yes []	No [X]
Have these been approved by Bank management?	Yes []	No [X]
Is approval for any policy waiver sought from the Board?	Yes []	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []

Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04		X	
Forests OP/BP 4.36		X	
Pest Management OP 4.09		X	
Physical Cultural Resources OP/BP 4.11		X	
Indigenous Peoples OP/BP 4.10		X	
Involuntary Resettlement OP/BP 4.12		X	
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60		X	
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Maintain the National Representative in the Regional Steering Committee (RSC)	X		SemiAnnual
Description of Covenant			
The Recipient shall maintain throughout the period of Project implementation its representative in the RSC to provide overall guidance and oversight for the Project at the regional level, and to participate in semi-annual meetings. This covenant is based on Schedule 2, Section I, A, 1 of the Financing Agreement, and is applicable to all the participating countries.			
Name	Recurrent	Due Date	Frequency
Maintain the National Steering Committee (NSC)	X		SemiAnnual
Description of Covenant			
The Recipient shall maintain throughout the period of Project implementation the NSC to hold semi-annual reviews of performance and implementation support for the Project at the national level, including approvals of Annual Work Programs and implementation planning. This covenant is based on Schedule 2, Section I, A, 2 of the Financing Agreement, and is applicable to all the participating countries.			
Name	Recurrent	Due Date	Frequency
Maintain Project Implementation Teams in ESA Higher Education Institutions.	X		CONTINUOUS
Description of Covenant			
The Recipient shall maintain throughout the period of Project implementation, the Project Implementation Teams in the Eastern and Southern Africa Higher Education Institutions to run day-to-day management of the Project. This covenant is based on Schedule 2, Section I, A, 3 of the Financing Agreement, and is applicable to all the participating countries.			
Name	Recurrent	Due Date	Frequency

Implement the Project in accordance with the Project Implementation Plan (PIP)	X		CONTINUOUS
Description of Covenant			
The Recipient shall cause the Africa Centers of Excellences to: (i) adopt not later than one month after the Effective Date and, thereafter maintain their respective PIPs in form and substance satisfactory to the Association; and (ii) carry out the Project in accordance with the PIP and Environmental and Social Management Plan. This covenant is based on Schedule 2, Section I, F, (a) of the Financing Agreement, and is applicable to all the participating countries.			
Name	Recurrent	Due Date	Frequency
Hiring of Independent Verifier(s)		31-Dec-2016	
Description of Covenant			
The Recipient IUCEA shall be responsible to carry out the verification of the proper fulfillment of DLIs and DLRs through the Independent Verifiers (for DLI 2 - DLI 4 and DLR 2.1 - DLR 4.2), to be hired in accordance with the provisions of Schedule 2, Section I, C, 1 of the IUCEA Financing Agreement, not later than six months after the Effective Date, and thereafter maintained under terms and conditions acceptable to the Association.			
Name	Recurrent	Due Date	Frequency
Adoption of Project Operational Manual (POM)		30-Jun-2016	
Description of Covenant			
The Recipient IUCEA shall: (a) adopt not later than one month after the Effective Date, and thereafter maintain the Project Operational Manual in form and substance satisfactory to the Association; and (b) carry out the Project in accordance with said POM, in accordance with the provisions of Schedule 2, Section I, E, 1 of the IUCEA Financing Agreement.			
Conditions			
Source Of Fund	Name	Type	
IDA	Performance and Funding Agreement (PFA)	Effectiveness	
Description of Condition			
The Performance and Funding Agreements have been executed in form and substance satisfactory to the Association on behalf of the Recipient and the Eastern and Southern Africa (ESA) Higher Education Institutions. This condition is based on Article V, 5.01, (a) of the Financing Agreement, and is applicable to all the participating countries.			
Source Of Fund	Name	Type	
IDA	National Steering Committee	Effectiveness	
Description of Condition			
The National Steering Committee has been created by the Recipient in form and substance satisfactory to the Association. This condition is based on Article V, 5.01, (b) of the Financing Agreement. This condition is applicable to all the participating countries except Kenya which has already created the NSC.			

Source Of Fund	Name	Type		
IDA	Performance and Funding Ratification	Effectiveness		
Description of Condition				
The Additional Legal Matter consists of the following, namely the PFA have been duly authorized or ratified by the Recipient and the ESA Higher Education Institutions and are legally binding upon the Recipient and the ESA Higher Education Institutions in accordance with their terms. This condition is based on Article V, 5.02, and is applicable to all countries.				
Source Of Fund	Name	Type		
IDA	Independent Verification of Eligible Expenditure Program (EEP) Spending Reports	Disbursement		
Description of Condition				
No disbursement will take place under Category (1) for any DLI/DLR until and unless the Association has received from the Independent Verifiers, the EEP Spending Reports confirming that the DLI and DLR have been achieved, and containing a proposal for disbursement under each Withdrawal. This condition is based on Schedule 2, Section IV, B, 1, (b), and is applicable to all countries.				
Source Of Fund	Name	Type		
IDA	Performance Agreement Ratification	Effectiveness		
Description of Condition				
The Performance Agreement has been executed in form and substance satisfactory to the Association on behalf of the Recipient IUCEA and the Regional Steering Committee. This condition is based on Article IV, 4.01 of the IUCEA Financing Agreement.				
Team Composition				
Bank Staff				
Name	Role	Title	Specialization	Unit
Arun R. Joshi	Team Leader (ADM Responsible)	Lead Education Specialist	Higher Education	GED01
Reehana Rifat Raza	Team Leader	Senior Economist	Education Economist	GED01
Xiaonan Cao	Team Leader	Senior Education Specialist	Higher Education	GED01
Xiaoping Li	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement	GGO07
Donald Paul Mneney	Procurement Specialist	Consultant	Procurement	GGODR
Patrick Piker Umah Tete	Financial Management Specialist	Sr Financial Management Specialist	Financial Management	GGO25
Ana Ruth Menezes	Team Member	Senior Education Specialist	Education - Mozambique	GED01

Andreas Blom	Team Member	Lead Economist	Education Economist	GED01
Carl Erik Schou Larsen	Team Member	Consultant	Agriculture	GEDDR
Celia A Dos Santos Faias	Team Member	Program Assistant	Administration	GED01
Constance Nekessa-Ouma	Safeguards Specialist	Social Development Specialist	Social Safeguards	GSU07
Cornelia Jesse	Team Member	Senior Education Specialist	Education - Tanzania	GED01
Elizabeth Ninan Dulvy	Team Member	Senior Education Specialist	Education - Uganda	GED01
Elvis Teodoro Bernado Langa	Team Member	Financial Management Specialist	FM - Mozambique	GGO13
Enagnon Ernest Eric Adda	Team Member	Sr Financial Management Specialist	FM - Rwanda	GGO19
Girma Woldetsadik	Team Member	Education Spec.	Education - Ethiopia	GED01
Henry Amena Amuguni	Team Member	Sr Financial Management Specialist	FM - Kenya	GGO31
Hiroshi Saeki	Team Member	Senior Economist	Education - Rwanda and Zambia	GED01
Isabella Micali Drossos	Counsel	Senior Counsel	Legal	LEGAM
Lingson Chikoti	Team Member	Consultant	FM - Zambia	GGO25
Luis M. Schwarz	Team Member	Senior Finance Officer	Disbursement Officer	WFALA
Meron Tadesse Techane	Team Member	Sr Financial Management Specialist	FM - Ethiopia	GGO25
Michael Eriu Okuny	Team Member	Sr Financial Management Specialist	FM - Tanzania	GGO31
Nalin Jena	Team Member	Senior Education Specialist	Education - Kenya	GED01
Nkahiga Mathus Kaboko	Team Member	Education Spec.	Education - Tanzania	GED01
Nobuyuki Tanaka	Team Member	Economist	Education - Malawi	GED01
Ok Pannenburg	Team Member	Consultant	Health	GEDDR

Paul Kato Kamuchwezi	Team Member	Financial Management Specialist	FM - Uganda and IUCEA	GGO31
Ruth Karimi Charo	Team Member	Senior Education Specialist	Education - Kenya	GED01
Sonali Ballal	Team Member	Consultant	Education	GEDDR
Svetlana Khvostova	Safeguards Specialist	Natural Resources Mgmt. Spec.	Environmental Safeguards	GEN01
Thanh Thi Mai	Team Member	Senior Education Specialist	Education - Ethiopia	GED01
Trust Chamukuwa Chimaliro	Team Member	Financial Management Specialist	FM - Malawi	GGO31

Extended Team

Name	Title	Office Phone	Location

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Tanzania	Morogoro	Morogoro		X	Sokoine University of Agriculture
Tanzania	Arusha	Arusha		X	Nelson Mandela African Institution of Science and Technology
Kenya	Nakuru	Njoro		X	Egerton University
Kenya	Uasin Gishu	Eldoret		X	Moi University
Kenya	Siaya	Bondo		X	Jaramogi Oginga Odinga University of Science and Technology
Rwanda	Kigali	Kigali		X	University of Rwanda
Uganda	Central Region	Nkozi		X	Uganda Martyrs University
Uganda	Western Region	Mbarara		X	Mbarara University of Science and Technology
Uganda	Central Region	Kampala		X	Makerere University
Ethiopia	Dire Dawa	Dire Dawa		X	Haramaya University
Ethiopia	Adis Abeba	Addis Ababa		X	Addis Ababa University
Zambia	Lusaka	Lusaka		X	University of Zambia

Zambia	Copperbelt	Kitwe		X	Copperbelt University
Malawi	Central Region	Lilongwe		X	Lilongwe University of Agriculture and Natural Resources
Malawi	Southern Region	Blantyre		X	University of Malawi - College of Medicine
Mozambique	Maputo City	Maputo		X	Universidade Eduardo Mondlane

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required ? Consulting services to be determined

I. STRATEGIC CONTEXT

A. Regional Context

1. **Sub-Saharan Africa (SSA) has experienced remarkable economic growth, and boosts in productivity in the last decade.** Its annual Gross Domestic Product (GDP) growth has accelerated from an average of two percent in the 1990s to five percent in 2014. The low-income economies in SSA grew on average at 7.4 percent. The share of the population living below poverty (US\$1.90 per day) in the region declined from 57 percent in 1990 to 43 percent in 2012.¹ The African middle class has tripled in size over the past 14 years, and the expansion is continuing.² Overall, this growth has been driven largely by a relatively sound fiscal policy, an improved business environment, domestic production and consumption power, and increased trade and investment in specific sectors such as agriculture, extractives, construction, services, information and communication technology (ICT), and tourism.

2. **As part of SSA, the Eastern and Southern African (ESA) countries have enjoyed similar development.** Despite having some differences in economic structures, there continues to be a heavy reliance on agriculture and extractives in majority of the countries. Some East African countries such as Rwanda and Tanzania were outliers in the ESA region and had annual GDP growth rates of around seven percent in 2014.³ Growth in oil, gas, mining and agriculture together account for 60 percent of the overall economic growth. The potential for growth in these sectors has attracted a significant amount of foreign investment, with foreign investment in East Africa alone having grown by 11 percent to US\$6.8 billion in 2014.⁴ These investments are mainly targeted toward fast expanding sectors such as oil and gas in Tanzania and textiles in Ethiopia. To expand, transform, and sustain their economies into the next level of development, the ESA countries have to rely more on higher level skills and knowledge, with a focus on science and technology (S&T).

3. **To sustain such growth and transform the economy to be globally competitive, ESA requires higher order skills in Science, Technology, Engineering and Mathematics (STEM).** However, the required human capital, especially at the higher level, is insufficient across the ESA countries. Gaps are most acute in the following areas:

- (a) ***Post-graduate training in S&T.*** The region does not produce sufficient number of skilled graduates required for expanding and diversifying its economy. While higher education enrollment has increased rapidly over the years, the region still lags far behind other regions (figure 1), especially in generating graduates in S&T, health, and other related disciplines. In Rwanda and Tanzania, for example, the percentage of enrollment in the arts and social sciences (60 percent and 45 percent respectively) was substantially higher than that of science and engineering (20 percent and nine percent respectively). In Mozambique, only eight percent of enrollment and four percent of

¹ <http://www.worldbank.org/en/news/press-release/2015/10/16/africa-gains-in-health-education-but-numbers-of-poor-grow>.

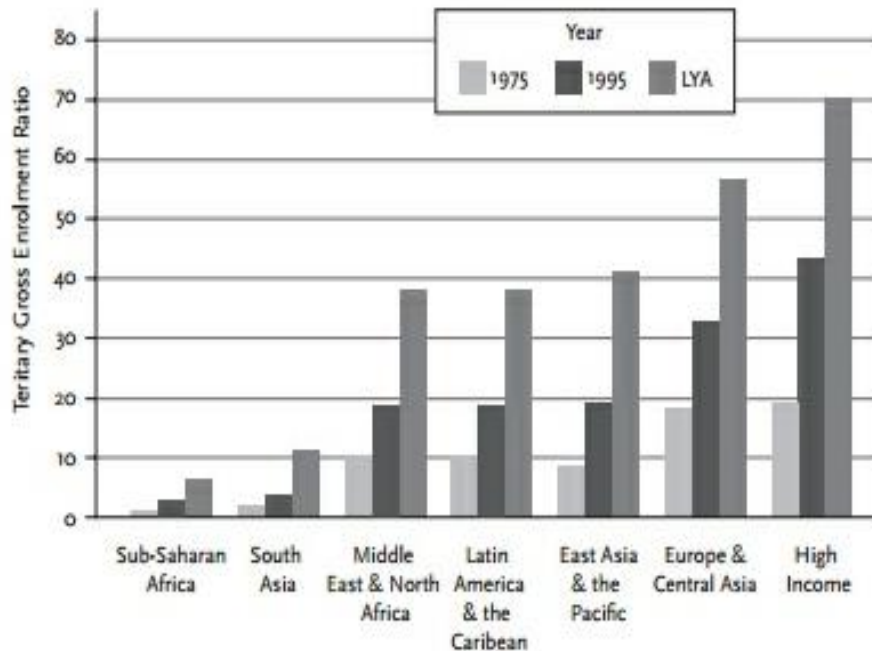
² York, Geoffrey. 2014. "Africa's middle-class boom is real." *The Globe and Mail*, August 19, 2014.

³ International Monetary Fund. 2015. *Regional Economic Outlook: Sub-Saharan Africa Navigating Headwinds*. Washington, DC: International Monetary Fund.

⁴ United Nations Conference on Trade and Development. 2015. World Investment Report.

graduates were in engineering and technology compared to 44 percent of enrollment and 47 percent of graduates in social sciences, law, and business.

Figure 1: Higher Education Enrollment, by Region and Year⁵



Source: World Bank and Elsevier (2015)

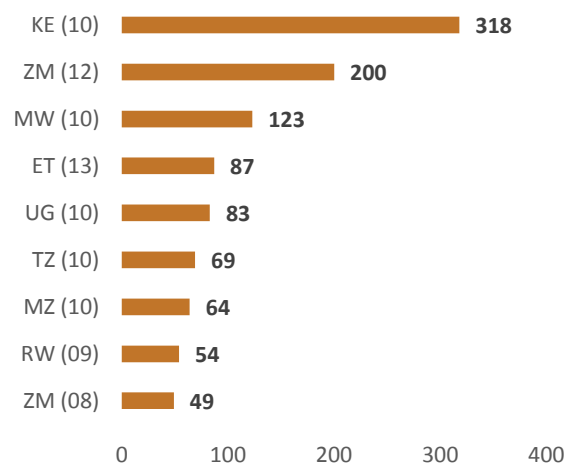
- (b) **Quality, relevance, and accountability.** Firm surveys across ESA reveal that firms face difficulties in filling technical and managerial positions, while at the same time, many university graduates are not able to find jobs. This is not simply due to the inadequate number of graduates, but also due to the low quality and relevance of their education and training. Despite the increase in enrollment, faculty qualification has not improved much. Very few faculty members have Doctor of Philosophy (PhD) degrees. It is estimated that only about 100 PhDs are produced by higher education institutions across 31 countries in SSA in science, technology and engineering.⁶ Institutions often do not have the resources to attract top quality faculty, nor are they able to provide faculty support with research facilities. There is little accountability demanded of higher education institutions, leading to inadequate quality of education across the region. In addition, curriculum inputs from, and training engagements for students in the private sector are minimal, resulting in a mismatch between the graduates and labor market requirements, especially in S&T.

⁵ LYA – latest year available

⁶ World Bank, 2014. *Applying Science, Engineering and Technology for African Competitiveness and Development*. Draft Paper. Washington, DC: World Bank.

(c) **Research outputs and researchers.** SSA contributes less than two percent of the global research output and just 0.1 percent of patents.⁷ From 2005-12, Ethiopia acquired only one patent and Kenya acquired 29. The region also produces the lowest number of scientific researchers in the world. For example, Rwanda, Malawi, Uganda and Zambia produce only 54, 123, 83 and 49 researchers per million inhabitants respectively (figure 2). In comparison, Malaysia and Thailand produce 1,780 and 546 researchers per million inhabitants.⁸

Figure 2: Researchers in ESA per million inhabitants (headcount)



Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO). Science Report: Towards 2030 (2015)

4. These deficiencies are particularly severe in the following regional priority areas.

(a) **Industry.** In general, ESA countries are experiencing low and declining levels of enrollment in areas associated with the growing industrial sectors which require skills in STEM. This is despite the vast demand for graduates in emerging sectors with high growth potential such as oil and gas, energy, extractives, and railways industries across ESA. The region faces a shortage of skilled professionals with specialized knowledge who can innovate and boost productivity in these areas, such as engineers (civil, petroleum, and mechanical), geoscientists, and mechanical technicians. Graduates in the fields of engineering, manufacturing and construction are only 11.2 percent of the total graduates in Rwanda, 6.4 percent in Uganda, 3.82 percent in Mozambique, 17.45 percent in Kenya and 4.88 percent in Ethiopia respectively.⁹

(b) **Agriculture.** Low levels of agricultural productivity, which has exacerbated food insecurity and slowed poverty reduction, is partly driven by skill constraints and the slow adoption of technology. Primarily this low productivity is because of factors such as frequent droughts, rampant diseases (crop and livestock), unimproved crop varieties, lack

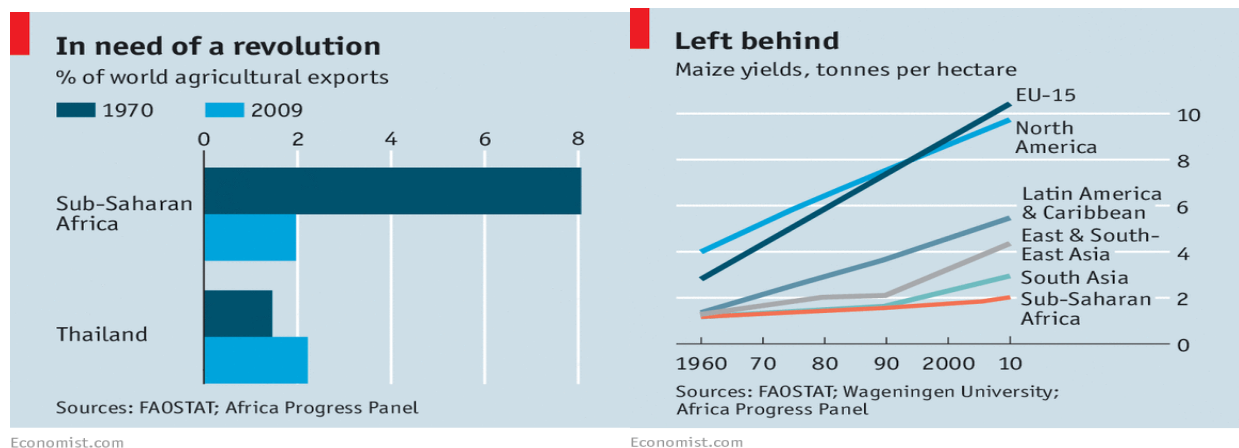
⁷ World Bank and Elsevier. 2015. *A Decade of Development in Sub-Saharan African Science, Technology, Engineering and Mathematics Research*. Washington, DC: Elsevier.

⁸ UNESCO. 2015. *UNESCO Science Report, 2015*. Paris, France: UNESCO.

⁹ UIS (UNESCO Institute of Statistics), 2012. Accessed at: <http://data.uis.unesco.org/Index.aspx?queryid=163>.

of access to quality seeds/fertilizers, and poor management of water resources. However to address these challenges, Africa needs trained personnel such as agribusiness specialists/managers, crop scientists, plant breeders, veterinarians, agronomists, water and irrigation engineers, and food preservation and processing specialists to drive innovative research and teaching for agricultural advancement, improved nutrition, and agricultural sustainability. Africa has moved from being a food exporter in the 1970s to a food importer whose share of agricultural exports has fallen from eight percent to two percent; Thailand's share of agricultural exports as a share of world exports is now greater than SSA's share (figure 3, left). Even though the value of the food market in Africa is predicted to rise threefold in the coming decades, the region will be unable to meet this demand due to low productivity, inadequate capacity, and slow adoption of technology. For example, maize yields in SSA is the lowest in the world (figure 3, right).

Figure 3: Decline in Agricultural Production in SSA



Source: The Economist accessed at <http://www.economist.com/news/middle-east-and-africa/21665005-small-farmers-africa-need-produce-more-happily-easier-it>

(c) **Health. Low life expectancy in ESA (60 and 59 years for Eastern and Southern Africa respectively; much lower than the global average of 71)¹⁰ is traced to a myriad of local health challenges.** Infectious diseases account for 40-50 percent of illness in the region; these include malaria and tuberculosis, diseases that have been eliminated elsewhere. Infectious diseases are also a major constraint to both the export of African livestock and the spread of diseases from animals to humans. One reason the region has inadequate capacity for management of epidemics is a lack of qualified personnel. For example, enrollment in medical and health sciences is only six percent in Ethiopia, four percent each in Mozambique, Tanzania and Zambia, and seven percent in Rwanda, all of which are significantly lower than comparable countries in other regions. Resources in traditional medicine and knowledge are not fully explored and utilized in drug development and there are concerns that the drugs and vaccines that western pharmaceutical industries produce are tailored more towards western diseases and less targeted to the needs of ESA.

¹⁰ <http://www.statistica.com/statistics/274511/life-expectancy-in-africa/>;
<http://apps.who.int/gho/data/view.main.690?lang=en>.

(d) Education. The quality of tertiary education is impeded by poor learning outcomes in primary and secondary education, particularly in mathematics and science. Poor education quality, especially at the primary and secondary levels, is a significant obstacle to higher education access and outcomes. Poor teaching competencies, particularly, in mathematics and science are a barrier to the production of high-quality graduates and faculty in the field. This is despite the fact that there are currently 150 million primary school students and 52 million secondary education students in SSA. There is an inadequate capacity in producing innovative and effective teachers, school leaders, and administrators, with an added challenge of outdated teaching methodology and curricula.

(e) Applied Statistics. The absence of reliable and accurate data, data management systems, and skilled statisticians is a serious constraint to policymaking, adequate analysis of development challenges, and monitoring and evaluation (M&E) of interventions. In SSA countries, across various sectors, there is a severe shortage of highly trained statisticians and of good quality data. This makes it difficult to provide analyses, plan and monitor interventions, inform fact-based policy, and track progress. It may not be recognized directly, but inadequate capacity of research and training within higher education is an important contributor to the constraints in this area.

5. **A regional approach to higher education in Africa offers the best way to build and sustain excellence in higher education in African economies to develop the human resources required for the severe development challenges mentioned above.** A regional approach would offer the following benefits:

(a) Economies of Scale. Few, if any countries in ESA, have the persistent means to fund internationally competitive centers of excellence in the broad range of areas required for their economies. Regional specialization and coordination of investments is the only way that ESA countries can financially and academically develop quality provision of higher education in this broad range. Without coordinated investments, the region risks investing scarce resources within the same areas, competing for the same faculty and producing similar knowledge, and more importantly, leaving the region with a number of gaps in skills, knowledge, and technology. A regional specialization of higher education would: (i) concentrate the limited available top-level faculty into a critical mass that can attain academic excellence; (ii) establish and sustain the necessary number of centers of excellence to support the region's demand for specialized human capital and knowledge at lower unit costs; and (iii) generate increased knowledge and flow of students across borders.

(b) Public Goods. Knowledge and research/innovation outputs generated by institutions in ESA countries are a regional public good. Therefore, the knowledge and innovation generated through applied research in this endeavor will be available/applicable to the consumption of the entire region. The inability to appropriate all the benefits from an investment in research and human capital development in its production results is due to under-investment. There are also a number of positive externalities from research and innovation which exacerbates this problem. For example, the benefit of having a quantum amount of skilled workers, not available before, allows for new types of research and innovation, and economic production (including possibly greater entrepreneurship). There

are also knowledge spillovers which allow newly trained workers to share new knowledge with other less skilled workers, resulting in enhanced productivity (i.e. within firms and in universities).

6. **A regional approach would work best in focusing on the few dynamic institutions with pockets of quality faculty that have already been responding innovatively by offering quality, fee-based, courses to students in Eastern and Southern Africa.** Success factors for regional collaboration in higher education are: (a) collaboration through specialization; (b) political emphasis on common standards in benchmarking; and (c) willingness to promote mobility of students and faculty. Institutions and centers within universities across ESA already specialize in offering high level training in STEM, agriculture, health and S&T innovation (including education and applied statistics). Supporting these institutions will allow them to improve and boost the quality of education in the region within their fields through partnerships, and allow them to compete with institutions in high-income countries for African students capable of paying for quality education.

7. **There is a growing and keen understanding in ESA of the common development challenges that the region faces, and a regional response in addressing the skills and capacity constraints in S&T is desirable through a shared regional framework and collaboration.** There is also recognition of the impact such a focus will have in addressing some of the more intractable challenges facing the region, including issues of poverty and inequity.

B. Sectoral and Institutional Context

8. **The higher education system in ESA has experienced expansion in the past decade with regard to enrollment and institutions.** Despite the impressive growth in enrollments and institutions, the current sector is not sufficiently oriented towards the development needs of the region. It is largely input-driven and historically funded with inadequate attention to performance and results. It now faces numerous challenges that need to be addressed. These challenges are discussed below.

9. **The higher education sector in ESA faces severe constraints with regard to producing a critical mass of graduates, including female graduates, to meet regional development needs.** Despite recent rapid expansion in higher education enrollment in the region, gross enrollment rates in ESA countries are still low (one percent in Malawi and six to eight percent in Ethiopia, Mozambique, and Rwanda).¹¹ Female enrollment rates (as a percent of total enrollment) are even lower with rates of less than one percent in Malawi and four percent in Ethiopia.¹² Overall, the ESA region produces low numbers of graduates in science, health, agriculture and engineering with less than 30 percent of graduates majoring in these fields, with female rates being even lower. This scenario is in marked contrast with emerging markets such as Vietnam, mid-income countries such as Malaysia, or advanced economies such as South Korea. Further, graduation rates of graduate students is also low, just ten percent for PhD students in S&T fields. The low number of higher education graduates could potentially influence the overall teaching quality—teaching force availability and capacity—within these disciplines at lower levels of education.

¹¹ UIS. 2014 – Ethiopia and Mozambique; 2013 – Rwanda; and 2011 – Malawi.

¹² UIS. 2014 – Ethiopia and 2011 – Malawi.

10. **Though some efforts have been made by regional institutions in crafting policies for establishing quality assurance systems across the region, most of these policies are not implemented.** Individual countries have initiated efforts in improving the quality of their higher education institutions under the pressure of system expansion. An example is the mandatory external quality assurance for all programs and institutions in Kenya. However, due to low capacity and investment, sound quality assurance mechanisms are either inadequate or non-existent. Institutions are struggling to provide quality education to students in the face of crumbling infrastructure and facilities, outdated curriculum and teaching methods, and insufficient research faculty. Particularly in S&T, the curriculum needs to be updated to ensure that graduates are abreast of the latest knowledge. Finally, universities need to overhaul the STEM pedagogy, particularly with regard to increasing the academic use of technology to deliver quality programs.

11. **Higher education quality is undermined by the slow pace of faculty capacity development and qualifications.** Many universities in ESA do not have sufficient number of qualified faculty, which in turn prevents them from providing relevant higher education training and research mentoring. Entrenched policies, institutional structures, and academic traditions have placed obstacles on female representation in teaching, research and administration. They are also constrained by the small number of PhDs produced each year who are candidates for faculty recruitment or to lead research hubs or centers. For example, in Kenya, 290 doctorates graduated in 2013, while tertiary enrollment expanded by 80,000. Even assuming full employment of all new PhD holders, the ratio of newly qualified faculty to new students was 1:275. To ensure high quality in higher education and research, the production of Master's and PhD's must be increased. The sector also needs to be cognizant of other issues that deter quality faculty recruitment – low salaries, lack of research funding and equipment, and limited autonomy. In addition, most African countries have experienced adverse effects of “brain drain”; less than 15 percent of staff in universities in Ethiopia, Kenya, Mozambique and Rwanda hold PhD degrees.¹³ Even flagship universities, such as Addis Ababa University (AAU) in Ethiopia and the University of Malawi in Malawi, employ only about 20-25 percent of staff with PhDs.

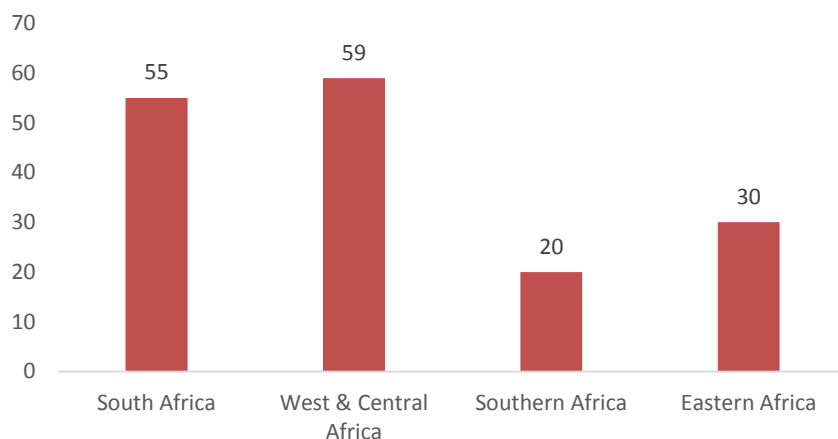
12. **Independent research capacity is extremely low** (Figure 4). Most of the research outputs in the ESA are produced with international (non-African) collaboration. Only 30 percent of publications in Eastern Africa and 20 percent in Southern Africa are the result of national and/or regional collaboration. Kenya, Uganda, Rwanda, and Ethiopia were the most productive countries in the region when it came to publications and most of the articles were produced with international collaborators. For example, more than 95 percent of articles from Rwanda were with international collaborators. Though international collaboration is important, it may result in the research agenda being driven by the international partner(s) rather than by problems or challenges that are local to the region. Regional collaboration on common development problems remains the most efficient way of solving the region's development challenges. Regional collaboration is however impeded by low researcher and staff mobility leading to insufficient cross-regional collaboration for addressing regional development challenges.¹⁴ A large majority of the articles produced in the

¹³ World Bank, 2014. *Applying Science, Engineering and Technology for African Competitiveness and Development*. Draft Paper. Washington, DC: World Bank.

¹⁴ World Economic Forum. 2015. *The Global Competitiveness Report, 2014-15*. Geneva: World Economic Forum.

region focus on health, with less than 2 percent of scientific publications produced by Ethiopia, Kenya, Malawi, Mozambique, and Zambia focusing on engineering, energy, and technology.¹⁵

Figure 4: Level of Regional and National Collaboration – number of articles with regional co-authors (2012)



Source: Scopus (World Bank. 2015. *A Decade of Development in Sub-Saharan Africa Science, Technology, Engineering and Mathematics Research*. Washington, DC: World Bank)

13. **The limited engagement with the private sector is reflected in the mismatch between the labor market needs and competencies of graduates.** Despite the fact that enrollment in higher education has been on the rise in the region, business surveys continue to highlight that firms cannot find sufficiently skilled workers, particularly those with scientific skills. An example is the growing, but unfilled employment need in sectors such as extractives and railways. The lack of engagement between industry and universities also hampers innovation. As universities have limited engagement with industry, industry has little confidence in the capacity of universities to generate graduates as problem solvers for their specific problems. The barriers to university-industry linkages include: (a) the lack of universities' knowledge of industry needs, as well as the industry's lack of knowledge of the universities' research capacity; (b) limited knowledge of how to engage with industry; (c) a lack of capacity to broker agreements/contracts with industry; and (d) a lack of knowledge on how to showcase research outputs and applications.

14. **Sound governance, leadership and results orientation in higher education are all still lacking in spite of a systematic expansion of higher education in the region.**¹⁶ Many ESA countries have enacted sweeping higher education laws promoting autonomy and improving accountability. For example, Tanzania has enacted a unified law to provide an integrated approach to both public and private universities and many university governing boards have included external representatives. Most countries also allow certain financial autonomy to institutions to collect funds from governments and donors, charge tuition fees, and indulge in revenue-generating activities. However, for the reforms to work, higher education institutions need strong leaders with the capacity to effect change in the sector, which is lacking. Increased institutional autonomy has

¹⁵ World Bank, 2014. *Applying Science, Engineering and Technology for African Competitiveness and Development*. Draft Paper. Washington, DC: World Bank.

¹⁶ World Bank. 2009. *Legal Frameworks for Tertiary Education in Sub-Saharan Africa: The Quest for Institutional Responsiveness*. Washington, DC: World Bank.

not necessarily resulted in greater accountability or a results-oriented culture, which is reflected in the quality and relevance issues mentioned in the previous sections.

15. **A regional approach that focuses on developing centers of excellence in areas of S&T to bridge skill gaps and foster an ecosystem for innovation is seen as the most effective use of regional resources to develop such capacity.** Scarcity of faculty and resources, along with gender disparity, limit the ability of each individual country in the region to develop a whole spectrum of research and teaching excellence across all science fields. Coordinated investments with country specific specializations allows the region to develop a broad based S&T ecosystem, covering all critical areas where S&T capacity is needed, without gaps. A well networked and integrated S&T ecosystem can also have economy of scale advantages with declining unit costs for both graduates and for innovation. For example knowledge spillovers can develop between faculty and researchers across countries if they have the opportunity to collaborate and share ideas within and across disciplines with benefits beyond individual centers. Further, as the development challenges are common, regional collaboration can bring together the critical mass of capacity and knowledge, otherwise partial, to resolve regional problems.

16. **The regional approach is already effectively being implemented in the first phase of the project in West and Central Africa.** Phase I was launched in 2013 for West and Central Africa as the Western and Central Africa Higher Education Centers of Excellence Project (ACE I). The project had an initial investment of US\$150 million, selected 19 African Centers of Excellence (ACEs) across seven countries – Benin, Burkina Faso, Cameroon, Ghana, Nigeria, Senegal and Togo – in three priority areas – STEM, Agriculture, and Health. ACE I, which is now operational in all the seven countries, also supports an emerging higher education system in Gambia. All the ACEs have started enrolling students, publishing research, developing partnerships and other activities that can make them become strong regional centers of excellence for the region. Redeemer University in Nigeria, which was the first to have tested an Ebola case in its lab was one of the selected ACEs under ACE I. Such regional initiatives are expected to set a global example for effectively stimulating collaboration, networking, and partnerships to cost-effectively solve regional development issues.

17. **Building on the ACE I experience, the Eastern and Southern Africa Higher Education Centers of Excellence Project (ACE II) seeks to collectively address a set of key development challenges facing ESA through interventions in developing critically-needed science and technology capacity by:** (a) selecting ACEs, from existing higher education institutions that have the capacity in specialized areas and the potential to help address regional priorities, through a competitive and transparent process from existing higher education institutions that have capacity in specialized areas and potential to help address regional priorities; (b) strengthening these specialized ACEs and enabling them to produce excellent training and applied research that meets the demand for highly skilled personnel and knowledge/technology transfer within regional priorities; (c) building networks among these ACEs to promote regional collaboration and foster partnerships with other institutions and the industry to produce innovative solutions with real impact; and (d) developing a culture of results-orientation and accountability among these ACEs through a performance-based financing mechanism, helping to set an example for other higher education institutions in the region.

C. Higher Level Objectives to which the Project Contributes

18. **The proposed Eastern and Southern Africa Higher Education Centers of Excellence Project (ACE II) is fully aligned with (i) the Bank’s twin goals of poverty reduction and shared prosperity; and (ii) the Bank’s Africa Strategy: to strengthen competitiveness and employment through the production of quality high-skilled human resources in priority growth sectors.** Through a sector-based approach, ACE II is designed to identify and address higher skills and innovation requirements for priority sectors in the region. There is extensive global evidence of the importance of higher education in building critical human capital and driving research and innovation and growth. Countries in ESA have lagged behind in developing the higher education sub-sector, thereby jeopardizing their growth potential. ACE II is meant to help address this deficiency through the creation of Centers of Excellence that address critical human resource gaps and innovations in priority sectors and will have the potential to become the regionally leading scientific and academic institution in its particular field, serving the region collectively to tackle the development challenges they all share.

19. **The project is part of the Bank’s Regional Integration Assistance Strategy (Report No. 43022-AFR) which coordinates interventions for regional public goods.** The Strategy foresees the proposed ACE II operation as having economies of scale in the use of facilities, equipment, and staff in specialized fields; to share innovations and good practices in teaching and learning; and to enhance cross-border research networks.

20. **The project will contribute to the Africa Climate Business Plan.**¹⁷ The plan proposes to bolster the region’s capacity to withstand the adverse consequences of climate change through the facilitation of investment into interventions that tackle climate change induced issues in the region. A number of centers of excellence selected in the project cover elements of climate change in line with its consequence for priority areas. Climate change has been included as a regional priority area under which ACEs could be financed at a later date depending on the availability of funding.

21. **The project complements other regional initiatives in Africa that focus on developing science and technology skills through collaboration and partnerships.** These include the Bank-supported Partnership for Applied Sciences, Engineering and Technology (PASET) which seeks to build a technical and scientific skilled labor force for priority sectors, from technical/vocational to higher education levels as well as research, to support the structural transformation of Africa. The proposed ACE II project will collaborate with the benchmarking exercise overseen by PASET to seek best practices in science education.

22. **The project aligns with Country Partnership Frameworks of the participating countries in three ways:** (i) It strengthens ongoing national operations to promote skills through a regional instrument (e.g., Malawi and Mozambique); (ii) It supports priority growth sectors through investments in skills and innovation (e.g., Rwanda, Tanzania and Zambia); and (iii) It raises youth employability and skills (e.g., Kenya, Mozambique, Tanzania, and Uganda). National governments and universities view this project as an opportunity to scale up regional collaboration

¹⁷ <http://www.worldbank.org/en/news/press-release/2015/11/24/world-bank-group-unveils-16-billion-africa-climate-business-plan-to-tackle-urgent-climate-challenges>.

in higher education; establish high-quality regional programs to train faculty in critical development priority areas; develop a new model for industry-academia collaboration; and reach a hitherto unachieved level of quality in higher education in the region.

23. **The ESA countries strongly endorse a regional approach to higher education.** There has been a strong interest in establishing regional centers of excellence. By pooling projects' regional resources, these countries aim to improve the quality of training and research in higher education, and reduce the skill gaps in critical areas. The project is also in sync with development strategies of other regional bodies such as the African Union Comprehensive African Agriculture Development Project, Science, Technology, and Innovation Strategy for Africa, and regional integration initiatives under the East African Community (EAC) and the Southern Africa Development Community (SADC). While the interest of governments in the region for the ACE approach is strong, the demand from ESA universities and other scientific institutions in the region (who in several cases are fairly autonomous from their governments) is equally pronounced. Ten countries originally expressed interest in the project. Out of the ten countries, eight are participating in ACE II as ACE hosting countries – Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zambia – have emphasized the alignment of the project with their national development priorities as well. Both Burundi and Zimbabwe initially expressed interest in their participation in ACE II. Burundi was unable to participate in the Call for Proposals due to the unrest in the country at that time. Though it does not host any ACEs, as an International Development Association (IDA) eligible country, Burundi is eligible to access services offered by the ACEs in other countries and regional capacity-building activities under the project. Zimbabwe is not an IDA eligible country and its participation is subject to whether it can finance its ACEs and other capacity building activities. It participated in the Call for Proposals and has one proposal selected by the Regional Steering Committee (RSC) based on the technical merit through the independent evaluation process, although funding for it is yet to be secured. In the meantime, Zimbabwe can participate in ACE capacity-building activities through self-financing.

II. PROJECT DEVELOPMENT OBJECTIVE

A. Project Development Objective (PDO)¹⁸

To strengthen selected Eastern and Southern African higher education institutions to deliver quality post-graduate education and build collaborative research capacity in the regional priority areas.

Project Beneficiaries

24. **The project beneficiaries are:**

- (a) Students in participating universities and their partner institutions across Eastern and Southern Africa will benefit from high quality education and training in regional priority areas;

¹⁸ The PDO will be slightly adjusted for its use in customized legal documents for each of the participating countries, i.e., “The objective of the Project is to support the Recipient to strengthen selected Eastern and Southern African Higher Education Institutions in the Recipient’s territory to deliver quality post-graduate education and build collaborative research capacity in the regional priority areas.”

- (b) Employers in targeted sectors/industries will have greater access to high quality/skilled personnel, results of applied research, and scientific knowledge for productivity improvement; as well as knowledge partners (including companies, governmental or non-governmental organizations) will use research produced by the ACEs;
- (c) Communities in which the ACEs reside will benefit from improved educational and research outreach of the ACEs, particularly primary and secondary schools and students;
- (d) Faculty and staff in the ACEs will benefit from improved teaching and research conditions and professional development opportunities;
- (e) Regional institutions such as EAC and SADC will benefit from improved capacity of the ACEs;
- (f) Faculty and students in STEM and other priority-sector disciplinary areas will benefit from exchange visits, collaborative teaching and research, and other knowledge-sharing activities across the ACEs organized by the ACE II Regional Facilitation Unit¹⁹; and
- (g) ACE hosting universities will benefit from the strengthened capacity of their ACEs, and quality improvement measures including benchmarking with other institutions initiated under the project.

PDO Level Results Indicators

25. The following indicators will be used to measure progress towards achieving the above PDO:

- (a) Regional students²⁰ enrolled by the ACEs in Master’s and PhD programs (number);
- (b) Students (both national and regional) enrolled by the ACEs in Master’s and PhD programs (number);
- (c) Memorandum of Understandings (MoUs) on partnerships for collaboration in applied research and training entered into by the ACEs (number); and
- (d) Accredited education programs offered by the ACEs (number).
- (e) Direct Project Beneficiaries (number), of which female (%)

III. PROJECT DESCRIPTION

26. The proposed ACE II project will support the governments of eight participating countries – Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zambia in strengthening the selected ACEs to deliver quality post-graduate education and build collaborative research capacity in the regional priority areas. With the view of achieving the above described vision and objective, the proposed ACE II operation will implement three sets of activities: (i) strengthening 24 selected ACEs for ESA in a set of defined regional priority areas²¹ (US\$140

¹⁹ In the customized legal agreements, the “Regional Facilitation Unit” is referred to as the “Regional Facilitation Entity.”

²⁰ “Regional students” excludes students from each ACE’s own ACE hosting country.

²¹ These priority areas have been defined by the project’s Regional Steering Committee (RSC) after broad consultations in the region. Climate change was added as a priority area for future call for proposals if financing becomes available.

million); (ii) providing capacity building support to these ACEs through regional activities (US\$3 million); and (iii) supporting coordination and management of the implementation of Components 1 and 2 (US\$5 million). Outlined below are the proposed activities to be financed under ACE II, including the key features of design and implementation. Their details can be found in Annex 2.

A. Project Components

Component 1: Strengthening Africa Centers of Excellence (ACEs) in Regional Priority Areas (US\$140 million)

27. **Under this component, the IDA Credit will finance the strengthening of 24 ACEs in five clusters of regional priorities – Industry, Agriculture, Health, Education and Applied Statistics.** Each of these 24 specialized regional centers will receive a grant of up to US\$6 million²² for implementing its proposal in a specific regional priority area. All these ACEs are expected to perform the following tasks:

- (a) Build institutional capacity to provide quality post-graduate education with relevance to the labor market;
- (b) Build institutional capacity to conduct high quality applied research, relevant to addressing a key development challenge/priority;
- (c) Develop and enhance partnerships with other academic institutions (national, regional and international) to pursue academic excellence;
- (d) Develop and enhance partnerships with industry and the private sector to generate greater impact;
- (e) Improve governance and management of the institution and set up a role model for other higher education institutions; and
- (f) Deliver outreach, and create an impact, to society by delivering excellent teaching and producing high quality applied research.

28. **The ACEs financed under the ACE II project were selected through an open, objective, transparent, and merit-based competitive process.** The Call for Proposals was followed by a two-step evaluation process conducted by the Independent Evaluation Committee (IEC)²³: a technical evaluation, as well as an onsite and leadership evaluation. Out of the 92 eligible proposals submitted, RSC conditionally selected 25 proposals to be ACEs, out of which only 24 will be financed under the project based on the following criteria²⁴: (a) address a specific challenge in one of the five priority areas in the region – industry, agriculture, health, education and applied statistics; (b) be of the highest quality; (c) have institutional capacity; (d) provide geographical balance; and (e) have IDA funding eligibility and availability. ***These selected ACEs underwent financial management (FM), procurement and safeguards assessments.*** Table 1 provides a glance at the distribution of these ACEs by cluster and country.

²² This amount is the capped disbursement amount per ACE for the project period of five years. Each ACE, with the exception of ACEs in Rwanda, can receive a maximum of up to US\$6 million over the project duration of five years. Of the four ACEs in Rwanda, as agreed with the Government of Rwanda, two (Education and Statistics) can receive a maximum of US\$4.5 million and the remaining two (ICT and Energy) can receive a maximum of US\$5.5 million over the project duration.

²³ The IEC is comprised of over 60 African and international experts with specialties in the proposal subject areas.

²⁴ The ACE from Zimbabwe, although conditionally selected, could not be included in the project as Zimbabwe is not eligible for IDA financing and has not been able to raise the needed funds so far.

Table 1: Distribution of Selected ACEs by Country and Cluster

Country/ Cluster	Industry	Agriculture	Health	Education	Statistics	TOTAL
Ethiopia	2 (Railways, Water Management.)	1 (Climate Smart)	1 (Drug Development)			4
Kenya	1 (Manufacturing)	2 (Agribusiness, Food)				3
Malawi		1 (Fisheries)	1 (Public Health & Herbal Medicine)			2
Mozambique	1 (Oil & Gas)					1
Rwanda	2 (ICT, Energy)			1 (STEM teaching)	1 (Applied Statistics)	4
Tanzania	1 (Water Infrastructure)	2 (Unspecified – Rodents, Agricultural Education)	1 (Infectious Diseases)			4
Uganda	1 (Product Design & Manufacturing)	2 (Crop Improvement, Agro-ecology)	1 (Pharma-Bio & Traditional Medicine)			4
Zambia	1 (Mining)		1 (Infectious Diseases)			2
TOTAL	9	8	5	1	1	24

29. **The proposed ACEs are expected to address specific development challenges facing the region through graduate training (Master’s, PhD, and short-term courses) and applied research in the form of partnerships and collaborations with other institutions and the private sector.** These are highlighted below for a quick illustration of their potential impact.

(a) Industry. There are nine selected ACEs in the areas of energy, extractives, ICT, manufacturing, railways, and water, based in Ethiopia, Kenya, Mozambique, Rwanda, Tanzania, Uganda, and Zambia. The center in energy will try to alleviate constraints which have resulted from low energy access and adoption of technologies in rural areas and poor inter-state energy trading in ESA. The centers in mining and oil and gas will take the lead on sustainable development of the extractive industry through the provision of education, training programs and research solutions in the field. The center in ICT will educate Africans who will develop and deploy innovative ICT services. The two centers in the water sector will address water and sanitation challenges in the region to ensure safe water and sanitation requirements for water provision; apply technology to use ground water for agricultural applications; and improve municipal and industrial water management. The center in railways will produce trained graduates who can fill the manpower needs of the burgeoning railway sector. The centers in manufacturing will utilize nanotechnology to fill the gap in promoting value addition of primary produce.

(b) Agriculture. There are eight selected ACEs in the agriculture area, based in Ethiopia, Kenya, Malawi, Tanzania, and Uganda. They will address development challenges of food insecurity and rural poverty by focusing on sustainable agriculture and agribusiness development and management, e.g., developing value chain capacity in the use of biotechnology and climate smart agriculture to increase crop and livestock productivity and

fisheries; developing technology to exploit the potential of edible insects as a source of protein; increasing the relevance of their training programs through internships, tracer studies, and wide stakeholder consultations; and producing scientists who can address issues of climate change adaptability, agricultural sustainability, and food insecurity.

(c) Health. There are five selected ACEs in the health area, based in Ethiopia, Malawi, Tanzania, Uganda, and Zambia. These centers will address development challenges in the areas of infectious diseases, public health, and drug development by providing leadership in postgraduate training and research in molecular biology, analytical epidemiology, traditional medicine, and pharma-biotechnology. These centers will provide a regional platform for innovative drug development, including exploring the use of traditional medicine, and support equitable access to medications and diagnostics in the region.

(d) Education. The selected ACE in education in Rwanda aims to improve the quality of mathematics and science education through facilitating the delivery of innovative pedagogical approaches, supporting the development and implementation of curriculum reforms, supporting research in mathematics and science education to alleviate learning barriers in these subjects and promote STEM education, and outreach programs targeting all education levels in the region.

(e) Applied Statistics. The selected ACE in applied statistics, based in Rwanda will become an international multidisciplinary center that combines expertise in statistics, economics, business, computer science, and engineering to use big data and data analytics to support evidence-based decision-making, help solve complex real-world problems related to development, monitor and evaluate performance of public intervention programs, and stimulate innovation.

30. These selected ACEs are expected to produce measurable results in the form of increased quality and quantity of graduates (Master's and PhD), and research in the priority areas as well as of increased quality and quantity of research, and increased collaboration and partnerships with industry and other higher education institutions, both regional and international. According to their proposals, over the project duration of five years, collectively these ACEs plan to:

- (a) enroll more than 3,500 graduate students in the regional development priority areas, out of which more than 700 will be PhD students and more than 1,000 will be female students;
- (b) publish almost 1,500 journal articles;
- (c) launch more than 300 research collaborations with private sector and other institutions; and
- (d) generate almost US\$30 million in external revenue.

31. Each of the selected ACEs will have the autonomy to implement its own proposals, with support from its host university and government as well as the Regional Facilitation Unit (RFU). To help improve the quality at ACE hosting institutions, all these institutions will be encouraged to participate in the PASET benchmarking initiatives. For those in the PASET

benchmarking program, technical assistance (TA) will be provided to develop comparable data and indicators, data collection protocols, standard reports, a data platform, and training where relevant. To ensure the achievement of targeted results, ACE II will employ a performance-based financing mechanism to disburse funding to each ACE against a set of agreed Disbursement Linked Indicators (DLIs, see Table 1.1 in Annex 1). To ensure regional collaboration for greater impact, the project will provide a mix of funding requirements and incentives to promote regional mobility of students and faculty, and partnerships with regional and international institutions as well as with the private sector. Each ACE will sign a Performance and Funding Agreement (PFA) with its government (i.e., the ministry in charge of higher education) which includes the following elements:

- (i) At least 15 percent of the funding must be invested in partnerships and at least ten percent must be invested in partnerships outside the ACE hosting country;
- (ii) A partnership agreement between the ACE and its respective partners needs to specify the work plan, budget and outcome arrangements;
- (iii) Civil works if needed, should not exceed 25 percent of the total grant; and
- (iv) The Government's existing commitments for continued funding of the institutional staff need to be part of the funding and performance agreement.

Component 2: Capacity Building Support to ACEs through Regional Interventions (US\$3 million)

32. Under this component, the IDA Grant will finance activities at the **regional** level to enhance the capacity of the ACEs and help them overcome key challenges for achieving the PDO. The ACE I experience indicates that additional support is needed to ensure that the selected ACEs achieve the intended outcome and impact of the project. Areas of additional support include: (a) capacity development to address key institutional inadequacies such as partnership development with the private sector; and (b) competitive scholarships to award top future talents and encourage regional student mobility. Under the ACE Scholarship Program, regional students will be financed for two years to attain a Master's degree in any of the ACEs. It is envisioned that the ACE Scholarship program will acquire the prestige of a Rhodes type scholarship program, identifying and cultivating future leaders for the region. Some elements of this component could be implemented by specialized TA firm(s) which will be overseen by the RFU.

Component 3: Facilitation, Coordination and Administration of Project Implementation (US\$5 million)

33. This component will be financed in the form of a Regional IDA Grant to the RFU. The sheer number of countries and institutions participating in ACE II makes the project implementation complex and requires a RFU that has a designated team for helping manage the project. The main role of the RFU is to deliver some capacity development activities under Component 2. The RFU will explore networks of regional institutions and industries within and outside of the ESA region and manage TA firm(s), as needed, to ensure effective project preparation and implementation, and oversee, administer, and coordinate M&E activities across the ACEs to ensure their achievement of the agreed DLI results. The Inter-University Council for East Africa (IUCEA), a regional body under the aegis of the EAC, was selected by the RSC as the RFU for the project through a competitive process (see Annex 3 for more details on the selection

process). To fulfill the responsibility as the RFU, IUCEA is forming a team which comprises a project coordinator, a financial specialist, a communication officer and others.²⁵ IUCEA has already received an IDA Grant of US\$1 million as part of the Project Preparation Advance (PPA).

B. Project Financing

34. **The IDA Credit and Grant will finance the above proposed ACE II activities through an Investment Project Financing instrument and its disbursement will be based on the achievement of the agreed DLIs for Component 1, and on statements of expenditures (SOEs) for Components 2 and 3.** The results-based financing approach is employed in Component 1 to incentivize the ACE institutions to focus on delivering results. The application of results-based financing in the form of DLIs in loan disbursement has been tried for several years in the Bank's education operations and has yielded certain key lessons: (a) prudence when estimating implementation capacity and adequate time for delivering results; (b) focus on results that are within the control of the implementing agencies; and (c) specification of detailed monitoring and reporting requirements. A similar approach is being used by ACE I, which has started showing some promising results.

35. **For Component 1, the IDA Credit disbursements will reimburse the participating governments for selected budget lines based on the performance of their ACE(s) and according to the funding agreements between the government and selected institution(s).** For Component 1, the amount of credit disbursements will be contingent upon the satisfactory achievement of agreed, pre-specified program implementation progress and performance results, in the form of DLIs that are presented in Table 1.1 in Annex 1. There are four DLIs defined for this component. Each DLI as well as each of associated Disbursement Linked Result (DLR) has an agreed unit price. The use of DLIs ensures that each ACE receives funding based on its fulfillment of the agreed conditions/requirements. The DLIs and DLRs have been fine-tuned during the Appraisal and now include a time-dynamic element in which inputs are weighted more in the earlier phase of the project to produce the expected outputs later. The reporting and verification of the achievement of the DLIs will be carried out twice a year through an agreed process (as indicated in the draft Project Operational Manual (POM)). Once the results are verified by an independent verifier, disbursement will follow. During the appraisal, the DLIs and their unit price were carefully examined to ensure that the indicators were ambitious but achievable. Each ACE will receive a jump-start funding once the project becomes effective to avoid implementation delays due to low liquidity. Further details are elaborated under the FM and Disbursement section of Annex 2.

36. **For Components 2 and 3, the IDA Grant disbursement will employ the traditional method - based on SOEs.** IUCEA that implements these two components will need to follow the IDA guidelines and present statements of eligible expenditures for the agreed activities to receive grant funding. Further details are elaborated under the FM and Disbursement section of Annex 3.

²⁵ During the course of project implementation, IUCEA may hire either as staff or consultants, to fill gaps in personnel for performing the required tasks. Adequate support and capacity building will be provided to IUCEA by the Bank to enable the fulfillment of its responsibilities (IUCEA has already received training in fiduciary aspects from the Bank).

37. **The project meets all four criteria for regional IDA allocation, as noted below:**

- (a) **The project involves three or more countries:** There are eight countries participating in ACE II.
- (b) **The project offers benefits, either economic or social, that spill over country boundaries.**
 - (i) *Benefits of economies of scale and economic growth obtained through regional specialization.* Regional specialization through targeted investments in existing institutions is economical and cost efficient, and can be used effectively by African countries to develop high quality universities that address skills shortages for meeting their specific development needs through collective efforts. Quality higher education is expensive to attain, particularly in S&T disciplines, and excellence in multiple fields is not easily achieved at the national level, given the high costs of maintaining quality universities, costs of laboratories and equipment, and the limited availability of quality faculty in Africa. For example, it is not efficient for all the countries with a growing oil and gas sector to invest in their own international top-level petroleum engineering program. On the other hand, the scale of the need for highly-skilled and specialized labors in the region is so large that it is costly and unsustainable to primarily send post-graduate students to Europe and North America for training. Hence, it makes sense for the region to pool its existing human and financial resources for a few specialized regional centers with an explicit mandate of offering quality education and relevant research to serve the needs in the region.
 - (ii) *Knowledge and research/innovation outputs generated by the ACEs are a regional public good.* The selected ACEs are in the defined regional development challenge areas. Therefore, the knowledge and research/innovation generated through applied research in this endeavor will be available/ applicable to the consumption of the entire region.
- (c) **The project receives strong interest from regional bodies.** The project has endorsement from regional bodies such as the African Union, SADC, EAC, and the Regional University Forum for Capacity Building in Agriculture.
- (d) **The project provides a platform for high-level exchanges and policy harmonization between countries.** IUCEA will host the project's RFU and oversee areas of collaboration, networking, and partnership activities among the ACE institutions across the region during the project implementation.

38. **IDA allocations under ACE II follows the common formula for regional projects with up to a half of the IDA amount coming from the regional IDA pool and the other half from the national IDA allocation.**

Project Cost and Financing

Table 2: Project Cost and Financing for Component 1 (in US\$ million)

Project Component	Total IDA	National IDA	Regional IDA
Component 1: Strengthening ACEs in Regional Priority Areas			
Ethiopia (4 ACEs)	24	12	12
Kenya (3 ACEs)	18	9	9
Malawi (2 ACEs)	12	6	6
Mozambique (1 ACE)	6	3	3
Rwanda (4 ACEs)	20	11	9
Tanzania (4 ACEs)	24	12	12
Uganda (4 ACEs)	24	12	12
Zambia (2 ACEs)	12	6	6
Total Component 1	140	71	69

Table 3: Project Cost and Financing (in US\$ million)

Project Components	Project Cost	IDA Financing	% Financing
1. Strengthening Africa Centers of Excellence (ACEs) in Regional Priority Areas	140	140	100
2. Capacity Building Support to ACEs through Regional Interventions	3	3	100
3. Facilitation, Coordination, and Administration of Project Implementation	5	5	100
Total Financing Required	148	148	100

C. Lessons Learned and Reflected in the Project Design

39. **ACE I design and implementation lessons.** ACE II has incorporated early lessons from the design and implementation of ACE I: (a) A strong consultative process with key stakeholders on project concept and design was key in the ACE I design. Under ACE II, a regional workshop and in-country workshops were conducted with stakeholders at both regional and national levels for consultative purposes; (b) ACE I did face a few ‘teething’ problems during implementation that could have been avoided had there been a stronger focus on developing a shared vision and on building capacity for implementation among the selected ACEs and supporting local agencies. Several ACEs had trouble developing good implementation plans, a vital indication of the ability of the center to deliver its programs. ACE II has reflected this lesson by providing support to improving implementation plans of the selected ACEs with international expert consultants and a capacity-building workshop. The selected ACEs were encouraged to finalize their implementation

plans and submit them to the RFU before the project becomes effective, getting ready for implementation; and (c) ACE I also had difficulty to verify DLI results in on time for disbursement due to the delayed hiring of an independent verification agency. Under ACE II, IUCEA has been informed to start the hiring process earlier with support from the Bank team and a clear delivery timetable is outlined in the draft POM. In general, ACE II has been designed through a participatory process involving numerous stakeholders.

40. **Avoiding a generic supply-driven approach.** Many projects supporting higher education focused on improving the overall sector but with little or no attention given to the human resources and research/innovation demands from the priority economic sectors. This has led to numerous projects generating many graduates and research outputs that are not necessarily aligned with the needs of the economic development. The ACE II design is based on regional development priorities identified through extensive consultations. ACE II will only support institutions that will focus on improving the pool of quality graduates, as well as relevant research within the defined priority sectors as listed in Annex 2.

41. **Increasing ownership and rewarding the achievement of results.** Many higher education projects have focused on providing generic inputs to higher learning institutions. While many institutions/countries have benefited from these initiatives, the development discourse (and an increasing body of evidence) suggests that a more results-based approach, which focuses on achieving certain agreed targets and benchmarks, would engender greater ownership/drive and yield better outcomes. The success of ACE II will depend on participating individual ACE institutions and their governments taking ownership of the project. ACE II requires institutions to prepare and implement their own proposals. Institutions are given direction to ensure that the proposals are aligned with national, regional, and industrial expectations. The selection process is merit-based, transparent, and competitive. The ACEs will be rewarded for improved performance as they move toward specific agreed targets. In addition, there will be provision for funding reallocation from low performers to high performers within a country during implementation (mid-term review) to encourage performance and efficiency.

42. **Designing implementation for success.** The need for simple design, manageable scope, common regional interest, support from regional institutions, attention to project implementation capacity, and appropriate allocation of resources for the preparation and implementation phases are some of the key lessons from other regional operations. The ACE II design is sector-based, confined to only five priority cluster areas, and focused on building capacity to deliver human resources and research/ innovation for helping solve regional development challenges. Lessons learned from a variety of regional operations have been incorporated in the ACE II design after broad consultations.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

43. **The implementation arrangements for ACE II follows a tiered structure with clear roles and responsibilities for key partners and stakeholders.** The core implementing team is

the ACE itself with support from its host university, its government, the RFU, the RSC, and its partners from both public and private institutions and firms.

44. **Each selected institution will implement its own ACE proposal.** A recognized academic or researcher with leadership and managerial capacity has been chosen (before negotiations) as the leader of the newly established ACE within the institution. The leader will come from the primary discipline of the ACE, be supported by faculty from all relevant departments, and receive support and guidance from the leadership of the ACE hosting university. Project implementation equally draws heavily on a large number of international, regional, and national partners to achieve academic and development objectives. The ACE will also receive support from its hosting university. Responsibility for fiduciary matters during the implementation will lie with existing implementation units within the ACE institutions. ACE II will build upon existing fiduciary capacity and find synergy within the Bank's existing portfolio in the respective countries.

45. **Each participating Government will constitute a National Steering Committee (NSC) through the ministry responsible for higher education.** The NSC is tasked with the semi-annual review of performance, withdrawal applications, and implementation planning and support, but with no day-to-day implementation or approvals. The composition of the NSC will be defined by each country, which could include representatives from the ministry responsible for higher education, the MoF, relevant line ministries related to the focus area of the ACEs, the Vice Chancellors from the ACE hosting universities, and the private sector.

46. **Kenya: Government Funding for the NSC.** The Government of Kenya has agreed to support activities of the NSC with financial support of up to five percent of the credit (equivalent to a maximum of US\$900,000) over the project duration of five years. Operational activities include, but are not limited to communication and dissemination of the ACE activities, performance and progress reviews and conferences.

47. **The RSC provides overall guidance and oversight for the project.** The RSC is the decision making body of the project and has been involved in ACE II from the preparation stage. It comprises of representatives from participating countries, academics, and representatives from regional bodies and the private sector. The RSC discussed and approved the five priority cluster areas for ACE II to address regional development challenges. It also selected the IUCEA as the RFU for ACE II. The RSC approved the Call for Proposals and made the conditional selection of the 24 ACEs based on the recommendations of the technical evaluation conducted by the IEC. During the implementation phase, the main task of the RSC will be to provide oversight and guidance to the project, to ensure that the ACEs are working towards achieving the PDO, and to help unblock any obstacles in implementation.

48. **The Regional Facilitation Unit for the project, IUCEA, provides overall coordination, facilitation and administration to the project implementation under the oversight of RSC. It also directly oversees the implementation of Component 2.** During the ACE selection process, IUCEA, with the assistance of the Bank team, put the IEC panel together and organized and managed the evaluation process. As the secretariat to the RSC, IUCEA is also responsible for organizing and coordinating all RSC meetings. Specifically, a TA firm is expected to implement the scholarship activity under Component 2. The firm will be managed and overseen by IUCEA.

One of the major administrative tasks for IUCEA during the project implementation is to provide/facilitate timely independent verification of the DLI results achieved and presented by each ACE for timely disbursement. IUCEA will verify results for DLI 1/DLR 1.1-1.2; DLI 2-4/DLR 2.1-4.2 will be verified by independent verifiers, potentially a TA firm(s) hired and overseen by IUCEA. In addition, IUCEA will provide overall project support and organize knowledge sharing events (see Annex 2). Besides existing staff, IUCEA is in the process of hiring additional staff including a project coordinator, a communication officer, and a FM specialist.

49. **The project will be implemented in accordance with each ACE's Implementation Plan and the signed PFA with its Government.** These implementation documents will be reviewed jointly by the IUCEA and Bank teams. They are part of the project effectiveness conditions. In addition, the POM prepared by IUCEA will guide the overall project implementation.

B. Results Monitoring and Evaluation

50. **A strong focus on M&E is critical to the success of ACE II.** The emphasis on M&E is key to the success of implementing a DLI model. To measure the progress of the ACEs and the overall project, a Results Framework and a list of DLIs/DLRs have been prepared. The M&E functions will be undertaken by each of the ACEs through their existing administrative arrangements, and when needed, through consultancies. At the ACE level, the tools for M&E will include: (a) reports on institutional progress, internal quality, and efficiency audit; (b) reports on results that are verified by an external independent verifier for disbursements and performance audits; and (c) direct stakeholder feedback. Each ACE is required to report its M&E capacity in its implementation plan.

51. **Results achieved by the ACEs will be verified independently for disbursement.** Independent verifier(s) will be hired by IUCEA to verify the results achievement of the agreed DLIs/DLRs for all the ACEs in every six months during the project implementation. The project will only disburse funds to an ACE for its achieved results that have been verified by an independent verifier. Detailed results verification process can be found in the draft POM. During the mid-term review of the project implementation, the DLIs/DLRs and their allocation amounts as well as any issues related to undisbursed funds will be reexamined.

52. **IUCEA is ultimately responsible for monitoring and aggregating the data and results at the regional level.** The IUCEA as the RFU will specifically oversee data collection and analysis for the overall ACE II operation as part of its responsibilities, as well as ensure that a robust M&E system is institutionalized and that all data is transparent and publicly available online. The detailed M&E structure and plan is included in the draft POM. Comprehensive ACE II progress reports will be provided to the Bank semi-annually.

C. Sustainability

53. **Institutional sustainability.** ACE II aims to strengthen institutions through a strong focus on building collaborations and networks among the participating ACEs and their host institutions, as well as partnerships with other public institutions and the private sector. ACE II is also cognizant of the necessity for the university as a whole to support the ACE. To encourage the ACE hosting

universities to provide a supportive quality improvement environment for the ACEs, the project has included a DLI which will reward universities to participate in regional benchmarking initiatives. IUCEA through regional initiatives under Component 2 will play a critical role in bringing these institutions and organizations together to help build collaborative platforms and institutional structures and processes that will build up and sustain the ACE leadership and the momentum of higher education transformation in the region.

54. **Financial sustainability.** Financing will be the most challenging aspect of sustainability for ACE II. Though national governments have shown strong commitment and ownership towards the selected ACEs, prior experience has highlighted the necessity for the ACEs themselves to develop fundraising capacity and learn innovative ways to generate revenues to finance their development needs after the project closing. The project also requires the ACEs to develop action plans for additional funds generation at the midterm review. To build financial sustainability, IUCEA, through the initiatives under Component 2, will facilitate forums where ACEs are given opportunities to interact and network with public institutions, development partners (DPs) and private firms to seek potential funding avenues. The project has taken this into consideration by designing a DLI that will match revenue generated externally by the ACEs, thus providing the ACEs with incentives to generate additional funds. The project will match US\$1 for every US\$1 raised from national sources, and US\$2 for every US\$1 raised from regional and international sources. The project also includes an indicator in the Results Framework, *externally generated revenue*, to monitor progress of fundraising made by the ACEs under the project.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

Risk Categories	Ratings
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	High
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	Moderate
Overall	High

55. **Overall implementation risk is high.** The project has eight participating countries, of which four countries have already held elections during project preparation. Elections are expected during project implementation and government changes could bring uncertainties in terms of policies, regulations and procedures under which the project operates. In addition to its cross-country nature, aiming for helping the region to address its real development challenges in the identified regional priority areas adds the multi-sectoral feature to the project. This is expected to be achieved through multiple and multilayered collaborations and partnerships with other public and academic institutions as well as the private sector, which are developed and cultivated by the 24 ACE institutions during project implementation. The project focuses on results achievement

and employs a results-based financing approach with pre-defined DLIs for disbursement. Such financing method is new to most participating countries and the ACE institutions which are traditionally accustomed to an input-based rather than results-based financing approach. It requires a new way of doing business and demands good fiduciary capacity, timely auditing and high-level accountability from implementation agencies and institutions. These unique features of the project present complexities and challenges to project implementation. Finally, although the ACEs are selected through a transparent competitive process and are expected to serve as centers of excellence for the region, their capacity is still limited at present and they must work hard on their own capacity building in many aspects during project implementation.

56. These implementation challenges will be mitigated by a number of measures including the following: (a) a project design with extensive involvement from the RSC and continuous workshops with universities; (b) a competitive selection process designed to identify and select suitable proposals through an evaluation conducted by the IEC responsible for reviewing the proposals and weeding out those not sufficiently committed, or those with inadequate capacity; (c) extensive implementation preparation and capacity building workshops for the selected ACEs; (d) technical oversight provided by the RSC for strategic decisions and by IUCEA (on an as needed basis) for project facilitation and support; and (e) external monitoring through results verification will be put in place to monitor performance on a regular basis, and make mid-course corrections as necessary.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

57. The economic and financial analysis provides the rationale for investment in post-graduate level (higher) education in the ESA region and the cost effectiveness of ACE II. Higher education produces wage premium for individuals and generates knowledge creation. Investments in higher education also plays an important role in alleviating poverty and promoting shared prosperity by facilitating social mobility through employment opportunities and increased earnings. Empirical research shows that schooling increases individual labor productivity and earning potential. The acquisition of higher education is associated with higher rates of returns as measured by the estimated proportional increase of earning from an additional year of schooling. Returns for higher education are particularly high in Africa where the scarcity of those with higher education qualifications results in market premium for those with such qualifications. Average rates of returns to tertiary education are as follows: 17 percent for Ethiopia (2005), 22.4 percent for Kenya (2005), 24.2 percent for Malawi (2010), 17.7 percent for Mozambique (2008), 28.8 percent for Rwanda (2010), 19.4 percent for Tanzania (2011), and 18.2 percent for Zambia (2010).²⁶

58. There is strong justification for public financing of the project, as well as a clear value addition from Bank involvement in the project. Market failures in ESA are causing under-investment in higher education, and therefore justify public sector involvement. With imperfect markets in the region, it is difficult for individuals to assess costs and benefits and hence choose

²⁶ The average rates of return can be found in Montenegro and Patrinos. 2014. *Comparable Estimates of Returns to Schooling around the World*. Policy Research Working Paper No. 7020. Washington, DC: World Bank.

to under-invest in skills development. The Bank's convening role in bringing global expertise to help ESA on ACEs, along with its rich experience in higher education will ensure that its involvement is effective and valuable. The Bank has supported higher education and investment and systematic interventions in many countries and regions across the world. The successful implementation of ACE I provides a good example of the Bank's value addition.

59. **There are strong economic justifications for taking a regional approach to this investment.** Knowledge creation and innovation, particularly to address regional development challenges, are a **public good**. There are also a number of positive externalities from research and innovation which are often not accounted for and results in underinvestment such as the benefits of having a quantum amount of skilled workers, not available before, which allows for new types of research and innovation, and economic production (including greater entrepreneurship and knowledge spillovers, which enhance productivity within firms and in universities). Coordinated investments with country specific specialization allow the region to develop a broad based S&T ecosystem, covering all critical areas where S&T capacity is needed, without gaps, which is likely given the scarcity of faculty and resources. A well-networked and integrated S&T ecosystem can also have **economy of scale advantages** with declining unit costs for both graduates and for knowledge creation.

60. The internal rate of return (IRR) for the project ranges from nine percent to 15 percent in the ESA region with Ethiopia – 12 percent, Kenya – 10 percent, Malawi – 9 percent, Mozambique – 14 percent, Rwanda – 15 percent, Tanzania – 14 percent, Uganda – 11 percent, and Zambia – 15 percent.²⁷ The IRRs to the project are positive and significant, even though the reported results only reflect the private benefits and not the social benefits, which are significant due to the regional public goods characteristics of the project. The economic and financial analysis is available in Annex 5.

B. Technical

61. **The technical design is based on globally-recognized approaches for building higher education excellence.** First, competitive funding of higher education is the main vehicle in high performing systems to achieve specific education goals, such as employability and scaling up of postgraduate education. The ACE II selection and implementation process incorporates the global lessons from competitive funds in higher education, and from science and engineering research funding programs in high-income countries. Second, ACE II seeks to lay a foundation for critical collaboration, networking, and partnerships, which are key for achieving transformation towards excellence within higher education. Third, the ACE II design focuses on a sector-based approach and emphasis on STEM – strengthening selected institutions to improve their quality and relevance of science and engineering education and applied research – to address challenges in key priority economic sectors.

62. **The technical design benefited from extensive consultations and partnerships.** The design process included extensive collaboration with key stakeholders such as regional bodies, national governments of participating countries, academics, and private sector representatives. The

²⁷ The IRR was calculated from various surveys; detailed information on the data source can be found under Table 4 in Annex 5.

project also benefited from the guidance received from RSC members, including a Princeton professor and former chair of the International Association of Universities. During the preparation of this project, in addition to the regional consultation workshop held in Dar-es-Salaam in January, 2015, all participating countries held their own national consultation workshops to introduce the project to their key stakeholders.²⁸ In addition, the various DPs were extensively consulted. Several DPs have expressed interest in future collaboration with the project, for example, the United States Agency for International Development, in the agriculture sector; the German Academic Exchange Service in supporting faculty and graduate student exchange with scholarships; and the National Institutes of Health in the United States in supporting faculty exchange and applied research.

C. Financial Management

63. FM Assessments were conducted for IUCEA that will implement Components 2 and 3 plus selected 24 ACEs that will implement Component 1. The objective of the assessments was to determine whether the implementing entities have acceptable FM arrangements in place that satisfy the Bank's OP/BP 10.00. These arrangements would ensure that the implementing entities: (a) use project funds only for the intended purposes in an efficient and economical way; (b) prepare accurate and reliable accounts, as well as timely periodic interim financial reports (IFRs); (c) safeguard assets of the project; and (d) have acceptable auditing arrangements. The FM assessments were carried out in accordance with the Financial Management Manual (FMM) for World Bank Investment Project Financing Operations that became effective on March 1, 2010 but was issued (retrofitted) on February 4, 2015.

64. The key finding is that there are adequate FM arrangements in all the implementing entities except for the need to recruit additional accounting and internal audit staff and addressing internal audit issues for the universities shown in the Financial Management Action Plan under Annex 3. All implementing entities have audit committees except for Addis Ababa University (AAU) and Haramaya University that will need to set them up as they are essential in following up audit issues to ensure they are addressed and therefore strengthening internal control systems for the implementing entities. There were implementing entities for the ACEs that had significant backlogs of audit reports that need to be finalized. They included AAU with a five year backlog of audit reports for Ethiopian Financial Year (EFY) 2003 (2010/11) to EFY 2007 (2014/15) and University of Zambia with a three year backlog of the audit reports for FY13 to FY15. Other universities with a two year backlogs of audit reports included Haramaya University, University of Malawi and Sokoine University of Agriculture. However, it was noted that each of the universities is taking steps to address the audit backlogs. Governance and anti-corruption arrangements have been recommended especially for the ACEs. They include establishing a complaint handling mechanism and publishing budgets and audited financial statements on their websites to enhance transparency and accountability. Disbursements under Component 1 will be results-based while for Components 2 and 3 implemented by the RFU (IUCEA), will be report based. Further details on these assessments are included in Annex 3.

65. The conclusion of the overall assessment is that the FM arrangements in place meet IDA's minimum requirements under OP/BP10.00, and therefore are adequate to provide, with reasonable assurance, accurate and timely information on the status of the project required by IDA. The

²⁸ ACE II held national workshops in nine countries from late April to early June, 2015.

overall FM residual risk rating of the project is Substantial for the ACEs and Moderate for the RFU (IUCEA).

D. Procurement

66. Procurement under the project will be carried out in accordance with the Guidelines: Procurement of Goods, Works, and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers dated January 2011 and revised July 2014 (“Procurement Guidelines”), the Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers dated January 2011 and revised July 2014 (“Consultant Guidelines”), and the Guidelines: On Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants dated October, 2006 and revised January, 2006 (“Anti-Corruption Guidelines”). The detailed procurement arrangements as already agreed with the Governments of the Borrower countries are summarized in Annex 3.

67. Each component of the project will have its own procurement arrangement. Component 1 will be implemented by selected education institutions from the Borrower countries as per assessed and approved proposals. Bank funds will be disbursed against a set of DLIs to finance the expenditures as defined under Eligible Expenditures Programs (EEPs) of the project, which would mainly be part of staff salaries of the selected institutions. Other expenditures under the project will be financed by their own funds of these institutions, which will be procured together with the institutions’ other operating requirements/needs following their own procurement procedures. To ensure that the project activities are carried out efficiently and meet the minimum requirements for economy, transparency and fairness, the Bank team has assessed these institutions’ existing procurement systems, and suggested measures to address the identified inadequacies and risks. The assessments are summarized in Annex 3.

68. IUCEA will implement Components 2 and 3, including procuring the required goods, works and consulting services following the above mentioned Bank Procurement and Consultant Guidelines. The Bank team has assessed the IUCEA’s procurement capacity and rated the procurement risk as Substantial. The assessment together with identified risks and agreed mitigation measures is summarized in Annex 3.

E. Social (including Safeguards)

69. The project takes into account the issue of gender inclusion. Its Results Framework offers disaggregated indicators on gender (number of female vs. number of male students, number. of female faculty and student exchanges, etc.). As part of continuous social risk and impact assessment for the project, the ACEs will need to assess other emerging risks including issues related to social inclusion during project implementation. However, the ACE institutions in general have less capacity to continuously assess social risks and impacts as well as implement and track performance. Given the project complexity and its regional nature (eight ACE hosting countries with different Environment and Social regulatory frameworks), the project will support and train an Environment and Social team at the RFU who will work with a focal point on social and environmental aspects of the project implementation in each ACE. The Bank will support the

training of the Environment and Social focal points in the ACEs to ensure a good understanding of the social concerns including safeguards policies.

F. Environment (including Safeguards)

70. **Environmental impacts are expected to be low to moderate.** The Environmental Assessment category is B (Partial Assessment). Some of the ACEs will undertake some rehabilitation and extensions of the selected institutions. However, there will be no new land acquisition for the ACEs; they will be based within existing institutions. In general, the project will focus on quality enhancements of the ACEs, which primarily requires "softer items" i.e. faculty and curriculum development, and learning resources, while construction will be capped at a maximum of 25 percent of the funding. The rationale for proposed new construction has been scrutinized to ensure that it is critical for excellence. Each selected ACE has prepared an Environmental and Social Management Plan (ESMP) that was reviewed by the Bank Safeguards specialist and cleared. The ESMPs have been disclosed in each institution in the country, and by IUCEA and the Bank.

G. World Bank Grievance Redress

71. 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
AFRICA: Eastern and Southern Africa Higher Education Centers of Excellence Project (P151847)

Project Development Objective (PDO): To strengthen selected Eastern and Southern African higher education institutions to deliver quality post-graduate education and build collaborative research capacity in the regional priority areas.												
PDO Level Results Indicators*	Core	Unit of Measure	Baseline ²⁹	Cumulative Target Values**					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Definition
				YR 1 ³⁰	YR 2	YR3	YR 4	YR5				
1. Regional students enrolled in ACEs: (i) Masters [no. of which are female] and (ii) PhD programs [no. of which are females ³¹]	<input type="checkbox"/>	No	68 (18) 20 (7)	186 (56) 54 (19)	350 (113) 118 (45)	482 (153) 174 (63)	610 (204) 227 (81)	692 (242) 263 (83)	Annual	ACE Progress Reports	ACE and RFU	This indicator measures the number of African students (excluding those from the ACE-hosting country) who are enrolled in (i) Masters who have successfully completed at least one semester and (ii) PhDs at the ACEs.
2. Students (national and regional) enrolled in ACEs: (i) Master's [no. of which are female] and (ii) PhD programs [no. of which are females]	<input type="checkbox"/>	No	642 (178) 137 (36)	991 (300) 248 (74)	1,495 (515) 414 (134)	1,857 (617) 586 (215)	2,506 (798) 709 (265)	2,903 (937) 773 (273)	Annual	ACE Progress Reports	ACE and RFU	This indicator measures the total number of students (national and regional) enrolled in (i) Masters, who have successfully completed at least one semester and (ii) PhD programs at ACEs
3. MOUs on partnerships for collaboration	<input type="checkbox"/>	No	66	153	200	245	284	306	Annual	ACE Progress Reports	ACE and RFU	This indicator measures the number of partnerships for collaboration in applied research and training as

** All values are the cumulative baseline and target values for the 24 ACEs.

²⁹ Baselines should reflect the status of the stated indicator in 2015.

³⁰ Some of the indicators may require a target of zero or N/A for year one. If so, the rationale will be explained in the comments column, and milestones clearly set and defined.

³¹ Target numbers with respect to females might vary depending on the engaged sectors (e.g., extractive industries vis-à-vis health).

in applied research and training entered into by the ACEs												measured by signed MoUs and signed proposals that outline at least a two year partnership work program
4. Accredited education programs offered by the ACEs	<input type="checkbox"/>		59	79	103	129	143	170	Annual	ACE Progress Reports	ACE and RFU	This indicator measures the quality of Masters and PhD programs and counts the number of programs accredited nationally, regionally and internationally by a body satisfactory to IUCEA and the World Bank.
5. Direct Project Beneficiaries (of which female)	<input checked="" type="checkbox"/>	No. (%)	779 (40)	1,238 (30)	1,909 (34)	2,443 (34)	3,215 (33)	3,676 (33)	Annual	ACE Progress Reports	ACE and RFU	This indicator measures the direct project beneficiaries (and proportion of female project beneficiaries).
INTERMEDIATE RESULTS												
Intermediate Result (Component One):												
1. Faculty and PhD students exchanges to promote research and teaching [no. of which are females]	<input type="checkbox"/>	No	64 (16)	142 (34)	321 (74)	470 (111)	625 (159)	762 (198)	Annual	ACE Progress Reports	ACE and RFU	This indicator measures number of faculty and PhDs who are hosted by ACEs from other institutions or when ACEs sends their faculty/PhD students to other institutions; locally, in the region or internationally for a “period” of minimum two weeks (for teaching or research collaboration).
2. Amount of externally generated revenue by the ACEs ³²	<input type="checkbox"/>	USD (million)	6.1	7.8	11.4	14.9	21.2	29.7	Annual	ACE Progress Report	ACE and RFU	This amount includes externally generated revenue deposited into the ACE’s account from tuition fees, other student fees, joint research, sale of consultancies, fund raising and donations, or other external sources:
3. Internationally recognized	<input type="checkbox"/>	No	194	290					Annual	Data source is International	RFU	This indicator records the number of internationally

³² The externally generated revenue would need to be certified as part of the financial audit.

research publications in disciplines supported by the ACE Program and with regional coauthors [No co-authored with regional collaborators]			(15)	(37)	465 (78)	748 (164)	1,097 (244)	1,454 (316)		bibliometric databases, such as ISI Thomson Reuters and/or Scopus		recognized research publications produced by the ACEs in total and with regional coauthors.
4. No. of institutions hosting ACEs participating in the PASET benchmarking exercise	<input type="checkbox"/>	No	0	5	10	15	20	24	Annual	ACE Progress Reports	ACE and RFU	This indicator measures the number of ACE hosting universities that agree to participate in the PASET benchmarking exercises.
Intermediate Result (Component 2):												
5. Events that foster partnerships between ACEs and private sector/industry	<input type="checkbox"/>	No	0	1	2	3	4	5	Annual	RFU Progress Reports	RFU	This indicator measures the number of events organized by IUCEA or contracted firm to build partnerships with private sector/industry
Intermediate Indicator (Component 3)												
1. Knowledge sharing events with ACEs, partner institutions,	<input type="checkbox"/>	No	0	2	4	6	8	10	Annual	RFU Progress Report	RFU	This indicator measures the number of knowledge sharing events organized by IUCEA. Where ACEs can share experience and research output

academia and diaspora ³³												
2. Reports by ACEs on Beneficiary Satisfaction	<input type="checkbox"/>	No	0	24	48	72	96	120	Annual	ACE Progress Report	ACEs and RFU	ACE reports on beneficiary satisfaction on teaching
3. Timely verification of ACE achievement of DLIs	<input type="checkbox"/>	%	0	75	75	85	90	100	Every other month	RFU Progress Report	RFU	Percentage of ACEs that have had their DLIs verified by the date specified in the POM
4. Biannual reporting on M&E of the ACEs	<input type="checkbox"/>	No	0	2	4	6	8	10	Every 6 months	RFU	ACEs and RFU	The report will aggregate individual results from the results framework for each ACE.

³³ During these events, there will be a discussion of program process, lessons learned, and recommendations for addressing bottlenecks, all to be compiled in a report.

**Table 1.1: Disbursement Linked Indicators and Allocated Amounts
Per Africa Center of Excellence**

Disbursement Linked Indicators (Can trigger maximum US\$6 million equivalent)	Action to be Completed	Definition	Disbursement Amounts³⁴ (expressed in USD equivalent)
DLI #1: Institutional readiness Total amount 1,100,000 (expressed in USD equivalent)	DLR#1.1: Completion of Effectiveness Conditions DLR#1.2: Development of the Project Implementation Plan	Disbursed when all conditions for effectiveness outlined in the legal agreements signed between the ACE hosting government and the World Bank are met Disbursed when detailed implementation plan of ACE is approved by the ministry in charge of higher education as part of the Performance Agreement.	DLR#1.1: 600,000 DLR#1.2: 500,000
DLI #2: Excellence in education and research capacity and development impact Total amount 4,300,000 (expressed in USD equivalent)	DLR# 2.1 ³⁵ : Timely annual implementation of the plans DLR #2.2: Newly enrolled students in the ACE of which at least 20% must be regional (African) students.	Disbursement based on the achievement of at least 50% and scalable up to 85% of implementation targets in any given year. Achievement rates beyond 85% in any given year triggers a 100% disbursement of that year Short-Term Courses: Disbursement occurs when any course ³⁶ leading to qualification (certificate/diploma /degree) counts as a short-term course: 400 per male national student 500 per female national student 800 per male regional student	DLR#2.1: 500,000 (100,000 per year) DLR#2.2: 1,200,000

³⁴ This amount is the capped disbursement amount per DLR for the project period of five years. Each ACE, with the exception of ACEs in Rwanda, can receive a maximum of up to US\$6 million over the project duration of 5 years. Of the four ACEs in Rwanda, as agreed with the Government of Rwanda, two (Education and Statistics) can receive a maximum of US\$4.5 million and the remaining two (ICT and Energy) can receive a maximum of US\$5.5 million over the project duration.

³⁵ If an ACE achieves 50 percent of this DLR in a given year, it will receive 50 percent of the allocation US\$100,000 for this DLR in that year, i.e., US\$50,000. If an ACE achieves 85 percent of this DLR in a given year, it will receive 85 percent of the allocation US\$100,000 for this DLR in that year, i.e., US\$85,000. If an ACE achieves beyond 85 percent of this DLR in a given year, it will receive 100 percent of the allocation US\$100,000 for this DLR in that year, i.e., US\$100,000.

³⁶ Course refers to a completed course.

Disbursement Linked Indicators (Can trigger maximum US\$6 million equivalent)	Action to be Completed	Definition	Disbursement Amounts³⁴ (expressed in USD equivalent)
	<p>DLR#2.3: Accreditation of quality of education programs.</p>	<p>1,000 per female regional student.</p> <p>Master's: Disbursement occurs when Master's students have successfully completed at least one semester: 2,500 per male national student 3,000 per female national student 4,500 per male regional student 5,500 per female regional student.</p> <p>PhD: Disbursement occurs when PhD students enroll: 12,000 per male national student 15,000 per female national student 25,000 per male regional student 30,000 per female regional student.</p> <p>Disbursement for academic accomplishment will occur upon the student's successful completion of a Master's program or the approval of a student's PhD research proposal. The amount triggered will be half of the above indicated in each category, totaling for not more than 300,000.</p> <p>Disbursement occurs when a Master or PhD program is accredited by international or regional or national body (satisfactory to IUCEA and the World Bank): 300,000 per program internationally accredited 150,000 per program regionally accredited 75,000 per program nationally accredited 75,000 per program for self-evaluation (satisfactory executed according to internationally recognized standard). Self-evaluation and national accreditation, totaling for not more than 300,000.</p>	<p>DLR# 2.3: 600,000</p>

Disbursement Linked Indicators (Can trigger maximum US\$6 million equivalent)	Action to be Completed	Definition	Disbursement Amounts³⁴ (expressed in USD equivalent)
	DLR#2.4: Partnerships for collaboration in applied research and training	Disbursement occurs when MoUs are signed and accompanied by signed proposals that outline at least a two-year collaboration and partnership work-program: 30,000 per MoU with public institutions/civil society 40,000 per MoU with private sector/ industry In order to access the disbursement under this DLR minimum 1 eligible MoU with private sector must be approved. All MoU work programs must be satisfactory to IUCEA/World Bank.	DLR#2.4: 200,000
	DLR#2.5: Peer-reviewed journal papers or peer-reviewed conference papers prepared collaboratively with national, regional or international co-authors	Disbursement occurs when a paper is accepted by a peer-review journal or is an accepted peer-reviewed conference paper: 10,000 per paper accepted by a peer-reviewed journal with national author (s) 30,000 per paper accepted by a peer-reviewed journal with regional author (s) 25,000 per paper accepted by a peer-reviewed journal with international author (s) 8,000 per paper accepted by a peer-reviewed conference paper with national author (s) 25,000 per accepted peer-reviewed conference paper with regional author (s) 20,000 per accepted peer-reviewed conference paper with international author (s)	DLR#2.5: 300,000
	DLR#2.6: Faculty and PhD student exchanges to promote regional research and teaching collaborations	This DLR is awarded to the ACE when it hosts faculty/PhD students from other institutions or when it sends its faculty/PhD students to other institutions locally, in the region or internationally for a “period” of minimum two weeks (for teaching/research collaboration):	DLR#2.6: 500,000

Disbursement Linked Indicators (Can trigger maximum US\$6 million equivalent)	Action to be Completed	Definition	Disbursement Amounts ³⁴ (expressed in USD equivalent)
	<p>DLR#2.7: External revenue generation</p> <p>DLR#2.8: Institution participating in benchmarking exercise</p>	<p>5,000 per “period” within the country 10,000 per “period” outside the country but within the region 8,000 per “period” for international, outside the region.</p> <p>Externally generated revenue deposited into the ACE’s account from tuition fees, other student fees, sale of consultancies, joint research, fund raising and donations, or other external sources: US\$1 per externally generated US\$1 from national sources, and US\$2 per externally generated US\$1 from regional and international sources.</p> <p>The DLR will be disbursed if the ACE hosting university participate in the Partnership of Applied Sciences, Engineering and Technology (PASET) benchmarking exercise.</p>	<p>DLR#2.7: 900,000</p> <p>DLR#2.8: 100,000</p>
<p>DLI#3³⁷: Timely, transparent and institutionally reviewed Financial Management</p> <p>Total amount 300,000 (expressed in USD equivalent)</p>	<p>DLR#3.1: Timely Withdrawal applications supported by interim unaudited financial reports for each ACE</p> <p>DLR#3.2³⁸: Functioning audit committee under each Eastern and Southern African Higher Education Institutions</p>	<p>The DLR will be disbursed if the ACE submits timely withdrawal applications supported by interim unaudited financial reports showing how funds have been utilized.</p> <p>The DLR will be disbursed if the university under the university council has a functioning audit committee that will amongst other assignments follow up audit issues related to the ACE.</p>	<p>DLR#3.1: 75,000 (15,000 per year)</p> <p>DLR#3.2: 75,000 (15,000 per year)</p>

³⁷ For ACEs in Rwanda, all audit committees under DLRs # 3.2 and 3.3 are at the university level.

³⁸ For ACEs in Ethiopia, as the current government regulation does not have the provision of such an audit committee, DLR #3.2 will therefore be adjusted to *seventy percent of all internal and external audit issues addressed by management in each Eastern and Southern African Higher Education Institution.*

Disbursement Linked Indicators (Can trigger maximum US\$6 million equivalent)	Action to be Completed	Definition	Disbursement Amounts³⁴ (expressed in USD equivalent)
	DLR#3.3: Functioning internal audit unit for each Eastern and Southern African Higher Education Institution DLR#3.4: Transparency of financial management (audit reports, interim unaudited financial reports, budgets and Annual Work Programs are all web accessible)	The DLR will be disbursed if a functional internal audit department conducts audits on the project based on a risk based approach. The DLR will be disbursed if all FM related reports (audit, IFRs, budgets, work programs) are published on ACE websites to promote transparency and accountability.	DLR#3.3: 75,000 (15,000 per year) DLR#3.4: 75,000 (15,000 per year)
DLI#4: Timely and audited Procurement Total amount 300,000 (expressed in USD equivalent)	DLR# 4.1 Timely procurement audit report for each ACE DLR#4.2: Timely and satisfactory procurement progress report for each ACE	The DLR will be disbursed if the ACE submits a timely procurement audit report detailing procurement practices. The DLR will be disbursed based on the timely and satisfactory progress report on the ACE's procurement practices.	DLR#4.1: 150,000 (30,000 per year) DLR#4.2: 150,000 (30,000 per year)

Notes:

- Any enrolment that occurs after 1st August, 2016 is counted towards the DLIs in the first year.
- A regional student is interpreted as a student from Africa.
- Total disbursement is limited to the overall amount of financing for each ACE, which has been confirmed during negotiations.
- DLI amounts will be proportionately allocated based on the total financing for that ACE (18 percent for DLI#1, 72 percent for DLI #2, 5 percent each for DLI #3 and #4)
- During implementation each ACE will have flexibility to achieve education and research excellence through completing different combinations of the education and research results indicated in DLRs #2.2 – 2.7. Therefore, the amounts allocated to each DLR#2.2 – 2.7 can be adjusted downwards and upwards. But, no more than 50 percent of the original amount capped for each DLR#2.2 – 2.7 can be re-allocated. The financing allocated to DLR# 2.1 and DLR# 2.8 is not adjustable and remains fixed. All adjustments to the amount of financing per DLI and DLR, including to DLR#2.2 – 2.7, will have to be requested by the ACE, and approved by the National Steering Committee and the Bank. During the mid-term review, the DLI/DLR allocation amounts and undisbursed funds will be revisited.

Table 1.2. Total Disbursement by Country (US\$ 000s)

DLI	DLR	Ethiopia	Kenya	Malawi	Mozambique	Rwanda	Tanzania	Uganda	Zambia
DLI 1	DLR 1.1	2,400	1,800	1,200	600	2,400	2,400	2,400	1,200
	DLR 1.2	2,000	1,500	1,000	500	2,000	2,000	2,000	1,000
DLI 1 Total		4,400	3,300	2,200	1,100	4,400	4,400	4,400	2,200
DLI 2	DLR 2.1	2,000	1,500	1,000	500	1,670	2,000	2,000	1,000
	DLR 2.2	4,800	3,600	2,400	1,200	4,010	4,800	4,800	2,400
	DLR 2.3	2,400	1,800	1,200	600	2,000	2,400	2,400	1,200
	DLR 2.4	800	600	400	200	680	800	800	400
	DLR 2.5	1,200	900	600	300	1,010	1,200	1,200	600
	DLR 2.6	2,000	1,500	1,000	500	1,670	2,000	2,000	1,000
	DLR 2.7	3,600	2,700	1,800	900	3,010	3,600	3,600	1,800
	DLR 2.8	400	300	200	100	350	400	400	200
DLR 2 Total		17,200	12,900	8,600	4,300	14,400	17,200	17,200	8,600
DLI 3	DLI 3.1	300	225	150	75	150	300	300	150
	DLI 3.2	300	225	150	75	150	300	300	150
	DLI 3.3	300	225	150	75	150	300	300	150
	DLI 3.4	300	225	150	75	150	300	300	150
DLR 3 Total		1,200	900	600	300	600	1,200	1,200	600
DLI 4	DLI 4.1	600	450	300	150	300	600	600	300
	DLI 4.2	600	450	300	150	300	600	600	300
DLR 4 Total		1,200	900	600	300	600	1,200	1,200	600
TOTAL		24,000	18,000	12,000	6,000	20,000	24,000	24,000	12,000

Annex 2: Detailed Project Description

AFRICA: Eastern and Southern Africa Higher Education Centers of Excellence Project (P151847)

1. The proposed ACE II project will support the governments of eight participating countries - Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zambia³⁹ - to collectively address a set of key development challenges facing the ESA region through interventions in developing critically-needed S&T capacity in four areas: (a) selecting ACEs through a competitive and transparent process from existing higher education institutions that have capacity in specialized areas with great potential to help address these regional priorities; (b) strengthening these specialized ACEs and enabling them to produce excellent training and applied research that meets the demand for highly-skilled personnel and knowledge/technology transfer within these regional priorities; (c) building networks among these ACEs to promote regional collaboration and foster partnerships with other institutions and the industry to produce innovative solutions for real development impact; and (d) developing a culture of results-orientation and accountability among these ACEs through a performance-based financing mechanism, helping to set an example for other higher education institutions in the region. It is envisaged that at the end of the project these ACEs will have developed sufficient capacity to become sustainable regional hubs for excellent training and research in their specialized fields, capable of leading efforts to address priority development challenges and improve lives in the region. In a not too distant future, these ACEs will gain international recognition in their respective fields and forge a strong network with ACEs in Western and Central Africa as well as globally renowned higher education institutions. Through their leadership and influence, this network of ACEs will raise the bar of quality, relevance and management of higher education for the entire Sub-Saharan Africa region. With this vision and these expectations from the region, the Project Development Objective for ACE II is therefore *to strengthen selected Eastern and Southern African higher education institutions to deliver quality post-graduate education and build collaborative research capacity in the regional priority areas.*

2. With the view of achieving the above described vision and objective, the proposed ACE II operation will implement three sets of initiatives: (a) strengthening 24 selected ACEs for ESA in a set of defined regional priority areas (US\$140 million); (b) providing capacity building support to these ACEs through institutional and regional activities (US\$3 million); and (c) supporting coordination and management of the implementation of Components 1 and 2 (US\$5 million). The paragraphs below outline these proposed activities to be financed under ACE II, including the key features of design and implementation.

³⁹Both Burundi and Zimbabwe initially expressed interest in their participation in ACE II. Burundi was unable to participate in the Call for Proposals due to the unrest in the country at that time. Though it does not host any ACEs, as an IDA eligible country, Burundi is eligible to access services offered by the ACEs in other countries and regional capacity-building activities under the project. Zimbabwe is currently not eligible for IDA and its participation is subject to whether it can finance its ACEs and other capacity building activities. It participated in the Call for Proposals and has one proposal selected by the RSC based on the technical merit through the independent evaluation process, although funding for it is yet to be secured. In the meantime, Zimbabwe can participate in ACE capacity-building activities with self-financing.

Component 1: Strengthening Africa Centers of Excellence (ACEs) in Regional Priority Areas (US\$140 million)

3. Under this component, the IDA Credit will finance the strengthening of 24 ACEs in five clusters of regional priorities – Industry, Agriculture, Health, Education and Applied Statistics. Each of these 24 specialized regional centers will receive a grant up to US\$6 million for implementing its proposal in a specific regional priority area. However, regardless of their specifications, all these ACEs are expected to perform the following tasks:

- (a) *Build institutional capacity to provide quality post-graduate education with relevance to the labor market, including, inter alia, updating existing program's curricula or creating new education programs to meet development challenges; meeting benchmarks for quality education (e.g. national/regional accreditation); attracting a regional student body; training of faculty to introduce new approaches to teaching and learning; enhancing work-place learning; encouraging entrepreneurship among students; upgrading faculty qualifications; and improving learning resources, including lab equipment, and minor rehabilitation or extension of existing facilities.*
- (b) *Build institutional capacity to conduct high quality applied research, relevant to addressing a key development challenge/priority, including, inter alia, faculty development and staff training, fellowships and post-doctoral studies, networking activities with national and international partners, hosting and participating in conferences, research equipment and materials and laboratory refurbishment/rehabilitation, research dissemination, knowledge and technology transfer, and patenting or other intellectual property rights related activities.*
- (c) *Develop and enhance partnerships with other academic institutions (national, regional and international) to pursue academic excellence, raise the capacity of network partners, and raise the ACE's capacity, including inter alia, joint delivery of education programs, faculty exchanges/visiting faculty, joint research and conferences, and sharing of specialized equipment and library resources.*
- (d) *Develop and enhance partnerships with industry and the private sector to generate greater impact, to enhance the impact of the ACE on development and increase its relevance in education and research, including, inter alia, industry advisory boards, industry lectures, training of trainers for sector training institutions (such as polytechnics, nursing, teacher or agricultural colleges), joint research, training and other activities to communicate, interact and reach out to civil society, private sector and grassroots communities.*
- (e) *Improve governance and management of the institution and set up a role model for other higher education institutions, to improve M&E, including monitoring of labor market outcomes of graduates, administration, fiduciary management (including FM, procurement, oversight and capacity), transparency, ability to generate resources, and project implementation.*
- (f) *Deliver outreach, and create an impact, to society by delivering excellent teaching and producing high quality applied research. Individual ACEs are selected because of the strength of their proposals and their relevance to providing solutions to regional development challenges. By fulfilling their mandate, the ACEs can effect*

a positive change in society and become model hubs of teaching, research, and innovation for other institutions in the region.

4. **National governments need to agree with a certain degree of decentralization in financial decision-making in their selected individual ACEs.** Sustainability of the ACEs is a critical concern. As a key mitigation action based on international experiences, the ACEs need to build their capacity in revenue generation and be allowed to retain the generated revenue for further development throughout the project implementation. The governments need to provide incentives and empowerment to enable this. Thus, as part of the proposal submission process, the Government must agree to devolve the following three financial powers to the ACE/university: (a) the ACE (with the approval of the hosting university) has the right to set and charge tuition for all short-term courses as well as Master’s and PhD level programs. Tuition fees for undergraduate programs can be subject to outside regulations; (b) the ACE is entitled in the performance agreement with the Government to retain all externally generated revenue (including the ACE grant and other revenue generated by the ACE). If the university has institutional revenue sharing policies established already, then an acceptable portion of the externally generated revenue can be shared with the rest of the university. The share going to the university has to be specified in the proposal, and the ACE grant has to go in its entirety to the agreed proposal; and (c) an ACE designated account (DA) (operating as an endowment fund) needs to be set up and all externally generated funding, as well as the project funding will go into this account and will be managed from there.

5. **Unlike many existing Centers of Excellence in the ESA region which focus primarily on academic research, the selected ACEs under ACE II must produce real impact in terms of addressing a specific challenge in one of the priority areas in the region.** These priority areas have been defined by the project’s RSC after broad consultations in the region. They fall into five clusters – Industry, Agriculture, Health, Education and Applied Statistics. Table 2.1 provides information on the areas covered within these priorities. All ACE proposals need to address development challenges in one of the priority areas to be considered. To encourage flexibility, innovation and cross-cutting solutions, an ‘unspecified’ category was created to allow for preparation of proposals in areas not explicitly listed. This priority list provides guidance for proposal development, but it does not mean that an ACE would be selected and established for each of these priority areas on the list under ACE II.

Table 2.1: Regional Priority Areas for ACEs⁴⁰

Cluster	Priority Area
Industry	<ul style="list-style-type: none"> • Energy (wind/hydro-power, geothermal & solar-energy, energy generation & transmission, etc.) • Value addition / Extractives (oil & gas sector, mining) • Urban design and construction/Infrastructure, transportation and logistics • Disaster/risk analysis and management, hydrology and water purification • ICT (soft/hardware, applications, services, teaching/learning) • Product design, manufacturing, • Railway engineering • Marine and ocean engineering

⁴⁰ Climate change was not included in the regional priority areas finalized by the RSC during the initial Call for Proposal.

	<i>Unspecified (room for innovation)</i>
Agriculture	<ul style="list-style-type: none"> • Agribusiness (crop & livestock sciences, agricultural engineering, agro/food processing & packaging; value chain) • Climate and environmental smart agriculture • Agricultural land management • Water resource management, hydrology and irrigation • Marine and ocean sciences <i>Unspecified (room for innovation)</i>
Health	<ul style="list-style-type: none"> • Pharm-bio technology (drug discovery, science-driven traditional medicine & development) • Bio-medical engineering (implant development, hospital infrastructure, tissue-engineering) • Bio-physics and bio-chemistry (diagnostic tools) • Molecular biology (infectious diseases, vaccine development) • Emergency medicine and trauma (with a focus on traffic injuries & deaths) and nutrition <i>Unspecified (room for innovation)</i>
Education	<ul style="list-style-type: none"> • Quality of Education (innovations in STEM teaching/learning/curriculum development, assessment & management tools, e-learning & education tools, creative design thinking)
Applied Statistics	<ul style="list-style-type: none"> • Applied Statistics (big data, bioinformatics, data mining, reliability modeling, research design, evidence-based policy analysis)

6. **Each of the selected ACEs will have the autonomy to implement its own proposals, with support from its host university and government as well as the RFU.** To help improve the quality at the ACE hosting institutions, all these institutions will be encouraged to participate in the PASET benchmarking initiatives. For those in the PASET benchmarking program, TA will be provided to develop comparable data and indicators, data collection protocols, standard reports, a data platform, and training where relevant. To ensure the achievement of targeted results, ACE II will employ a performance-based financing mechanism to disburse funding to each ACE against a set of agreed DLIs (see Table 1.1 in Annex 1). To ensure regional collaboration for greater impact, the project will provide a mix of funding requirements and incentives to promote regional mobility of students and faculty, and partnerships with regional and international institutions as well as with the private sector. Each ACE will sign a PFA with its government (i.e., the ministry in charge of higher education) which includes the following elements:

- (i) At least 15 percent of the funding must be invested in partnerships and at least ten percent must be invested in partnerships outside the ACE hosting country;
- (ii) A partnership agreement between the ACE and its respective partners needs to specify the work plan, budget and outcome arrangements;
- (iii) Civil works if needed, should not exceed 25 percent of the total grant; and
- (iv) The Government's existing commitments for continued funding of the institutional staff need to be part of the funding and performance agreement.

7. **The project uses a PFA mechanism to minimize implementation risks and incentivize good performance and ownership.** Any funds undisbursed at the time of the mid-term review will be reallocated using transparent criteria that incentivizes better performing ACE institution(s) within a participating country, as described in detail in the draft POM. This way, the risk of

committing large amounts of funds to underperforming institutions or institutions without adequate capacity is minimized.

ACE Activities.

8. **Each ACE is expected to encompass the following five interrelated elements:**

- (a) Enhancing capacity to deliver high **quality training** in the region to produce skilled personnel needed for addressing a specific development challenge defined in the regional priority areas;
- (b) Enhancing capacity to deliver **applied research** to find solutions for addressing a specific development challenge defined in the regional priority areas;
- (c) Building and strengthening **academic collaboration** both within and outside the ESA region to raise the quality of education and research in the specialized priority discipline;
- (d) Building and using **industry/sector partnerships** to enhance the impact on the chosen priority area through improved relevance of training, research and outreach of the ACE; and
- (e) Strengthening **monitoring and evaluation** to improve governance and management of the ACE and its hosting university.

9. Each of these five elements is elaborated further in the below sections.

10. **Enhancing capacity to deliver high quality training in the region to produce skilled personnel needed for addressing a specific development challenge defined in the regional priority areas.** Four key indicators for measuring progress toward achieving this goal in each ACE will be used: (a) number of regional (non-national) students enrolled in specialized courses at the Master's and PhD levels; (b) number of training programs that are regionally and internationally accredited; (c) number of ACE hosting universities participating in regional benchmarking initiatives; and (d) amount of externally generated revenue. These will be achieved by implementing an institutional plan consisting of an institutional-specific mix of the following elements: (a) developing and offering new specialized short-term training programs aimed at industry professionals for their further professional development; (b) developing and offering new specialized Master's- and PhD-level programs with improved quality and relevance of existing programs through revision of curricula and pedagogy based on professional standards of the industry and incentives⁴¹ for good performance of faculty (e.g., awards for top teaching and research); (c) improving laboratories, classrooms, computer labs, and other teaching facilities; (d) establishing nationally, regionally and internationally accredited education programs; (e) upgrading teaching capacity for student-centered learning; (f) upgrading faculty qualifications; and (g) participating in the regional PASET. Other activities could be permissible for funding as laid out by the POM.

11. **Enhancing capacity to deliver applied research to find solutions for addressing a specific development challenge defined in the regional priority areas.** The key indicators for

⁴¹ Only non-monetary incentives to achieve this objective can be funded by the ACE grant. The project does not restrict the use of funds generated from other sources for this purpose.

measuring progress towards achieving this goal will be: (a) number of collaborative research and partnership agreements signed with public institutions and private firms; (b) number of faculty and PhD student exchanges; and (c) amount of externally generated revenue. These will be achieved by carrying out an institutional specific mix of the following activities: (a) improving research facilities and material supply; (b) incentivizing research and publications with regional collaborators;⁴² (c) increasing enrollment of Master's and PhD students by offering scholarships if necessary to attract young and female talents;⁴³ (d) assisting grant proposal writing, manuscript translation, and editorial support; (e) participating and organizing workshops/seminars and presenting research results at academic conferences; (f) exchanging faculty and PhD students with relevant institutions; (g) accessing library and e-journals; and (h) covering the costs associated with research collaboration.

12. Building and strengthening academic collaboration both within and outside the ESA region, to raise the quality of education and research in the specialized priority discipline.

Such collaboration can be either on-going or new. The key indicators for measuring progress towards achieving this goal will be: (a) share of regional (non-national) students enrolled in ACE-offered training programs; (b) number of internationally recognized research publications co-authored with regional collaborators; (c) number of faculty and PhD student exchanges; and (d) number of collaboration and partnership agreements signed with the institutions in the region. The ACEs will be encouraged to forge collaborations with national, regional and international institutions in their specialized areas to address the needs for training and research in their chosen development priority areas. Academic collaboration activities could include: (a) collaboration in delivery of education programs; (b) faculty development and exchange, including PhD students; (c) joint conferences, research and course offerings in specialized areas; (d) sharing access to learning equipment and library resources (i.e., giving students and faculty exposure to different learning environments); and (e) assistance to curriculum development. These kinds of activities are expected in the ACE proposal and the selected proposals will have a chance to revise their academic collaboration action plans with comments from the evaluation. An academic collaboration agreement will be developed by the ACE in close collaboration with its collaborators, and co-signed by all major parties. This agreement will form part of the PFA to be signed with the Government. The academic collaboration action plan will be reviewed and revised at mid-term.

13. Building and using industry/sector partnerships to enhance the impact on the chosen priority area through improved relevance of training, research, and outreach of the ACE.

The key indicators for measuring progress toward achieving this goal will be: (a) the number of partnership agreements signed with public institutions and private firms; and (b) the amount of revenue generated externally. These partnerships should ideally be regional in nature. Partnerships with key national and regional industry associations or other important players is a strong indication of the potential relevance and impact of the ACE. Industry partnerships could also be with "lower-level" industry/sector-specific training institutions, such as institutions that provide technical training or extension service training for farmers. An action plan for the ACE in this area needs to be tailored to its specific development challenge, existing industry partnerships, and new

⁴² See footnote #38.

⁴³ The project strongly encourages the ACE to prioritize any scholarships for degree courses to young graduates over mid-career faculty members.

opportunities for future growth. Activities could be a combination of: (a) adjunct lecturers from the industry; (b) Master's/PhD theses based on real problem-solving with companies; (c) advisory boards on curriculum; (d) placement of students and job fairs; and (e) liaison office for industry-outreach and research results/technology transfer. The main industry partnerships of the ACEs will be defined in the MoUs outlined in the action plan, which will be updated at the mid-term review.

14. Strengthening M&E to improve governance and management of the ACE and its hosting university. The key indicators for measuring progress toward achieving this goal are outlined in the project Results Framework and associated DLIs in Annex 1. Concrete activities could include: (a) implementing new or improved grant management, procurement, and monitoring procedures; (b) hiring or training of existing personnel for fundraising and related M&E; (c) improving internal board procedures including regular meetings, membership review (e.g., having private sector representatives and other external members), and disclosure of board meeting minutes, etc. for greater transparency; (d) establishing internal M&E mechanisms towards quality assurance and enhancement; and (e) capturing lessons-learned from project implementation and sharing with regional partners and other ACEs.

Application Process

15. All applications/proposals were submitted through the ministry/agency in charge of higher education in each participating country to emphasize government support and ownership of ACE II. The RFU for ACE II – Inter-University Council for East Africa (IUCEA) – received and conducted eligibility screening of all submissions from the government of each participating country. Along with the proposals, the submission included a cover letter in which the following was explicitly stated: (a) the government's support to the proposals; (b) the government's willingness to utilize of IDA for financing its ACE(s) if selected; and (c) the government's agreement to grant a certain degree of decentralization in financial decision-making to its ACE(s) if selected.

16. Only the proposals that passed the eligibility screening were considered for evaluation. Institutions interested in hosting ACEs needed to have ongoing PhD and Master's programs in the field that they applied. The aim of the project is to strengthen the capacity of existing university programs to deliver high quality training to meet the demand for skills in ESA's development priority areas. By offering advanced graduate degree programs, institutions have a built-in capacity for academic achievement that can be harnessed and expanded through ACE II. The presence of PhD programs indicates an institution's research capacity and ambition, and is a precursor to the development of a high quality faculty. The project was open to both public and private higher education institutions. However, the decision on the inclusion of private higher education institutions was left to the government of each participating country because of their varied conditions. Institutions that could not meet the above requirements could still participate in ACE II in two ways: (a) through partnerships with qualified institutions; and (b) acquiring of services (education and research) from the selected ACEs.

17. Participating countries were encouraged to have national workshops to facilitate the application process. As part of empowering the institutions and governments to take ownership of the project, ACE II has required all participating countries to host national consultation

workshops. These workshops were organized by the respective governments with technical support from the Bank. They encouraged stakeholders to start thinking about proposals and their focus areas on both national and regional development priorities, as well as the eligibility of their institutions. The Government and its interested institutions agreed on an in-country process for proposal development and submission.

Selection Process and Criteria

18. **The selection process was transparent, objective, merit-based, and competitive.** It is outlined in detail in the evaluation protocol developed jointly by the IUCEA and the Bank (the evaluation protocol is part of the POM, prepared by IUCEA). The general steps and timetable for some milestones are:

- (a) Consultations on draft eligibility, evaluation criteria, and selection process
- (b) RSC approval of criteria, process, and call for proposals
- (c) Launch of Call for Proposals (*July 31, 2015*)
- (d) Submission of proposals by the Governments (*by October 2, 2015*)
- (e) Eligibility screening of proposals (*by October 6, 2015*)
- (f) Technical desk evaluation by the IEC (*by October 16, 2015*)
- (g) Shortlisting of proposals (*by October 20, 2015*)
- (h) On-site and leadership evaluation of shortlisted proposals (*by November 28, 2015*)
- (i) Provisional selection of ACEs by the RSC (*December 4-5, 2015*)
- (j) No-objection from the Bank (*by December 12, 2015*)
- (k) Announcement of the conditionally selected ACEs (*by December 15, 2015*)
- (l) Addressing of complaints by the Grievance committee (*by January 20, 2016*)
- (m) Submission of improved draft implementation plans (*by March 11, 2016*)
- (n) Signing of the Performance and Funding agreements (*by May 13, 2016*).⁴⁴

19. **There were two steps in the evaluation of eligible proposals: (a) desk review, and (b) on-site visit.** This approach ensures a fair and thorough evaluation based on proposal merits, thus ensuring the integrity of the selection process. The entire evaluation process was coordinated by the IUCEA and overseen by the RSC, with technical support from the Bank.

Desk Review

The IEC⁴⁵ reviewed all the eligible proposals based on the technical criteria listed in **Table 2.2**. The IEC is a panel of internationally renowned academics (primarily African or from the African diaspora) with expertise in the defined regional development priority areas. The panel members must have no conflict of interest with the project and must be capable of evaluating the proposals under the guidance of the evaluation protocol. They must also have a good understanding of Africa's development challenges in general and of challenges in the ESA's priority areas in particular. As the RFU of the project, IUCEA was responsible for nominating panelists and preparing the evaluation protocol, all of which are detailed in the draft POM.

⁴⁴ This is an estimated date and could change during the preparation.

⁴⁵ The IEC comprises over 60 African and international experts with expertise in the regional priority areas.

Table 2.2: Technical Evaluation Criteria for Desk Review

Criteria for Technical Evaluation	Mark
<i>(1) Potential for Regional Development Impact:</i>	
<i>Importance of development topic for the region and the innovation of the proposal – including alignment with regional and national development plans</i>	
<i>Potential regional development impact – including strengths and relevance of collaboration with industry partners (employers, organizations, and governments)</i>	
<i>Potential for raising the quality and relevance of education at national and regional academic partner institutions – including strengths of existing regional collaborations and partnerships</i>	
<i>(2) Potential for Excellence</i>	
<i>Potential for Learning Excellence – including the availability of existing physical and human resources of expertise; relevance, excellence and strengths of proposed international collaboration</i>	
<i>Potential for Research Excellence</i>	
<i>(3) Sustainability (financially and academically) of the proposal and its impact</i>	
<i>(4) Social Responsibility</i> – inclusion of rural/remote institutions as partner institutions, and impact on disadvantaged students, including girls	
<i>(5) Quality and Consistency of proposal</i> – including fit with strategic plan analysis	
Total	

On-Site Visit

20. **The on-site evaluation of the short-listed institutions was conducted by small teams of the IEC.** Each team consisted of at least two internationally reputed experts and a leading researcher within the field of expertise of the proposed ACE. These teams visited the short-listed institutions. During each site visit, the team assessed the leadership and management capacity of the potential ACE hosting University and the proposed ACE itself. The team also ascertained the feasibility of the implementation of the proposal given the existing academic capacity, infrastructure (including learning and research facilities), and management capacity according to the criteria in Table 2.3.

Table 2.3: Onsite/Leadership Evaluation Criteria

On-Site and Leadership Evaluation	Marks
Institutional leadership and vision	
Center leadership and administrative capacity	
Institutional ownership of proposal as evident from faculty and student awareness and inclusion	
Government involvement to support the institutional proposal and alignment to strategy	
Consistency between the submitted proposal and the reality on the ground as observed by the visiting evaluation team	
Financial management and procurement track record and capacity	
Total	

Selection Process and Criteria

21. **Based upon the aggregated evaluation marks of both the technical/desk-review and on-site evaluations, the IEC submitted specific recommendations to the RSC, supported by appropriate documentation.** To ensure a reasonably equitable balance in geography, language and priority disciplines, the RSC was allowed to make necessary adjustment to the IEC’s recommendations (but without any changes to the individual evaluation marks) and finalize the selection. The clear objective and justification for the RSC’s final decision must be recorded in detail in the RSC decision meeting minutes. All the institutions with submitted proposals received a summary of their proposals’ main strengths and shortcomings of their proposals.

22. **The ACEs financed under ACE II were selected through an open, objective, transparent, and merit-based competitive process.** The Call for Proposals, issued on July 31, 2015 was followed by a two-step evaluation process conducted by the IEC⁴⁶: a technical evaluation and an onsite and leadership evaluation. The nine participating countries submitted 109 proposals. The eligibility screening⁴⁷ by IUCEA produced a total of 92 proposals for evaluation, out of which the RSC conditionally selected 25 proposals to be ACEs, out of which only 24 will be financed under the project based on the following criteria⁴⁸: (a) address a specific challenge in one of the five priority areas in the region – industry, agriculture, health, education and applied statistics; (b) be of the highest quality; (c) have institutional capacity; (d) provide geographical balance; and (e) have IDA funding eligibility and availability. ***These selected ACEs underwent FM, procurement and safeguards assessments.*** Table 2.4 provides a glance at the distribution of these ACEs by cluster and country.

⁴⁶ The IEC is comprised of over 60 African and international experts with specialties in the proposal subject areas.

⁴⁷ Only proposals submitted by the governments of the participating countries, with existing PhD programs, and in the defined regional priority areas were eligible for consideration. The eligibility screening was done by IUCEA.

⁴⁸ The ACE from Zimbabwe is not eligible for IDA financing.

Table 2.4: Distribution of Selected ACEs by Country and Cluster

Country/ Cluster	Industry	Agriculture	Health	Education	Statistics	TOTAL
Ethiopia	2 (Railways, Water Management.)	1 (Climate Smart)	1 (Drug Development)			4
Kenya	1 (Manufacturing)	2 (Agribusiness, Food)				3
Malawi		1 (Fisheries)	1 (Public Health & Herbal Medicine)			2
Mozambique	1 (Oil & gas)					1
Rwanda	2 (ICT, Energy)			1 (STEM teaching)	1 (Applied Statistic)	4
Tanzania	1 (Water Infrastructure)	2 (Unspecified – Rodents. Agricultural Education)	1 (Infectious Diseases)			4
Uganda	1 (Product Design & Manufacturing)	2 (Crop Improvement, Agro-ecology)	1 (Pharma-Bio & Traditional Medicine)			4
Zambia	1 (Mining)		1 (Infectious Diseases)			2
TOTAL	8	9	6	1	1	24

23. **The proposed ACEs are expected to address specific development challenges facing the region through graduate training (Master’s, PhD, and short-term courses) and applied research in the form of partnerships and collaborations with other institutions and the private sector.** These are highlighted below for a quick illustration of their potential impact:

(a) Industry. There are nine selected ACEs in the areas of energy, extractives, ICT, manufacturing, railways and water, based in Ethiopia, Kenya, Mozambique, Rwanda, Tanzania, Uganda and Zambia. The center in energy will try to alleviate constraints which have resulted from low energy access and adoption of technologies in rural areas and poor inter-state energy trading in ESA. The centers in mining, and oil and gas will take the lead in sustainable development of the extractive industry through the provision of education, training programs and research solutions in the field. The center in ICT will educate Africans who will develop and deploy innovative ICT services. The two centers in the water sector will address water and sanitation challenges in the region to ensure safe water and sanitation requirements for water provision; apply technology to use ground water for agricultural applications; and improve municipal and industrial water management. The center in railways will produce trained graduates who can fill the manpower needs of the burgeoning railway sector. The centers in manufacturing will utilize nanotechnology to fill the gap in promoting the value addition of primary produce.

(b) Agriculture. There are eight selected ACEs in the agriculture area, based in Ethiopia, Kenya, Malawi, Tanzania, and Uganda. They will address development challenges of food insecurity and rural poverty by focusing on sustainable agriculture and agribusiness development and management, e.g., developing value chain capacity in the use of biotechnology and climate smart agriculture to increase crop and livestock productivity and fisheries; developing technology to exploit the potential of edible insects as a source of protein;

increasing the relevance of their training programs through internships, tracer studies, and wide stakeholder consultations; and producing scientists who can address issues of climate change adaptability, agricultural sustainability, and food insecurity.

(c) Health. There are five selected ACEs in the health area, based in Ethiopia, Malawi, Tanzania, Uganda, and Zambia. These centers will address development challenges in the areas of infectious diseases, public health, and drug development by providing leadership in postgraduate training and research in molecular biology, analytical epidemiology, traditional medicine, and pharma-biotechnology. These centers will provide a regional platform for innovative drug development, including exploring the use of traditional medicine, and support equitable access to medications and diagnostics in the region.

(d) Education. The selected ACE in education in Rwanda aims to improve the quality of mathematics and science education through facilitating the delivery of innovative pedagogical approaches, supporting the development and implementation of curriculum reforms, supporting research in mathematics and science education to alleviate learning barriers in these subjects and promote STEM education, and outreach programs targeting all education levels in the region.

(e) Applied Statistics. The selected ACE in applied statistics, based in Rwanda will become an international multidisciplinary center that combines expertise in statistics, economics, business, computer science, and engineering to use big data and data analytics to support evidence-based decision-making, help solve some complex real-world problems related to development, monitor and evaluate performance of public intervention programs, and stimulate innovation.

24. **The project will contribute to the Africa Climate Business Plan.**⁴⁹ The plan proposes to bolster the region's capacity to withstand the adverse consequences of climate change through the facilitation of investment into interventions that tackle climate change induced issues in the region. A number of centers of excellence selected in the project cover elements of climate change in line with its consequence for priority areas. However, in the future, the project will be open to possible Call for Proposals for centers focusing exclusively on climate change.

25. **These selected ACEs are expected to produce measurable results in the form of increased quality and quantity of graduates (Master's and PhD), and research in the priority areas as well as of increased quality and quantity of research, and increased collaboration and partnerships with industry and other higher education institutions, both regional and international.** According to their proposals, over the project duration of five years, collectively these ACEs plan to:

- (a) enroll more than 3,500 graduate students in the regional development priority areas, out of which more than 700 will be PhD students and more than 1,000 will be female students;
- (b) publish almost 1,500 journal articles;

⁴⁹ <http://www.worldbank.org/en/news/press-release/2015/11/24/world-bank-group-unveils-16-billion-africa-climate-business-plan-to-tackle-urgent-climate-challenges>.

- (c) launch more than 300 research collaborations with private sector and other institutions; and
- (d) generate almost US\$30 million in external revenue.

26. **The RSC has set up a grievance committee to ensure the integrity of the selection.** Any applying institution can submit grievances to challenge the results of the selection. Once a grievance is received, this committee will seek clarifications from the IUCEA, the IEC and other relevant entities, and then make a recommendation to the RSC on whether the grievance should be accommodated and whether any modification needs to be made to the evaluation/selection decision.

27. **Each selected ACE was given the opportunity to improve its proposal** with comments and suggestions from the IEC. During the same period, fiduciary assessments and safeguards screenings were carried out by the Bank specialists. Each ACE institution submitted its ESMP which was disclosed in-country and on the Bank and IUCEA websites on February 22, 2016. Each institution has submitted before March 11, 2016 the following for further review: (a) the improved proposal; (b) a draft of implementation plan; and (c) a draft of PFA. This is to ensure the readiness for implementation of the selected ACEs.

Component 2: Capacity Building Support to ACEs through Regional Interventions (US\$3 million).

28. Under this component, the IDA Grant will finance activities at the **regional** level to enhance the capacity of the ACEs and help them overcome key challenges for achieving the PDO. The ACE I experience indicates that additional support is needed to ensure that the selected ACEs achieve the intended outcome and impact of the project. Areas of additional support include: (a) capacity development to address key institutional inadequacies such as partnership development with the private sector; and (b) competitive scholarships to award top future talents and encourage regional student mobility. Under the ACE Scholarship Program, 30 regional students in STEM will be financed for two years to attain a Master's degree in any of the ACEs. It is envisioned that the ACE Scholarship program will acquire the prestige of a Rhodes type scholarship program, identifying and cultivating future leaders for the region. Some elements of this component could be implemented by specialized TA firm(s) which will be overseen by the RFU. The project will coordinate with PASET and other regional scholarships and international initiatives to expand the pool of scholarships to encourage students to study in an ACE institution outside their native country in the region.

29. *Capacity Building for Partnership Development with the Private Sector.* The ACE I experience shows that the selected ACE institutions are uneasy about forging partnerships with industry/private sector. However, such partnerships are so critical to finding solutions for development challenges that there is a DLR designated to it in the project design. Such partnerships, though agreed in project preparation, often fail to materialize into meaningful engagement or deliver active collaboration for problem solving. That is a function of both lack of access and trust with stakeholders on the one hand and unfamiliarity of how to engage with the private sector on the other. Opportunities for both industry/private sector and academic institutions to engage and share knowledge are important and need to be facilitated. Thus, the project will

provide forums for industry-academic engagement for ACEs to highlight their work and brainstorm on collaborative research ideas, as well as facilitate capacity building workshops in areas such as crafting contract and legal agreement, patent application, etc. These could be implemented by a TA firm as needed, under the management of IUCEA.

Component 3: Facilitation, Coordination and Administration of Project Implementation (US\$5 million)

30. This component will be financed in the form of a Regional IDA Grant to the RFU. The sheer number of countries and institutions participating in the ACE II project makes the project implementation complex and requires a RFU that has a designated team for helping manage the project. The main role of the RFU is to deliver some capacity development activities under Component 2. The RFU will explore networks of regional institutions and industries within and outside of the ESA region and manage a TA firm(s), as needed to ensure effective project preparation and implementation, and oversee, administer, and coordinate M&E activities across the ACEs to ensure their achievement of the agreed DLI results. The Inter-University Council for East Africa, a regional body under the aegis of the EAC, was selected by the RSC as the RFU for the project through a competitive process (see Annex 3 for more details on the selection process). To fulfill the responsibility as the RFU, IUCEA is forming a team which comprises a project coordinator, financial specialist, a communication officer and others.⁵⁰ IUCEA has already received an IDA Grant of US\$1 million as part of the PPA.

As the RFU for ACE II, IUCEA⁵¹ will have the following tasks:

- (i) To be responsible for the oversight of the entire project implementation under the direction of the RSC and with the TA from the Bank;
- (ii) For Component 1, to ensure that the developed DLI framework works and carry out all the necessary tasks required for its effective implementation including timely verification of DLI results submitted by each ACE, collecting necessary data for M&E, ensuring timely compliance and coordinating and sharing information with the participating countries;
- (iii) To oversee Component 2 as detailed above;
- (iv) To support and facilitate the fiduciary and safeguard reporting that is required for the project under the direction of the Bank; and
- (v) To facilitate regional collaboration and networking by organizing a series of knowledge sharing events for all the selected ACEs and their partners.

⁵⁰ During the course of project implementation, IUCEA may hire either staff or consultants, to fill gaps in personnel for performing the required tasks. Adequate support and capacity building will be provided to IUCEA by the World Bank to enable the fulfillment of its responsibilities (IUCEA has already received training in fiduciary from the Bank).

⁵¹ IUCEA, an institution of the inter-governmental EAC, is headquartered in Kampala, Uganda and headed by the Executive Secretary. Its mandate is to foster collaboration in higher education within the EAC.

Annex 3: Implementation Arrangements
AFRICA: Eastern and Southern Africa Higher Education Centers of Excellence Project
(P151847)

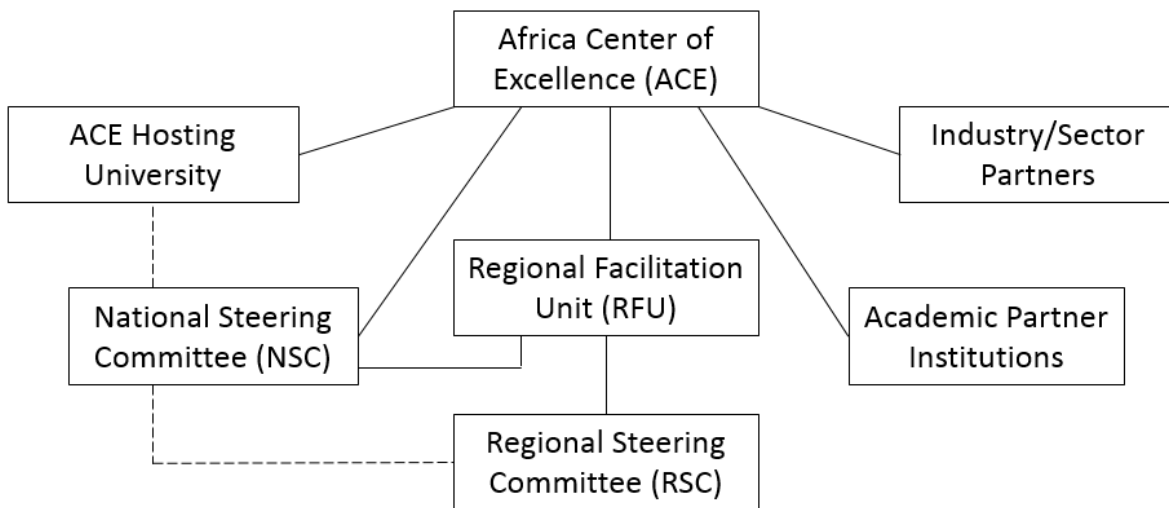
A. GOVERNANCE

1. The following entities which operate at the institutional, national and regional levels will be directly involved in the implementation, supervision and monitoring of the project. Implementation arrangements, responsibilities and procedures are described in the Key Responsibilities section of this annex. Furthermore, the detailed terms of reference will be provided in the POM.

- (a) **Africa Centers of Excellence.** The project activities will principally be implemented by the selected ACEs with support from their respective host universities. The individual ACE is responsible for strategic planning, proposal implementation, FM, M&E, and reporting.
- (b) **Governments.** Implementation support and supervision of the project at the national level is provided by the NSC.
- (c) **Regional Facilitation Unit.** The RFU will coordinate, facilitate and administer project implementation and provide capacity building support to the ACEs. It will be hosted within the Inter-University Council for East Africa.
- (d) **Regional Steering Committee.** The project will operate under the overall guidance and oversight of the RSC whose main task is to set guidelines for the project, and to ensure that the ACEs achieve the project development objectives.

2. This annex will also lay out the fiduciary arrangements of the project with respect to FM, procurement, safeguards and M&E. The fiduciary capacity available within the higher education sector or related Bank projects will provide implementation support and possibly oversight for the ACEs. Further, ACE II will, to the extent feasible, use the same fiduciary procedures as in other closely related Bank projects.

Figure 3.1. Project Organigram



Key for the Diagram:

- Regional Steering Committee (RSC) provides oversight and guidance to the project through the Regional Facilitation Unit (RFU).
- RFU provides regional coordination, facilitation and administration as well as capacity building support to the implementation of the ACEs.
- The National Steering Committee (NSC), in liaison with the ACE Hosting University, RSC and RFU, provides oversight to the implementation of its ACE(s).
- Africa Center of Excellence (ACE) develops partnerships with industry/sector organizations and academic institutions.

Key Responsibilities

(a) Africa Centers of Excellence (ACE)

3. Each selected ACE will be responsible for implementing its own proposal as part of Component 1. Each ACE will, both at the national and regional levels, implement and monitor the project activities that fall under its respective responsibilities. The ACE will ensure that Project funds are planned for and invested in accordance with the Implementation plan, and within the framework agreed upon in the PFA signed with the Government.

4. Each university can have up to two ACEs. Each ACE will have a management team with an ACE Center Leader who reports to the pro-Vice Chancellor or Deputy Vice Chancellor.⁵² The faculty members within the institution will serve as extended members of the ACE team and assist with the implementation of the ACE proposal. The ACE team will also include an FM officer, a procurement officer, and an M&E officer who will be responsible for the fiduciary responsibilities of the project. For an institution with two ACEs, a similar structure will apply with an institutional leader assigned to manage both ACEs.

⁵² In the case of Rwanda, the ACE Center Leader reports to the College Principal.

5. Each ACE is responsible for implementing activities under Component 1 and for preparing an annual work plans based on the approved proposal that will be reviewed by the NSC. The detailed activities of each ACE are provided in the draft POM. A summary of these tasks is listed below.

- (a) Implement activities under Component 1 that strengthen the quality of education through enhanced teaching capacity to modern standards within the focus areas of the ACE. Details on the type of activities can be found in Annex 2 of this Project Appraisal Document (PAD).
- (b) Implement activities under Component 1 that seek to raise the quality of education and propagate applied research to impact more beneficiaries by networking with other higher education institutions through: (i) partnerships with other ACEs and higher education institutions; and (ii) partnerships with existing thematic networks in research and training in the country and within and outside the region. A detailed MoU between the ACE and each partner institution will specify the nature of their partnership.
- (c) The ACE will take initiative and undertake outreach activities including outreach to academic and industry partners to ensure linkages between the training offered and the labor market needs, and application and impact of research on development challenges.
- (d) The ACE will be responsible for its own fiduciary and safeguards functions. This includes: (i) undertaking its own procurement; (ii) maintaining project financial accounts according to its requirements; and (iii) implementing the project's M&E plan as well as the ESMP.
- (e) The detailed activities of each ACE are provided in the POM.
- (f) The ACE will be responsible for ensuring its sustainability after the project implementation period is over. The ACE will work on fundraising and developing external sources of revenue.
- (g) The ACE will hold and manage funds for capacity building in partners institutions. All fiduciary and M&E matters related to the use of these funds will lie under the purview of the ACEs.

6. **Institutional capacity.** As part of Project preparation, institutional assessment of the capacities of the ACEs was undertaken, including fiduciary, and environmental and social safeguards management capacity assessment. Based on the outcome of these assessments, capacity building plans will be developed to ensure the application of Bank guidelines for project implementation and potential risks include: (a) faculty inertia; (b) lack of incentives; (c) overly cumbersome processes; (d) demand for bribes for facilitating the process; (e) lack of knowledge of the process; and (f) lack of decentralization within the university.

(b) Governments

7. Implementation support and supervision of the project at the national level is provided by the National Steering Committee (NSC). Each Government will sign a Financing Agreement with IDA. The Government will specify the ACE as the Implementing Entity and sign a PFA for its work. This agreement will define the responsibilities of the institution, including fiduciary

arrangements, reporting arrangements and the terms and conditions for its operation, including engagement with partner institutions, in accordance with the agreed implementation plan.

8. Each government will constitute a NSC through the ministry or agency responsible for higher education. The NSC is tasked with the semi-annual review of performance, withdrawal applications, and implementation planning and support, but with no day-to-day implementation or approvals. The composition of the NSC will be defined by each country; but the NSC will include representatives from the MoF, relevant line ministries related to the focus area of the ACEs, the Vice Chancellors from the ACE hosting institutions, the lead agency for higher education or S&T education, and the private sector. The specific tasks are as follows:

- (a) Undertake annual performance and progress reviews based on the signed PFA for the selected ACEs and provide constructive feedback
- (b) Oversee audits (approval of the terms of reference for the annual audit, monitoring of required follow-ups on recommendations outlined in the annual audit report presented by the selected ACEs)
- (c) Receive and review DLI results and related withdrawal applications
- (d) Monitor overall progress of the project implementation with a particular focus on achievements, delays, problems and bottlenecks (e.g., DLI results and financial reporting for disbursement, decisions on follow-up activities presented by the selected ACEs) and help address implementation challenges
- (e) Promote good practices in project implementation among and beyond the selected ACEs
- (f) Recommend changes to the POM and decisions to be considered by the RSC

9. Kenya: Government Funding for the NSC. The Government of Kenya has agreed to support activities of the NSC with financial support of up to five percent of the credit (equivalent to a maximum of US\$900,000) over the project duration of five years. Operational activities include, but are not limited to communication and dissemination of ACE activities, performance and progress reviews and conferences.

(c) Regional Facilitation Unit (hosted within the Inter-University Council for East Africa)

10. The Regional Facilitation Unit (RFU) will be hosted within the Inter-University Council for East Africa (IUCEA). The IUCEA will be responsible for implementing Components 2 and 3 of the project.

11. The IUCEA was selected as the RFU for ACE II through a competitive process using the following criteria: (a) based in Africa, with an independent legal entity status; (b) proven capacity to handle IDA and other donor funds; (c) long-term mandate in higher education; (d) established working relationships with higher education institutions; (e) evidence of experience in working across sectors; (f) evidence (based on due diligence assessment) of well-established FM systems; (g) evidence of regional coverage across thematic areas; (h) extensive experience in capacity building; (i) experience with project implementation and coordination; and (j) evidence of language capacity (ability to work in English, with desired knowledge of French and Portuguese). The selection was made by the RSC.

12. The detailed tasks of the RFU have been provided in the draft POM, and below is a summary of these tasks:

- (a) As the secretariat, coordinate and fund the activities of the RSC to deliver its tasks;
- (b) Facilitate the selection of institutions as ACEs as part of the project preparation;
- (c) Ensure effective and efficient coordination and facilitation of the project activities;
- (d) Support the M&E needs of the selected ACEs as well as aggregated M&E needs of the overall project;
- (e) Oversee the implementation of tasks outlined in Components 2 and 3;
- (f) Manage the administrative aspects of the project with regards to regional activities;
- (g) Communicate on a regular basis with ACEs;
- (h) Oversee the implementation of cross-cutting intervention tasks such as policy studies;
- (i) Verify semi-annual reports on DLI achievements and project implementation submitted by the ACEs;
- (j) Facilitate sharing of experiences across aspiring ACEs, such as knowledge sharing workshops for the ACEs and partner institutions; and
- (k) Promote partnerships among ACEs and between ACEs and partner institutions.

13. A Grant Funding Agreement between the Bank and the RFU will define the terms and conditions for this engagement. Funding for the RFU will be under Components 2 and 3. The RFU's main task is to facilitate project coordination and support implementation of the ACEs. The RFU will have a project coordinator who will have full management responsibility for facilitation of the project. The RFU will also have professional staff with accounting, M&E, and project management skills requisite for project needs. The RFU mainly consists of project coordinating and M&E staff, as the execution of the main project activities will be undertaken by the selected ACEs themselves.

14. Funds under Components 2 and 3 will be disbursed to the RFU against a SOE based on a work plan and a procurement plan agreed upon with the RSC and the Bank. The RFU will report to the RSC and the Bank through annual meetings.

(d) Regional Steering Committee

15. The function of the RSC is to oversee and provide guidance for the Project. The RSC will also be responsible for advocating for regional collaboration in higher education, and for acting as a liaison between the project and regional leadership as well as with the public at large. The RSC will meet twice a year, and will be supported by the RFU. During its inaugural meeting held in Dar-Es-Salaam, Tanzania on April 27-28, 2015, the RSC adopted detailed rules and operating procedures that are consistent with the spirit of the project (the terms of reference are provided in the draft POM).

16. The RSC will undertake the following tasks:

- (a) Make strategic decisions to ensure the continued coherence between the project support and sector and regional development priorities;
- (b) Make decisions concerning deviations from the project support document;

- (c) Consider the findings and recommendations of the IEC (as facilitated by the RFU) in making the final selection of the ACEs;
- (d) Review and guide the overall progress of the project with a special focus on delays, problems and bottlenecks (approval of progress and financial reports, and decisions on follow-up activities presented by RFU);
- (e) Overseeing the implementation of cross-cutting issues as identified in the project support document, e.g. gender and diversity;
- (f) Visit institutions during implementation and provide consultations and improvements;
- (g) Facilitate national, regional, and international networking and outreach activities for the project as a whole;
- (h) Review the extent and performance of collaborations among ACEs;
- (i) Review and guide linkages between ACEs and industry;
- (j) Coordinate in-country semi-annual reviews and provide implementation support; and
- (k) Oversee audits (approval of the annual audit, and oversee the follow-up on recommendations in the annual audit report presented by RFU)

17. The RSC has approximately 13 members and comprises of representatives from these organizations:

- (a) The Government of each participating country (9⁵³)
- (b) Academic experts of international stature (2)
- (c) The private sector (1)
- (d) Regional bodies (1)

18. The RSC was established by stakeholders in consultation with the World Bank as part of the project preparation. The RSC meetings will be chaired by the member representing the host country.

19. The RSC will have an appropriate budget under Component 3 to perform its functions. Members of the RSC will not receive an honorarium, but their travel associated expenses will be covered by the project. The RFU will serve as the secretariat for the RSC.

B. FINANCIAL MANAGEMENT AND DISBURSEMENTS

20. Financial Management (FM) assessments were conducted for IUCEA, which is the RFU that will implement Components 2 and 3 plus the selected 24 ACEs that will implement Component 1 whose details are given in the table below.

⁵³ There is a representative from Zimbabwe on the RSC.

Table 3.1. ACEs selected under ACE II

Country	Institution	Africa Center of Excellence (ACE)
Ethiopia	Addis Ababa University	ACE for Water Management
	Addis Ababa University	African Railway Education & Research Institute
	Addis Ababa University	Center for Innovative Drug Development & Therapeutic Trials for Africa
	Haramaya University	ACE for Climate Smart Agriculture and Biodiversity Conservation
Kenya	Egerton University	Center of Excellence in Sustainable Agriculture & Agribusiness Management
	Jaramogi Oginga Odinga University of Science & Technology	Center of Excellence in Sustainable Use of Insects as Food and Feeds
	Moi University	Center of Excellence in Phytochemicals, Textiles and Renewable Energy
Malawi	Lilongwe University of Agriculture & Natural Resources	African Center of Excellence for Aquaculture and Fisheries Science
	University of Malawi – Malawi College of Medicine	African Center of Excellence for Public Health and Herbal Medicine
Mozambique	Universidade Eduardo Mondlane	Center of Studies in Oil and Gas Engineering and Technology
Rwanda	University of Rwanda -College of Business & Economics	African Center of Excellence for Data Sciences
	University of Rwanda – College of Science & Technology	African Center of Excellence in Energy for Sustainable Development
	University of Rwanda – College of Science & Technology	African Center of Excellence in Internet of Things
	University of Rwanda – College of Education	African Center of Excellence for Innovative Teaching and Learning Mathematics and Science
Tanzania	Nelson Mandela African Institution of Science & Technology	Collaborating Center for Research, Evidence, Agricultural Advancement & Teaching Excellence & Sustainability
	Nelson Mandela African Institution of Science & Technology	Water Infrastructure & Sustainable Energy Center for the Future
	Sokoine University of Agriculture	African Center of Excellence for Innovative Rodent Pest Management & Biosensor Technology Development
	Sokoine University of Agriculture	Southern African Center for Infectious Disease Surveillance
Uganda	Makerere University	Center of Materials, Product Development & Nanotechnology
	Makerere University	Makerere University Center for Crop Improvement
	Mbarara University of Science & Technology	Pharm-Biotechnology & Traditional Medicine Center
	Uganda Martyrs University	African Center for Agro-Ecology & Livelihood Systems
Zambia	Copperbelt University	Africa Center of Excellence for Sustainable Mining
	University of Zambia	African Center for Excellence for Infectious Diseases of Humans & Animals

21. The objective of the assessments was to determine whether the implementing entities have acceptable FM arrangements in place that satisfy the Bank's OP/BP 10.00. These arrangements will ensure that the implementing entities: (a) use project funds only for the intended purposes in an efficient and economical way; (b) prepare accurate and reliable accounts as well as timely periodic IFRs; (c) safeguard assets of the project; and (d) have acceptable auditing arrangements. The FM assessments were carried out in accordance with the FMM for Bank Investment Project Financing Operations that became effective on March 1, 2010, but was issued (retrofitted) on February 4, 2015.

Institutional and Implementation Arrangements

22. Component 1 will be implemented by 24 ACEs while Components 2 and 3 will be implemented by IUCEA, which is the RFU. The accounting officers, who will assume overall responsibility for accounting of the project funds will be the Head or Leader of the ACE and Executive Secretary for IUCEA. The institutions will be responsible for project implementation including maintaining satisfactory FM arrangements throughout the life of the project. This will involve the ACEs working closely with their Universities to ensure satisfactory FM arrangements are maintained during the project's life. The institutions will constitute the operational links with IDA on matters related to the implementation of the project.

Planning and Budgeting Arrangements

23. **Budget Guidelines and Procedures.** Budgets for the ACEs will follow guidelines/procedures/policies issued by their Universities that consider in some cases guidelines/regulations and Acts of their respective governments. Similarly, IUCEA will use its Financial Procedures Manual issued on July 1, 2014 to prepare and monitor its budget. Other project specific budgeting guidelines will be included in each ACE's Implementation Manual/Plan that will be a condition of effectiveness. The key aspect of budgeting for all institutions implementing this project is to prepare and approve budgets before the commencement of the financial year they relate to such that there is no hindrance to implementing programs due to having unapproved budgets. The other key aspect is to monitor budgets on a quarterly basis using IFRs and ensure that where there are variances between actual and budgeted amounts, significant variances are explained and appropriate action taken by management to address the variances. Budget guidelines for all implementing entities were assessed and deemed as adequate.

24. **Staffing.** Staffing to prepare and monitor budgets for all implementing entities, have been assessed as adequate but this will be strengthened by additional accountants to be recruited in some of the ACE Universities as documented under the accounting arrangements. However, it will be essential to train all staff on good practice FM arrangements for Bank projects that include budgeting arrangements.

25. **Budget Information Systems.** All the implementing entities have an information system that will be used to prepare and monitor budgets.

Accounting Arrangements

26. **Financial Management Manual (FMM):** This is essential as it documents the accounting and other FM arrangements that will be utilized for the project. All implementing entities have adequate FMMs documented in their guidelines/procedures/policies and supplemented where applicable in government legislation (Acts) and regulations. The specific FMMs for each of the implementing entities are shown in the table below. However, AAU in Ethiopia will have to update

its Financial Policies and Procedures Manual to take account of the recent changes of implementing an Integrated Financial Management Information System (IFMIS), share the manual with its three ACEs and train their ACE staff on application of the manual by the end of May 2016.

27. All the FMMs of the implementing entities have adequate FM guidelines for the project. The FMM will be complemented by, and annexed to, the Implementation Manual/Plan for each implementing entity, which has to be approved by the Bank before effectiveness.

28. **Accounting staff:** They are essential as they will prepare accounts for the project. All implementing entities that have adequate staff will need to assign an accountant to prepare the project accounts. The implementing entities that need to strengthen their accounting staff members by ensuring they are recruited within three months of effectiveness include the following:

- Uganda: Makerere University needs to recruit an accountant for each of its ACEs while Mbarara University of Science and Technology needs to recruit one accountant.
- Rwanda: The University of Rwanda (UR) needs to recruit 4 additional accountants who are qualified and experienced. Three accountants will be based in the three colleges that host the four ACEs and the UR Head Office will have another accountant to consolidate the accountabilities from all the four ACEs.
- Tanzania: Although accounting staffing arrangements were noted as adequate as there is an Acting Head of Accounts (Bursar), Nelson Mandela African Institution of Science and Technology needs to recruit a qualified and experienced Bursar or promote one of its current staff.
- Ethiopia: There is need to recruit a qualified and experienced Senior FM Specialist at AAU who will consolidate the accounts of the three ACEs at the university. In addition, there is need to also recruit a qualified and experienced FM Specialist for each of the three ACEs.
- Malawi: University of Malawi and Lilongwe University of Agriculture and Natural Resources each need to recruit a qualified and experienced accountant to prepare their ACE accounts.

29. To ensure the ACEs have professionally qualified accountants, opportunity should be granted to the staff who need to enhance their skills to become professional accountants in the ACE universities. The Bank will also enhance the skills of the existing staff by training them in Bank FM and Disbursement requirements/procedures.

30. **Accounting Information Systems.** Computerized accounting information systems are essential as they ensure efficiency in the preparation of accounts and avoid errors associated with a manual system where mainly Microsoft Excel spreadsheets are utilized. All the implementing entities have adequate computerized accounting systems to prepare the accounts of the ACEs and they are included in the table below for each implementing entity.

31. **Accounting standards, accounting basis and fiscal year ends:** The table below provides this information for each of the implementing entities. The definitions for accounting basis are explained below:

- *Accrual Basis of Accounting.* This is the basis of accounting under which transactions and other events are recognized when they occur (and not only when cash or its equivalent is received or paid). Therefore, the transactions and events are recorded in the accounting records and recognized in the financial statements of the periods to which they relate. The

elements recognized under accrual accounting are assets, liabilities, net assets/equity, revenue, and expenses.

- *Cash Basis of Accounting.* This basis of accounting recognizes transactions and events only when cash (including cash equivalents) is received or paid by the entity. Financial statements prepared under cash basis provide readers with information about the sources of cash raised during the period, the purposes for which cash was used and the cash balance at the reporting date.
- *Modified Cash Basis.* The modified cash basis of accounting uses elements of both the cash basis and accrual basis of accounting. The modified cash basis uses double entry accounting, so the resulting transactions can be used to construct a complete set of financial statements. The modified cash basis may be acceptable as long as there is no need for the financial statements to be compliant with International Public Sector Accounting Standards (IPSAS).

Table 3.2. Accounting standards, accounting basis and end of fiscal year

Institution/ACE	FM Manual	Accounting Information System	Accounting Standards	Accounting Basis	Fiscal Year End
Ethiopia: Addis Ababa University (AAU) - ACE for Water Management under College of Natural Science (CNS); African Railway Education & Research Institute under Addis Ababa Institute of Technology (AAiT); and Center for Innovative Drug Development & Therapeutic Trials for Africa under the College of Health Science.	Ethiopia Government Financial Management plus AAU Financial Management Manual dated September 2002. The AAU manual needs to be shared with the 3 ACEs.	AAU –currently using IBFIS ⁵⁴ but main campus has started implementing government’s IFMIS. CNS – using IBFIS CHS and AAiT are using Peachtree for project funds.	Ethiopian Financial Regulations (Double Entry)	Modified Cash Basis	July 7th
Ethiopia: Haramaya University - ACE for Climate Smart Agriculture and Biodiversity Conservation	Ethiopia Government Financial Management	IBEX software used for the Treasury fund and Peachtree for university projects.	Ethiopian Financial Regulations (Double Entry)	Modified Cash Basis	July 7th
Kenya: Egerton University - Center of Excellence in Sustainable Agriculture & Agribusiness Management	University Financial Policies and Procedures Manual	Sage ERP System	IPSAS	Cash Basis	June 30 th
Kenya: Jaramogi Oginga Odinga University of Science & Technology – Center of Excellence in Sustainable Use of Insects as Food and Feeds	University Financial Policies and Procedures Manual	Sage ERP System	IPSAS	Cash Basis	June 30 th
Kenya: Moi University - Center of Excellence in Phytochemicals, Textiles and Renewable Energy	University Financial Policies and Procedures Manual	Sage ERP System	IPSAS	Cash Basis	June 30 th
Malawi: Lilongwe University of Agriculture & Natural Resources (LUANAR) – African Center of Excellence for Aquaculture and Fisheries Science	LUANAR Accounting Procedures Manual	ACC PAC ERP	IFRS	Accrual Basis	June 30 th
Malawi: University of Malawi, Malawi College of Medicine – African Center of Excellence for Public Health and Herbal Medicine	University of Malawi Accounting Procedures Manual	ACC PAC ERP	IFRS	Accrual Basis	June 30 th
Rwanda: University of Rwanda -College of Business & Economics (African Center of Excellence for Data Sciences); College of Science & Technology (African Center of Excellence in Energy for Sustainable Development and African Center of Excellence in Internet of Things); and College of Education (African Center of Excellence for Innovative Teaching and Learning Mathematics and Science)	Financial Management Procedures Manual designed in compliance with Organic Law on State Finances and Property (12/2013) and Ministerial Order (2007)	SAGE Pastel	IPSAS	Modified Cash Basis	June 30 th
Tanzania: Nelson Mandela African Institution of Science & Technology (NM-AIST) -	Public Finance Act 2001, Public Finance Regulations 2001	EPICOR Version 9.05	IPSAS	Accrual Basis	June 30 th

⁵⁴ IBFIS stands for Integrated Budget and Finance Information System

Institution/ACE	FM Manual	Accounting Information System	Accounting Standards	Accounting Basis	Fiscal Year End
Collaborating Center for Research, Evidence, Agricultural Advancement & Teaching Excellence & Sustainability; and Water Infrastructure & Sustainable Energy Center for the Future	(Revised 2004), EPICOR Operations Manual, Chart of Accounts Guide and NM-AIST Financial Regulations Manual, 2013.				
Tanzania: Sokoine University of Agriculture (SUA) - African Center of Excellence for Innovative Rodent Pest Management & Biosensor Technology Development; and Southern African Center for Infectious Disease Surveillance	Public Finance Act 2001, Public Finance Regulations 2001 (Revised 2004) and SUA Financial Regulations Manual, 2010.	Votebook Financial Management Information System (supported by the University IT staff).	IPSAS	Accrual Basis	June 30 th
Uganda: Makerere University - Center of Materials, Product Development & Nanotechnology; and Makerere University Center for Crop Improvement	University Finance Manual	SAGE used by university administration but ACEs are using QuickBooks. Government is in the process of rolling out the Education Management and Accounting System to all Public Universities to integrate all university functions.	IPSAS	Modified Cash Basis	June 30 th
Uganda: Mbarara University of Science & Technology - Pharm-Biotechnology & Traditional Medicine Center	University Finance Manual	QuickBooks	IPSAS	Modified Cash Basis	June 30 th
Uganda: Uganda Martyrs University - African Center for Agro-Ecology & Livelihood Systems	University Finance Manual	SUN Accounting System	IFRS ⁵⁵	Accrual Basis	June 30 th
Zambia: Copperbelt University - Africa Center of Excellence for Sustainable Mining	University Act 2013 and Financial Regulations issued July 2013	Access Dimensions Accounting System	IFRS	Accrual Basis	December 31 st
Zambia: University of Zambia - Center for Excellence for Infectious Diseases of Humans & Animals	University Accounting Procedures Manual	SAGE ERP 1000	IFRS	Accrual Basis	December 31 st
Mozambique: University of Mozambique – Center of Studies in Oil, Gas, Engineering and Technology	<i>Manual Tipo de Procedimentos Administrativos e Financeiros MTPAF</i> – Administrative and Financial Procedures Manual	e-SISTAFE - IFMIS	IPSAS	Cash Basis	December 31 st
RFU: Inter-University Council for East Africa	EAC Financial Rules and Regulations and IUCEA Financial Procedures Manual issued on July 1, 2014.	Microsoft Dynamics SL upgraded in 2013	IPSAS	Accrual Basis	June 30 th

⁵⁵ IFRS stands for International Financial Reporting Standards

Internal Control and Internal Unit Arrangements

32. **Internal Control Arrangements.** The management of each implementing entity is responsible for the effectiveness of the system of internal controls. This responsibility will include making sure that: (a) project funds are utilized efficiently, economically and only for the intended purposes; (b) financial reports generated by the accounting system are prepared on time, accurately and are reliable; and (c) the assets acquired with project funds are safeguarded from misuse, defalcation, conversion, and other forms of misappropriation.

33. The system of internal controls in operation follows those defined in the FMM of all the implementing entities. The internal control systems will be enhanced with project specific control systems documented in the Project Implementation Manual/Plan.

34. During the assessment of the ACEs, it was noted that some ACEs need to improve their internal control systems. Some of the notable observations are highlighted below:

- Ethiopia: AAU has internal control issues related to delays in carrying out bank reconciliations for special and project funds. For example, Addis Ababa Institute of Technology that will be responsible for the ACE on African Railway Education & Research Institute had bank reconciliations for special and project funds last done in June 2015. The recruitment of an additional FM Specialist for the ACE project will address this issue. The other issue was that fixed assets are not counted and reconciled to accounting records. Other issues identified in the internal audit report for EFY 2007 (2015) include the cashier holding excess amounts and therefore not complying with imprest policy, unsubstantiated payments and not adhering to procurement policies and procedures. External audit report also pointed out issues concerning long outstanding debtors and creditors implying that advances take long to be accounted for and payments also take long to be paid; and lack of adequate supporting documentation to account for funds.
- Ethiopia: Haramaya University review of the internal audit reports noted that there were receivables/advances that had taken long to be accounted for and payments were also taking a long time to be paid.
- Mozambique: A review of audited financial statements noted that there is a need to improve submission of contracts to the Mozambique's *Tribunal Administrative*, to obtain clearance before execution of contracts.
- Tanzania: Sokoine University of Agriculture was noted to have long overdue imprest/advance that is yet to be accounted for and there were delays in preparing bank reconciliations.
- Uganda: Makerere University based on the review of the 2014/15 external audit report had issues such as the mischarge of expenditure on item codes that do not reflect the nature of expenditure; unaccounted funds; significant domestic arrears for the last three years that need to be paid; advances to staff personal accounts that were not accounted for; procurement irregularities; and non-disclosure of donor grants.
- Uganda: Mbarara University of S&T based on the review of the 2014/15 external audit report had issues such as outstanding receivables not collected from private students yet some of the students had sat for exams contravening university policy. There were also

advances to personal/individual accounts that had not been accounted for which is a practice that should be discouraged under this project.

- Kenya: Egerton University has challenges of recovering overdue imprests and student debtors based on the external audit report for June 30, 2014.
- Zambia: The Copperbelt University audit for December 31, 2014 noted internal control issues related to accuracy of student receivable balances and differences in the coding of capital assets with what was recorded in the accounting information system.

These issues need to be addressed as part of being a center of excellence.

Internal Audit Arrangements

35. **Internal Audit function:** Having a functional internal audit department that conducts audits on this project based on a risk based approach is a DLR. All implementing entities have adequate internal audit staffing arrangements except for AAU and Uganda Martyrs University that need to recruit one qualified and experienced internal auditor. In Tanzania, Nelson Mandela African Institution of Science & Technology has an understaffed internal audit unit with only one position filled by the acting Chief Internal Auditor out of a total of six positions. In order to ensure there are adequate internal audit staff for the project, the university will have to fill the vacant position of the Chief Internal Auditor and recruit an additional qualified and experienced internal auditor. Jaramogi Oginga Odinga University of Science & Technology is in the process of recruiting two qualified internal auditors to strengthen its internal audit department. Haramaya University will also need to recruit one internal auditor. The RFU, that is, IUCEA will need to recruit an additional internal auditor to monitor the ACEs with respect to their compliance with DLRs and FM arrangements. All internal audit units should include in their work plans audits to be done on the project based on a risk based approach.

36. The Bank will encourage all implementing entities to strengthen their internal audit functions by increasing staff where there are work load concerns in the internal audit units; strengthening the internal audit manuals with good practices issued by the Institute of Internal Auditors; acquiring internal audit software to be more efficient and effective when conducting audits; training in performance auditing to strengthening value for money auditing; and training in risk based auditing to strengthen internal audit skills. Internal audit units should be encouraged to audit the project at least on a semi-annual basis if the risk is low or moderate or on a quarterly basis if the risk is high or substantial.

37. **Audit Committees:** These committees are essential to ensure that audit issues are brought to high level attention and addressed. The committees are made up of non-executive members, including University Council members. All implementing entities do have audit committees except for AAU responsible for three ACEs (ACE for Water Management; African Railway Education & Research Institute; and Center for Innovative Drug Development & Therapeutic Trials for Africa) and Haramaya University responsible for ACE for Climate Smart Agriculture and Biodiversity Conservation. However, Ethiopia's requirement to meet the requirements related to the DLI on audit committees will be revised and based on evidence of management addressing both internal and external audit issues. The Universidade Eduardo Mondlane (Center of Studies in Oil and Gas Engineering and Technology) will use the *Gabinete de Auditoria Interna* (Department of Internal

Control) to conduct the role of an audit committee. However, the *Gabinete de Auditoria Interna* will report to the President of the university. Given the importance of audit committees playing a role of following up audit issues to ensure they are addressed and therefore strengthening internal control systems of the ACEs, the functionality of these committees will be a DLI for the ACEs. This functionality will be measured by holding meetings in accordance with the audit committee charter and having minutes to demonstrate that there is follow up of audit issues. Internal auditors will be expected to report to the audit committees functionally and report administratively to the Head of the Institution e.g. Vice Chancellor or the Rector for the ACEs.

Governance and Anti-corruption Arrangements

38. All implementing entities are encouraged to do the following to improve on their governance and anti-corruption arrangements:

- Put in place an independent complaint handling mechanism where complaints will be made and responded to with a good recording system to show the related details including the time the complaint was reported and the time the response was made.
- Form committees that deal with risk management and anti-corruption such that governance and anti-corruption arrangements can be independently dealt with by a non-executive committee. During the assessment, we noted that there were a few universities that were dealing with risk management and they included University of Malawi and Lilongwe University of Agriculture and Natural Resources that both had an Audit and Risk Committee; and the 3 universities in Kenya (Egerton University, Moi University and Jaramogi Oginga Odinga University of Science & Technology) that had committees on Audit, Risk and Governance/Compliance.
- Publish budgets, financial reports and audited accounts related to the project and for the institution on the websites to enhance transparency and accountability. This will be encouraged as it will be a DLR.

Funds Flow Arrangements

39. **Bank Accounts:** The following bank accounts will be opened for all implementing entities:

- (a) **Designated Account:** IUCEA will open a DA in United States Dollars in a commercial bank acceptable to IDA.
- (b) **Project Accounts:** IUCEA will open a Project Account in local currency at a commercial bank in which funds from the DA will be transferred to make payments in local currency. ACEs are to open project bank accounts in USD and local currency. With respect to Kenya, one special project account in USD will be opened for the three ACEs managed by the National Treasury at the Central Bank of Kenya and funds will be transferred to each of the ACEs project account in local currency (in commercial banks) through the Ministry of Education, Science and Technology. Funds received from the World Bank or a third party in USD can be transferred to a local currency project account to make payments in that currency. The Project Account will be opened at a commercial bank or the Central Bank depending on national and university procedures/guidelines. These accounts will also serve as the depository for government counterpart fund contributions where applicable.

Funds sent to the ACE Project Account will be used for ACE eligible investments. Specific details of the ACE project bank accounts in USD and local currency will be located are shown in the table below.

Table 3.3. Location of ACE Project Accounts

Location of ACE Project Accounts			
Institution	Africa Center of Excellence (ACE)	Project Account (USD)	Project Account (local currency)
Addis Ababa University	ACE for Water Management	National Bank of Ethiopia	Commercial Bank
Addis Ababa University	African Railway Education & Research Institute	National Bank of Ethiopia	Commercial Bank
Addis Ababa University	Center for Innovative Drug Development & Therapeutic Trials for Africa	National Bank of Ethiopia	Commercial Bank
Haramaya University	ACE for Climate Smart Agriculture and Biodiversity Conservation	National Bank of Ethiopia	Commercial Bank
Egerton University	Center of Excellence in Sustainable Agriculture & Agribusiness Management	Central Bank of Kenya (Account managed by National Treasury)	Commercial Bank
Jaramogi Oginga Oginga University of Science & Technology	Center of Excellence in Sustainable Use of Insects as Food and Feeds		Commercial Bank
Moi University	Center of Excellence in Phytochemicals, Textiles and Renewable Energy		Commercial Bank
Lilongwe University of Agriculture & Natural Resources	African Center of Excellence for Aquaculture and Fisheries Science	Commercial Bank.	Commercial Bank
University of Malawi – Malawi College of Medicine	African Center of Excellence for Public Health and Herbal Medicine	Commercial Bank.	Commercial Bank
Universidade Eduardo Mondlane	Center for Studies in Oil and Gas Engineering and Technology	Central Bank	Central Bank
University of Rwanda -College of Business & Economics	African Center of Excellence for Data Sciences	Central Bank (National Bank of Rwanda)	Central Bank
University of Rwanda – College of Science & Technology	African Center of Excellence in Energy for Sustainable Development	Central Bank (National Bank of Rwanda)	Central Bank
University of Rwanda – College of Science & Technology	African Center of Excellence in Internet of Things	Central Bank (National Bank of Rwanda)	Central Bank
University of Rwanda – College of Education	African Center of Excellence for Innovative Teaching and Learning Mathematics and Science	Central Bank (National Bank of Rwanda)	Central Bank
Nelson Mandela African Institution of Science & Technology	Collaborating Center for Research Evidence, Agricultural Advancement & Teaching Excellence & Sustainability	Central Bank. (Bank of Tanzania)	Bank of Tanzania
Nelson Mandela African Institution of Science & Technology	Water Infrastructure & Sustainable Energy Center for the Futures	Central Bank (Bank of Tanzania)	Bank of Tanzania
Sokoine University of Agriculture	African Center of Excellence for Innovative Rodent Pest Management & Biosensor Technology Development	Central Bank (Bank of Tanzania)	Bank of Tanzania
Sokoine University of Agriculture	Southern African Center for Infectious Disease Surveillance	Central Bank (Bank of Tanzania)	Bank of Tanzania
Makerere University	Center of Materials, Product Development & Nanotechnology	Central Bank (Bank of Uganda)	Bank of Uganda
Makerere University	Makerere University Center for Crop Improvement	Central Bank (Bank of Uganda)	Bank of Uganda

Location of ACE Project Accounts			
Institution	Africa Center of Excellence (ACE)	Project Account (USD)	Project Account (local currency)
Mbarara University of Science & Technology	Pharm-Biotechnology & Traditional Medicine Center	Central Bank (Bank of Uganda)	Central Bank/Commercial Bank (Standard Chartered)
Uganda Martyrs University	African Center for Agro-Ecology & Livelihood Systems	Central Bank (Bank of Uganda)	Central Bank/Commercial Bank (Centenary)
Copperbelt University	Africa Center of Excellence for Sustainable Mining	Bank of Zambia (managed by Ministry of Finance)	Commercial Bank
University of Zambia	African Center for Excellence for Infectious Diseases of Humans & Animals	Bank of Zambia (managed by Ministry of Finance)	Commercial Bank

40. There will be at least two signatories required for each approved payment from the above accounts subject to national and university procedures/guidelines. The two signatories should come from two categories. The first category should consist of the project's management and in the second, the staff accounting for the project's funds. The signatories will be communicated to the IDA together with the bank account details after the signing of the project but before the project's effectiveness. The funds from both bank accounts must be used only for eligible expenditures.

41. **Eligible Expenditure Programs (EEPs):** This will relate to only component 1 and shall comprise of university staff salaries or other non-procurable operational costs of the program. These costs will be verified by internal audit before submission for reimbursement to IDA.

42. **Component 1 Funds Flow arrangements:** Upon Credit Effectiveness, this will be as follows:

Regarding the achievement of results for DLI 1 for Year 0

- The ACE will submit the report to IUCEA for verification regarding the achievement of institutional readiness for implementation.

Regarding the achievement of results for DLIs 2-4 for Years 1-5

- The ACE will submit the Independent Verification Agency report to the NSC, IUCEA and the Bank regarding the achievement of results for DLI 2-4 for Year 1 onwards. Further, the IUCEA through the Independent Verification Agency will certify that it has the required background information in its archives to document the achievements of the results.
- The information submitted to the Bank should be accompanied with a reimbursement withdrawal application.

43. The Bank will disburse funds for Year 0 results directly to the project's bank account denominated in USD. For each subsequent semester disbursement (every six months), this will be as follows:

- The ACE will compile the achieved results and certify that it has the required background information in its archives to document the achievements of the results.
- The ACE will submit the Independent Verification Agency report to the NSC, IUCEA and the Bank regarding the achievement of the project results for that year (Year 1-5). The

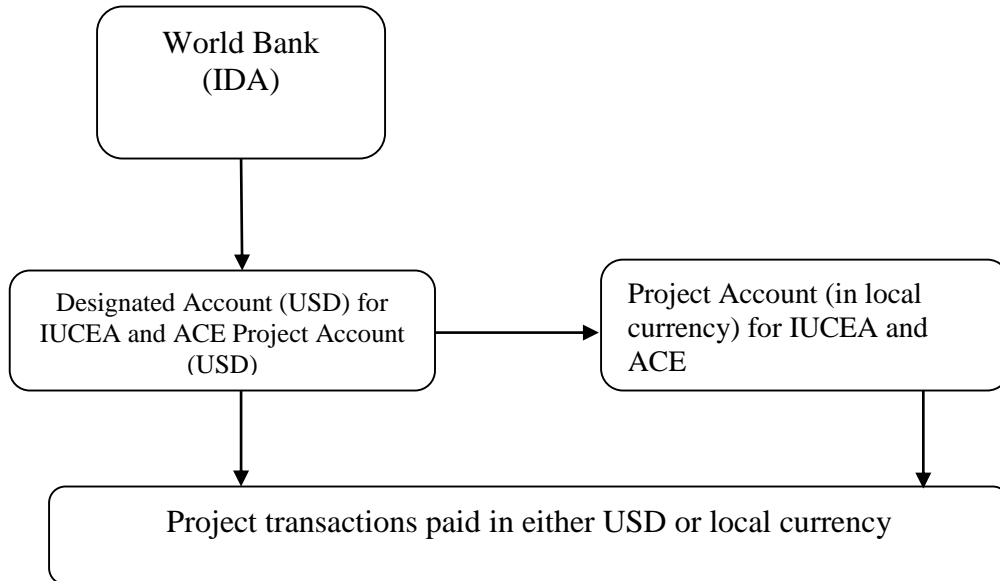
report should consist of two parts: (i) ACE results in the form of the DLIs/DLRs, and (ii) expenditures in the Eligible Expenditure Program (EEP).

- IUCEA, the National Steering Committee (NSC), together with the World Bank, will verify the achievements of the agreed results, sometimes on a sample basis. This will be done after the Independent Verification Agency verifies the DLIs/DLRs results.
- The verification outcome will be shared with the ACE and the NSC. There will be a 15 day grievance period for any disputed results.
- Thereafter, the World Bank will disburse the agreed funds for that semester’s results to the project’s bank account. The disbursement will be made through submission of the withdrawal application with supporting evidence of EEPs to be reimbursed for the achieved DLIs/DLRs.

Funds Flow Diagram

44. Funds will be disbursed to the DA of IUCEA for Components 2 and 3, and project bank accounts of the ACEs for Component 1 upon request of a withdrawal application. These funds as seen from the diagram below will be disbursed from the World Bank (IDA). These funds will be disbursed in United States Dollars. Funds from the DA of IUCEA and ACE Project Accounts denominated in USD can be transferred to the Project Accounts denominated in local currency to make payments related to approve activities in the Project Implementation Plan. The ACE Project funds received in the USD bank account will be utilized for only approved activities in the Project Implementation Plan. The funds flow diagram (Figure 3.2) showing this arrangement is below.

Figure 3.2. Funds Flow Diagram



45. **Risk in the funds flow process:** Major risks are delays in the submission of withdrawal applications for reimbursement with supporting DLIs/DLRs. To mitigate the risk of delays in the

transfer of funds, the Bank will deposit directly to a project account managed by the ACE. This bank account will be a subaccount/sub ledger of the respective ACEs within the Central Bank under the account of the respective university or a commercial bank account opened by the ACEs in a financial institution satisfactory to the Bank. These will also be mitigated by having a DLI that encourages timely submission of withdrawal applications to the Bank for disbursement and having as part of the reports submitted to the Bank a commitment of the government to invest in the ACE through specific budget line; proof of funds transferred by MoF to the ACE; and proof of commitment for the next year. In addition, where funds received are in a project account in USD managed by the MoF, a timeline should be agreed between the MoF and the ACE for funds to be transferred and documented in the contract between the government and the university/ACE.

46. **Government of Kenya Funding for the NSC.** The Government of Kenya shall provide counterpart funds up to five percent of the credit (equivalent to a maximum of US\$900,000) over the project duration of five years to support activities of the NSC. These funds will be for the operational activities of the NSC that will include but are not limited to communication and dissemination of ACE activities, performance and progress reviews and conferences. These funds will be deposited into a development account of MoEST at the Central Bank of Kenya. These deposits will be made every March and October of each fiscal year (FY) of Kenya. These funds will be audited as part of MoEST accounts and the audited financial statements will be submitted to the Bank within nine months of the end of the FY.

Disbursements Arrangements

47. Disbursement under component 1 to the ACEs will be report-based (IFRs) while under Component 2 and 3 to the RFU (IUCEA) will be transaction-based (SOEs). Under Component 1, disbursement will be mainly based on reimbursement of certified EEPs supported with achieved DLIs/DLRs and other relevant documentation. In the case of the RFU (IUCEA) the disbursement methods will include advances, reimbursement, direct payment, and use of special commitment (e.g. letters of credit). If ineligible expenditures are found to have been made from the Designated and/or Project Account, the Borrower will be obligated to refund the same. If the DA remains inactive for more than six months, IDA may reduce the amount advanced. IDA will have the right, as reflected in the terms of the Financing Agreement, to suspend disbursement of the funds if significant conditions, including reporting requirements, are not complied with. Additional details regarding disbursement will be provided in the disbursement letters.

Table 3.4. Disbursement Table (IDA Credit) by Country

Category	Percentage of Expenditures to be Financed (inclusive of Taxes)	Country	Amount of the Credit Allocated (Expressed in)	
			SDR ⁵⁶	US\$
(1) Eligible Expenditure Programs under Part 1 of the Project for the Africa Centers of Excellence	100% of amounts spent in compliance with DLI and DLR amounts set out in Schedule 4 of the Financing Agreement as reported under the EEP Spending Reports for each Withdrawal	Ethiopia	17,400,000	24,000,000
		Kenya	12,800,000	18,000,000
		Malawi	8,700,000	12,000,000
		Mozambique	4,300,000	6,000,000
		Rwanda	14,500,000	20,000,000
		Tanzania	17,100,000	24,000,000
		Uganda	17,100,000	24,000,000
		Zambia	8,700,000	12,000,000

Table 3.5. Disbursement Table (IDA Grant) for IUCEA

Category	Percentage of Expenditures to be Financed (inclusive of Taxes)	Amount of the Grant Allocated (expressed in SDR)	Amount of the Grant Allocated (expressed in US\$)
(1) Goods, Non-consulting services, Consultants' services, Operating Costs and Training for Parts 2 and 3 of the Project	100%	5,080,000	7,000,000
(2) Refund of Preparation Advance	Amount payable pursuant to Section 2.07 of the General Conditions ⁵⁷	720,000	1,000,000
TOTAL AMOUNT		5,800,000	8,000,000

⁵⁶ SDR Conversion rates is SDR 0.72 = US\$1 for Ethiopia, Malawi, Rwanda and Zambia; SDR 0.71 = US\$1 for Kenya, Mozambique, Tanzania and Uganda.

⁵⁷ See negotiated FA of IUCEA for further details

48. **Retroactive financing.** For IUCEA under Components 2 and 3, there is the provision for retroactive financing up to ten percent of the financing for payments made for eligible expenditure twelve months prior to the effectiveness date. For Ethiopia, under Component 1, there is a provision for retroactive financing up to SDR 1,000,000 for payments made for eligible expenditures twelve months prior to the effectiveness date. For Uganda, under Component 1, there is a provision for retroactive financing up to SDR 1,710,000 for payments made for eligible expenditures twelve months prior to the effectiveness date.

Financial Reporting Arrangements

49. All implementing entities under Component 1 (ACEs) will submit semi-annual IFRs while the RFU (IUCEA) will submit quarterly SOEs to IDA within 45 days of the end of the reporting period. The quarterly and semi-annual periods will follow the calendar year. The formats of these IFRs has been agreed with IDA before negotiations. The IFRs will comprise of the following:

- ACE Statement of Reimbursable EEPs which should be cleared by the Country FM Specialist of the Bank
- ACE Statement of Sources and Uses of Funds in accordance with activities agreed in the Project Implementation Plan;
- Detailed Statement of Uses of Funds by Project Activity/Component as documented in the Project Implementation Plan; and
- Bank Statements for the Project Account (both USD and local currency) and their reconciliation statements.

Other documentation that should be submitted with the withdrawal application for Component 1 should include the following:

- Commitment of the Government to invest in the ACE through a specific budget line;
- Money transfer proof of the previous tranche from the MoF/University to the ACE project account;
- Proof of Commitment for the next year; and
- ACE proof of results achievement.

50. All the above documentation when submitted to the Bank should be copied to the NSC and IUCEA. All implementing entities will prepare annual accounts within three months after the end of the financial year in accordance with accounting standards acceptable to IDA. Thereafter all the implementing entities will be responsible for ensuring their reports are audited and submitted to IDA within six months after the end of the financial year. The audit will include the EEPs and the sources and uses of funds agreed in the Project Implementation Plan.

External Audit Arrangements

51. The external audit of the project's funds will be done by both the Supreme Audit Institutions (SAI)/Auditor General and private audit firms acceptable to the IDA. The SAIs may contract acceptable private audit firms to IDA, to audit the project and this cost can be met as part of the project's operational expenditure. Table 3.4 detailing who audits each of the implementing entities is shown below. All audits should be carried out in accordance with International Standards

on Auditing. All Terms of Reference for audits of the implementing entities has been agreed during negotiations. The audit terms of reference for component one should at least, ensure all EEPs and ACE expenditure in line with the Project Implementation Plans are audited. This will mean receiving two audit reports as documented below:

52. **Audit report of the university hosting the ACE:** This will ensure the EEPs are audited. The audit reports and management letters of the universities should be submitted to the Bank within nine months after the end of the financial year except for University of Rwanda which will be submitted within ten months after the end of the financial year.

53. **Audit report of the ACE:** This should ensure that the resources planned to be received under the project are audited as well as the expenditure in relation to the activities agreed with the Bank in the Project Implementation Plan. Where there are a number of ACEs in a university, their audits can be combined into one audit report. The audit reports and management letters for the ACEs should be received by the Bank within six months after the end of the financial year. The financial years for preparing audited accounts may follow the individual financial years of each of the implementing institutions as documented above or be synchronized to the financial year January-December of every year. Audit reports will be publically disclosed by the Bank in accordance with the Bank disclosure policy.

Table 3.4. External Auditors and Audit Status of Implementing Entities

Institution	Africa Center of Excellence (ACE)	External Auditor	Most Recent Audit Report	Audit Qualification of most recent audit report
Addis Ababa University	ACE for Water Management	Private Audit Firm in consultation with SAI or Audit Service Corporation	Last audit was for 4 years from EFY 1999 (2006/7) to EFY 2002 (2009/10). Audits for EFY 2003 (2010/11) to EFY 2006 (2013/14) have been done and audit report is expected by March 9, 2016. EFY 2007 (2014/15) audit is ongoing and audit report is expected on April 8, 2016.	EFY 1999 (2006/7) to EFY 2002 (2009/10) had a disclaimer audit opinion ⁵⁸ for all budget units except College of Natural Science responsible for African Center for Water Management that got a qualified opinion. Disclaimer opinion was long outstanding debtor and creditor balances, significant abnormal cash balances, not offsetting inter-fund balances and lack of supporting documentation.
Addis Ababa University	African Railway Education & Research Institute			
Addis Ababa University	Center for Innovative Drug Development & Therapeutic Trials for Africa			
Haramaya University	ACE for Climate Smart Agriculture and Biodiversity Conservation	Private Audit Firm in consultation with SAI	EFY 2005 (2013) audit report completed. EFY 2006 (2014) audit finalized but audit report not signed. EFY 2007 (2015) audit is ongoing.	Qualified opinion ⁵⁹ due to concerns on internal control procedures around salary expense at the university.
Egerton University	Center of Excellence in Sustainable Agriculture & Agribusiness Management	SAI	June 30, 2014 completed	Qualified Opinion due to not having land titles for 13 parcels of land, inclusion of stalled project

⁵⁸ Disclaimer audit opinion is issued when an auditor is unable to obtain sufficient appropriate audit evidence on which to base their opinion, and the auditor concludes that the possible effects on the financial statements of undetected misstatements, if any, could be both material and pervasive.

⁵⁹ Qualified audit opinion is issued when an auditor having obtained sufficient appropriate audit evidence, concludes that misstatements, individually or in the aggregate, are material, but not pervasive, to the financial statements; or the auditor is unable to obtain sufficient appropriate audit evidence on which to base the opinion, but the auditor concludes that the possible effects on the financial statements of undetected misstatements, if any, could be material but not pervasive.

Institution	Africa Center of Excellence (ACE)	External Auditor	Most Recent Audit Report	Audit Qualification of most recent audit report
				expenditure and long outstanding imprest not accounted for.
Jaramogi Oginga Odinga University of Science & Technology	Center of Excellence in Sustainable Use of Insects as Food and Feeds	SAI	June 30, 2014 completed	Unqualified (Clean) Opinion
Moi University	Center of Excellence in Phytochemicals, Textiles and Renewable Energy	SAI	June 30, 2014 completed	Qualified Opinion due to not revaluing fixed assets and including stale checks in closing bank balances.
Lilongwe University of Agriculture & Natural Resources	African Center of Excellence for Aquaculture and Fisheries Science	Private Audit Firm	June 30, 2014 completed. June 30, 2015 is in draft to be signed.	Unqualified (Clean) Opinion
University of Malawi – Malawi College of Medicine	African Center of Excellence for Public Health and Herbal Medicine	Private Audit Firm	June 30, 2013 completed. June 30, 2014 audit in progress.	Unqualified (Clean) Opinion
Universidade Eduardo Mondlane	Center for Studies in Oil and Gas Engineering and Technology	Private Audit Firm	December 31, 2014	Qualified opinion due to not complying with procurement regulations due to not submitting a contract for prior review and paying for equipment in full prior to receiving it.
University of Rwanda - College of Business & Economics	African Center of Excellence for Data Sciences	SAI	June 30, 2014 completed	Adverse Opinion due to unsupported internally generated expenditure, unsupported expenditure, unsupported payables and no respect for the cut-off period related to the accounting year end. Management has developed an action plan to address these issues by June 2016 and they are committed.
University of Rwanda – College of Science & Technology	1) African Center of Excellence in Energy for Sustainable Development 2) African Center of Excellence in Internet of Things			
University of Rwanda – College of Education	African Center of Excellence for Innovative Teaching and Learning Mathematics and Science			
Nelson Mandela African Institution of Science & Technology	Collaborating Center for Research Evidence, Agricultural Advancement & Teaching Excellence & Sustainability	SAI	June 30, 2014 completed	Unqualified (Clean) Opinion
Nelson Mandela African Institution of Science & Technology	Water Infrastructure & Sustainable Energy Center for the Futures			
Sokoine University of Agriculture	African Center of Excellence for Innovative Rodent Pest Management & Biosensor Technology Development	SAI	June 30, 2013 completed. FY14 audit report is completed but yet to be signed. FY15 audit is ongoing.	Unqualified (Clean) Opinion
Sokoine University of Agriculture	Southern African Center for Infectious Disease Surveillance			
Inter-University Council for East Africa (IUCEA)	Regional Facilitation Unit	SAI (Audit Commission of EAC ⁶⁰)	June 30 2014 completed. June 30, 2015 audit done but awaiting signature	Unqualified (Clean) Opinion
Makerere University	Center of Materials, Product Development & Nanotechnology	SAI	June 30, 2015	Unqualified (Clean) Opinion
Makerere University	Makerere University Center for Crop Improvement			
Mbarara University of Science & Technology	Pharm-Biotechnology & Traditional Medicine Center	SAI	June 30, 2015	Unqualified (Clean) Opinion

⁶⁰ The Audit Commission of the East African Community (EAC) is composed on the Supreme Audit Institutions of the Partner States of Tanzania, Kenya, Uganda, Rwanda and Burundi.

Institution	Africa Center of Excellence (ACE)	External Auditor	Most Recent Audit Report	Audit Qualification of most recent audit report
Uganda Martyrs University	African Center for Agro-Ecology & Livelihood Systems	Private Audit Firm	June 30, 2014 completed	Unqualified (Clean) Opinion
Copperbelt University	Africa Center of Excellence for Sustainable Mining	Private Audit firm on behalf of SAI	December 31, 2014	Unqualified (Clean) Opinion but there was an emphasis of the matter on the university having a deficit during FY.
University of Zambia	Africa Center for Excellence for Infectious Diseases of Humans & Animals	SAI	December 31, 2012	Unqualified (Clean) Opinion but there was an emphasis of the matter on the going concern of the university as it operated on a deficit.

54. During the assessment, there were delays in some of the ACE universities finalizing the audit reports as noted above. The major concern amongst all the ACEs is the five year backlog of audit reports at AAU and the three year backlog related to the audit reports for the University of Zambia. Other universities that have not finalized their audit reports for FY 2013 and therefore have a two year backlog include Haramaya University, University of Malawi (will require audit report for only the College of Medicine) and Sokoine University of Agriculture. All these universities are working towards addressing the backlog of audit reports as indicated in the table.

Financial Management Action Plan

55. The action plan below (Table 3.5) indicates the actions to be taken for the project to strengthen its financial management system and the dates that they are due to be completed by.

Table 3.5. Action Plan

	Action	Due by	Responsible
1	Agree Interim Financial Report formats and External Audit Terms of Reference	Agreed during Negotiations	All Implementing entities
2	Project Implementation Manual/ Plan with adequate Financial Management Arrangements. This will cover any project specific FM arrangements that are not in the existing FM Manuals.	Required to meet DLI 1 to become effective	All Implementing entities
3	Audit Report backlog: There are universities with audit backlogs that should be addressed by effectiveness. These are Addis Ababa University with a 5 year backlog of EFY 2003 (2010/11) to EFY 2007 (2014/2015); and University of Zambia with a 3 year backlog for FY13 to FY15. Universities with 2 year backlogs include Haramaya University, University of Malawi and Sokoine University of Agriculture.	Disbursement condition in the Performance Agreement between the Government and the responsible university	Addis Ababa University, University of Zambia, Haramaya University, University of Malawi and Sokoine University of Agriculture
4	Accounting Staff: Recruit qualified and experienced accountants/FM Specialists to account for the project funds in the following institutions: <ul style="list-style-type: none"> University of Rwanda (3 accountants for the 3 colleges representing the 4 ACEs and 1 accountant for the University to consolidate the accounts of all the ACEs); University of Malawi (1 accountant); Lilongwe University of Agriculture and Natural Resources (1 accountant); Addis Ababa University (Senior FM specialist at main campus and FM Specialist for each of the 3 ACEs); 	Within 3 months after effectiveness	University of Rwanda, University of Malawi, Lilongwe University of Agriculture and Natural Resources, Addis Ababa University and its Institute of Technology, Haramaya University, Makerere University,

	Action	Due by	Responsible
	Haramaya University (1 FM Specialist); Makerere University (2 accountants for the 2 ACEs); Mbarara University (1 Accountant); and Nelson Mandela African Institution of Science and Technology (1 Bursar).		Mbarara University of S&T and Nelson Mandela African Institution of Science and Technology
5	Internal Audit Staff. Recruit qualified and experienced internal auditors to audit the project funds in the following institutions: <ul style="list-style-type: none"> Addis Ababa University (1 Internal Auditor); Uganda Martyrs University (1 internal auditor); Nelson Mandela African Institution of Science & Technology (Chief Internal Auditor plus 1 internal auditor); Jaramogi Oginga Odinga University of Science & Technology (2 internal auditors); Haramaya University (1 internal auditor); and IUCEA (1 internal auditor). 	Within 6 months after effectiveness	Addis Ababa University, Uganda Martyrs University, Nelson Mandela African Institution of Science & Technology, Jaramogi Oginga Odinga University of Science & Technology, Haramaya University and IUCEA.
6	Audit Committee: Addis Ababa University and Haramaya University should each set up a functional audit committee that will follow up audit recommendations to ensure they are addressed appropriately by management. This is a disbursement linked result for Financial Management but in the interim, the management of the universities will have to ensure that both internal and external audit issues related to the ACEs are addressed.	Within 6 months after effectiveness	Addis Ababa University and Haramaya University
7	Strengthen governance and anti-corruption systems: This will need to be done by putting in place a functional and independent complaint handling mechanism; setting up a functional risk management and anti-corruption committee; and publishing budgets, financial reports and audited accounts on their websites to promote transparency and accountability.	During Implementation	All implementing entities
8	Strengthen internal audit skills: Internal audit units are encouraged to strengthen their systems by improving their internal audit manuals with good practices issued by the Institute of Internal Auditors; acquiring internal audit software to be more efficient and effective when conducting audits; train in performance auditing to strengthening value for money auditing; and train in risk based auditing to strengthen internal audit skills.	During Implementation	All implementing entities
9	Strengthening internal control system (a) Strengthen Internal Control Systems based on issues identified in internal and external audit reports (specific issues are highlighted under the section on Internal Control Arrangements above).	During Implementation	Addis Ababa University, Haramaya University, Sokoine University of Agriculture, Makerere University, Mbarara University, Egerton University and Copperbelt University
10	Funds flow arrangement: Timely remittance of funds from the designated Accounts held by the Ministry of Finance or University to the ACE.	During Implementation	Ministry of Finance and Universities
11	Annual financial audit report.	Annually (standard covenant)	All implementing entities

Financial Management DLIs

56. The DLIs below (included in Annex 1) relate to Component 1 and are incentives to strengthen FM. They include:

- The ACEs submitting timely withdrawal applications supported by interim unaudited financial reports showing how funds have been utilized.
- Universities under the university council having functioning audit committee that will amongst other assignments follow up audit issues related to the ACE. Evidence of the minutes of the audit committees will be reviewed to determine the effectiveness of the audit committee. The committee will also be expected to meet at least quarterly. For the ACEs in Ethiopia, there will be an exception because they do not have audit committees. However, the equivalent DLI that will be monitored in the case of Ethiopia, will be based on evidence of management addressing both internal and external audit issues. With regard to the ACE in Mozambique, this DLI will recognize the use of the *Gabinete de Auditoria Interna* (Department of Internal Audit) as the equivalent of the audit committee.
- Universities having functioning internal audit units that will support the ACEs. Evidence will constitute internal audit reports that indicate that the project is being audited.
- The ACEs publishing work plans, budgets, IFRs and audit reports on their websites to promote transparency and accountability.

Financial Covenants

57. Financial covenants are the standard ones as stated in the Financing Agreement Schedule 2, Section II (B) on FM, Financial Reports and Audits and Section 4.09 of the General Conditions.

Implementation Support Plan

58. FM implementation support missions will be carried out twice a year for the ACEs based on the substantial FM residual risk rating. For IUCEA, the implementation support will be carried out once a year based on the moderate FM residual risk rating. Implementation Support will also include desk reviews such as the review of the IFRs and audit reports. In-depth reviews and forensic reviews may be done where deemed necessary. The FM implementation support will be an integrated part of the project's implementation reviews.

Conclusion

59. The conclusion of the assessment is that the FM arrangements in place meet IDA's minimum requirements under OP/BP10.00, and therefore are adequate to provide, with reasonable assurance, accurate and timely information on the status of the project required by IDA. The overall FM residual risk rating of the Project is Substantial for the ACEs and Moderate for the RFU (IUCEA).

C. PROCUREMENT

General:

60. Procurement under the project will be carried out in accordance with the Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers dated January 2011 and revised July 2014 (“Procurement Guidelines”), the Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers dated January 2011 and revised July 2014 (“Consultant Guidelines”), and the Guidelines: On Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants dated October, 2006 and revised January, 2006 (“Anti-Corruption Guidelines”).

61. Each component of the project will have its own procurement arrangement. Component 1 will be implemented by selected education institutions from the Borrower countries as per assessed and approved proposals. Bank funds will be disbursed against a set of DLIs to finance the expenditures as defined under EEPs of the project, which would mainly be part of staff salaries of the selected institutions. Other expenditures under the project will be financed by their own funds of these institutions, which will be procured together with the institutions’ other operating requirements/needs following their own procurement procedures. To ensure the project activities will be carried out efficiently and meet the minimum requirements for economy, transparency and fairness, the Bank team has assessed these institutions’ existing procurement systems, and suggested measures to address the identified inadequacies and risks. The assessments are summarized in this Annex.

62. IUCEA will implement Components 2 and 3, including procuring the required goods, works and consulting services following the above mentioned Bank Procurement and Consultant Guidelines. The Bank team has assessed the IUCEA’s procurement capacity and rated the procurement risk as Low. The assessment together with identified risks and agreed mitigation measures is summarized in this Annex.

Inter-University Council for East Africa

63. An assessment of IUCEA’s capacity to carry out procurement was conducted in May/June 2015 and updated in February/March 2016. In 2009 the East Africa Legislative Assembly enacted the IUCEA Act 2009 thus integrating IUCEA into the EAC operational framework. IUCEA received a PPA from the World Bank to facilitate preparation of the project. IUCEA will be the RFU of the project providing facilitation to the ACEs. IUCEA has a procurement officer with basic academic qualifications, and procurement experience of more than five years. His experience includes processing procurement under Bank funding and currently handling procurement activities under the PPA in addition to the regular IUCEA procurement duties. IUCEA has a Procurement Policies and Procedures Manual dated June 2014 which is relevant in providing guidance in carrying out public procurement. The assessment has rated the procurement risk level to be **Substantial**.

64. In mitigating the procurement risk, IUCEA should: (a) hire a procurement expert to work with procurement officer who is handling the PPA procurement activities in addition to the IUCEA procurement work load; (b) the procurement officer to be trained through workshops, courses and

clinics in application of Bank procurement Guidelines and procedures, preparation of bidding documents and request for proposals, bids/ proposals evaluation, procurement planning; and (c) prepare a procurement manual outlining Bank procurement procedures and internal controls. After these measures have been implemented, the residual procurement risk is expected to be lowered to **Moderate**.

65. A Procurement Plan dated March 7, 2016 for the first 18 months of the project implementation for Components 2 and 3 has been agreed with IUCEA as follows:

Table 3.6. Procurement Thresholds

Expenditure Category	Contract Value Threshold (US\$)	Procurement Method	Contracts Subject to Prior Review (US\$)
1. Goods and Non-consulting Services	Below US\$ 100,000	Shopping	None
2. Consulting Services ⁶¹ and Training	With firms above US\$ 300,000	Quality and Cost Based Selection	All contracts
	With individuals above US\$ 100,000	Individual	All Contracts
	With firms up to US\$ 300,000	Consultants Qualifications Selection /Other	As specified in PP
	With Individuals up to US\$ 100,000	Individual	Only for project Staff
3. All types of contracts	All contracts	Sole source / direct contracting and terms of reference	As specified in PP

Table 3.7. Goods and non-consulting services

1 Ref No.	2 Contract Description	3 Estimated Cost	4 Procurement Method	5 Review by Bank (Prior / Post)	6 Expected Bid-Opening/ Commencement Date	7 Comments
Facilitation, Coordination and Administration of the Project Implementation						
A	<i>Goods/Supplies</i>					
I	Office equipment					
1a	3 Printers (1000)	10,000	Shopping	Post	4/7/2016	
1b	2 Desk top Computers (3000)					
1c	2 Lap top Computers (3000)					
1d	1 Scanner (1,000)					
1e	1 Photocopier (2,000)					
2	Office furniture	5,000	Shopping	Post	11/7/2016	
3	Motor vehicle	50,000	Shopping	Post	2/9/2016	
Administration expenses						

⁶¹ A shortlist of consultants for services estimated to cost less than US\$ 300,000 equivalent per contract may consist entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

A <i>Holding of bi-annual (ordinary RSC) meetings</i>						
1a	Meeting Venues-1 st 2 yrs.	58,880	Shopping	Post	1/9/2016	
1b	Meeting Venues-2 nd 3yrs	88,320	Shopping	Post	15/9/2018	
2a	Air Tickets-1 st 2 yrs.	60,800	Shopping	Post	9/9/2016	
2b	Air Tickets-2 nd 3yrs.	91,200	Shopping	Post	1/9/2018	
B <i>Holding of bi-annual technical and advisory meetings</i>						
1a	Meeting Venues 1 st 2 yrs.	49,760	Shopping	Post	10/11/2016	
1b	Meeting Venues-2 nd 3yrs	74,640	Shopping	Post	1/12/2018	
2a	Air Tickets-1 st 2 yrs.	74,500	Shopping	Post	15/11/2016	
2b	Air Tickets-2 nd 3 yrs.	111,840	ICB	Post	1/12/2018	
C <i>Undertaking quarterly M&E for the ACE II Project</i>						
1a	Air Tickets-1 st 2 yrs.	11,200	Shopping	Post	14/2/2017	
1b	Air Tickets--2 nd 3 yrs.	16,800	Shopping	Post	12/12/2018	
D <i>Recruitment of M&E Specialist & Procurement Assistant</i>						
1	Accommodation	5,000	Shopping	Post	22/8/2016	
2	Air Tickets	8,600	Shopping	Post	5/9/2016	
E <i>Staff Training</i>						
1	Air tickets	6,000	Shopping	Post	12/10/2016	
2	Accommodation/Venue	14,000	Shopping	Post	12/10/2016	
F <i>Development & Evaluation of DLIs & DLRs</i>						
1a	Air Tickets-1 st 2 yrs.	48,000	Shopping	Post	5/12/2016	
1b	Air Tickets-2 nd 3 yrs.	64,000	Shopping	Post	10/8/2018	
G <i>Monitoring and Supervision of ACEs</i>						
1a	Air Tickets-1 st 2 yrs.	48,000	Shopping	Post	5/12/2016	
1b	Air Tickets-2 nd 2 yrs.	48,000	Shopping	Post	10/8/2018	
2a	Accommodation for Consult	14,400	Shopping	Post	12/10/2016	
2b	Accommodation for Consult	14,400	Shopping	Post	11/10/2018	
Communication and Dissemination of project information						
A <i>Organizing annual meetings with national and regional higher education agencies</i>						
1a	Meeting Venues - 1 st 2 yrs.	4,992	Shopping	Post	10/4/2017	
1b	Meeting Venues -2 nd 3 yrs.	7,488	Shopping	Post	10/7/2018	
2a	Air Tickets - 1 st 2 yrs.	20,480	Shopping	Post	20/4/2017	
2b	Air Tickets -2 nd 3 yrs.	30,720	Shopping	Post	10/7/2018	

Table 3.8. Selection of Consultants

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost	Selection Method	Review by Bank (Prior / Post)	Commencement Date	Comments
A. ACEs Private sector Partnership Activities						
1	Hiring a firm to manage the Partnership programme	120,000	Consultants Qualification Selection	Post	1/09/2016	
B. ACEs Scholarships to encourage regional student mobility						
1	Hiring a firm to manage the Scholarship programme	160,000	Consultants Qualification Selection	Post	1/09/2016	
C. Monitoring and Evaluation						
1	Hiring a consultant to develop M&E tools	10,000	Individual Consultant Qualification	Post	8/11/2016	
D. Monitoring and Supervision of ACEs						

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost	Selection Method	Review by Bank (Prior / Post)	Commencement Date	Comments
1.	Hiring of Consultant for M & E	24,000	Consultants Qualification Selection	Post	14/12/2016	
E. Evaluation of DLIs & DLRs						
1.	Recruitment of a firm to carry out evaluation of DLIs/DLRS	22,700	Consultants Qualification Selection	Post	15/2/2017	
Facilitation, Coordination and Administration of the Project Implementation						
1	Recruitment of M&E Specialist	244,800	ICS-Qualification	Prior	1/12/2016	
2	Recruitment of Procurement Assistant	144,000	ICS-Qualification	Prior	1/7/2016	

Table 3.9. Administration Expenses

1	2	3	4	5	6	7
Ref. No.	Item	Estimated Cost				Comments
A ACES Private sector Partnership Activities						
1	Expenses for hiring a TA to manage ACES partnership with private sector	22,500	N/A	N/A	N/A	N/A
B ACES Scholarships to encourage regional student mobility						
1	Expenses for hiring a TA to manage the scholarship programme	22,500	N/A	N/A	N/A	N/A
2	Training	42,050	N/A	N/A	N/A	N/A

Procurement Assessment of Selected Education Institutions:

66. Since many education institutions are involved under Component 1, procurement capacity assessment had to be carried out on a sample basis. For this purpose, a representative list of education institutions was identified from a list of institutions from the participating countries who had been conditionally short listed by the Regional Steering Committee. On average, two institutions from each country were assessed, except for Zambia in which the assessment is done under another Bank project (P158570). The assessment is summarized as follows:

Table 3.10. Tanzania

Country	Implementing Agency	Procurement Capacity Evaluation	Risk Rating Before Mitigation Measures	Procurement Mitigation Measures	Risk Rating After Mitigation Measures
Sokoine University of Agriculture (SUA)					
<p>Procurement activities at SUA are managed by the Procurement Management Unit (PMU). Procurement functions are governed by the Public Procurement Act No. 7 of 2011 (PPA 2011) and its Regulations 2013. The legal framework is based on the United Nations Commission on International Trade Law (UNCITRAL) model. The legal framework is quite robust and covers all aspects of public procurement at all levels of government and internationally acceptable. SUA has established organs to process procurement in line with the PPA 2011 and its Regulations.</p> <p>The potential risks are (i) inadequate customization of bidding documents and request for proposals; (ii) tender evaluations not done in accordance with the criteria indicated in the bidding documents and evaluation guidelines; (iii) inefficiencies in tendering process - delays in evaluating bid and getting necessary approval; (iv) delays in paying vendors; (v) weak contract management system due to lack of knowledge and experience; and (vi) lack of appropriate record filing and management system and uncondusive working environment.</p>		High	The mitigation measures recommended are (i) conduct intensive trainings on preparation of bidding documents and evaluation of bids and contract management to PMU and User Department staff; (ii) ensure vendors in time according to the terms and conditions (iii) establish a proper records filing and management system.	Substantial	
Nelson Mandela Africa Institution of Science and Technology (NM-AIST)					
<p>Procurement activities at NM-AIST are managed by the PMU. Procurement functions are governed by PPA 2011 and its Regulations 2013. The legal framework is based on the United Nations Commission on International Trade Law (UNCITRAL) model. The legal framework is quite robust and covers all aspects of public procurement at all levels of government and internationally acceptable. NM-AIST has established organs to process procurement in line with the PPA 2011 and its Regulations. The potential risks identified are the insufficient experience of staff in charge of procurement.</p> <p>The procurement risks are; (i) inadequate staffing – position of the head of PMU is vacant; (ii) tender evaluations not done in accordance with the criteria indicated in the bidding documents and evaluation guidelines; (iii) inefficiencies in tendering process - delays in evaluating bid and getting necessary approval; (iv) delays in paying vendors; (v) weak contract management system due to lack of knowledge and experience; and (vi) lack of appropriate record filing and management system and uncondusive working environment.</p>		High	The mitigation measures proposed: (a) recruit experience procurement officer to fill the vacant position of the head of PMU; (ii) conduct intensive trainings on preparation of bidding documents and evaluation of bids and contract management to PMU and User Department staff; (iii) ensure vendors in time according to the terms and conditions (iv) establish a proper records filing and management system.;	Substantial	

Table 3.11. Ethiopia

Country	Implementing Agency	Procurement Capacity Evaluation	Risk Rating Before Mitigation Measures	Procurement Mitigation Measures	Risk Rating After Mitigation Measures
Addis Ababa University (AAU)					
<p>Procurement in AAU shall be carried out in the Procurement and Property Administration Directorate. ICB and consultancy service contracts are carried out centrally in the Directorate whereas NCB and other contracts are carried out in the procurement units of colleges and institutes. Procurement is carried out in accordance with the procurement laws and directives issued by the Federal Government. The University has previous experience in implementing Bank financed projects. In the colleges and institutes the staffs are not adequate and they are not familiar with Bank financed procurement. Risks to procurement in the organization include lack of qualified procurement staff in the colleges and limitations in the maintenance of complete procurement records, bid and proposal evaluations, and in the preparation of detailed procurement planning.</p>		Substantial	<p>Mitigation measures include (a) employment of qualified procurement staff and providing them basic training in management of procurement of goods and services; (b) procurement staff, decision making bodies such as tender approval committees should be provided with procurement clinics on procurement of goods and services, procurement planning, bid evaluation and procurement record keeping; (c) provide adequate facility for safe keeping and storage of procurement records.</p>	Moderate	
Haramaya University					
<p>Procurement at Haramaya University shall be carried out under the Procurement, Finance and Property Administration Directorate of the University. ICB, NCB and consultancy contracts are carried out centrally whereas procurement under shopping are carried out in the cluster offices in the colleges and universities. Procurement is carried out in accordance with the procurement laws and directives issued by the Federal Government. The University has previous experience in implementing Bank financed projects. Risks to procurement in the organization include lack of qualified procurement staff and limitations in the maintenance of complete procurement records, bid and proposal evaluations, and in the preparation of detailed procurement planning</p>		Substantial	<p>Mitigation measures include (a) employment of a qualified procurement staff; (b) procurement staff, tender approval committees should be provided with procurement clinics on procurement of goods and services, procurement planning, bid evaluation and procurement record keeping; (c) provide adequate facility for safe keeping and storage of procurement records.</p>	Moderate	

Table 3.12. Kenya

Country	Implementing Agency	Procurement Capacity Evaluation	Risk Rating Before Mitigation Measures	Procurement Mitigation Measures	Risk Rating After Mitigation Measures
Egerton University (EU)					
<p>All procurement at EU is carried out by the Procurement and Supply Chain Directorate which will apply to the ACE II. EU is a government institution of higher learning established by an act of parliament in 1987. Being a government institution and a procurement entity, it uses the national procurement system under the Public Procurement and Asset Disposal Act, 2015 that replaced the Public Procurement and Disposal 2005 with effect from January 07, 2016. The procurement unit is staffed with a large pool of well trained and experienced staff, is served with conducive and spacious working environment with staff having access to computers and reliable internet connectivity, and adequate and secure storage facilities for procurement records.</p> <p>The key risks for procurement are: (1) lack of effective procurement planning; (ii) inadequate contract management; and (iii) moderately satisfactory records management and procurement/contract filing systems.</p>		Substantial	Proposed mitigation measures are: (i) Training on Bank procurement procedures, procurement planning and contract management; (ii) hand-holding in the preparation of the first set of bidding documents, terms of references and requests proposals; and (iii) maintain files and records in line with procurement cycle coupled with close monitoring by the Procurement Staff.	Moderate	
Moi University (MU)					
<p>All procurement at MU is carried out by the Procurement and Supply Chain Directorate which will apply to the ACE II. MU is a government institution of higher learning established by an act of parliament in 1984. Being a government institution and a procurement entity, it uses the national procurement system under the Public Procurement and Asset Disposal Act, 2015 that replaced the Public Procurement and Disposal 2005 with effect from January 07, 2016. The procurement unit is staffed with a large pool of well trained and experienced staff, is served with conducive and spacious working environment with staff having access to computers and reliable internet connectivity, and adequate and secure storage facilities for procurement records.</p> <p>The key risks for procurement are: (1) lack of effective procurement planning; (ii) inadequate contract management; and (iii) moderately satisfactory records management and procurement/contract filing systems.</p>		Substantial	Proposed mitigation measures are: (i) Training on Bank procurement procedures, procurement planning and contract management; (ii) hand-holding in the preparation of the first set of bidding documents, terms of references and requests proposals; and (iii) maintain files and records in line with procurement cycle coupled with close monitoring by the Procurement Staff	Moderate	
Jaramogi Oginga Odinga University of Science and Technology (JOOUST)					
<p>All procurement at JOOUST is carried out by the Procurement and Supply Chain Directorate which will apply to the ACE II. JOOUST is a government institution of higher learning established through an act of parliament in 2013. Being a government institution and a procurement entity, it uses the national procurement system under the Public Procurement and Asset Disposal Act, 2015 which replaced the Public Procurement and Disposal Act 2005 with effect from January 07, 2016. The procurement unit has limited number of staff who has no experience in Bank financed operations and operates in a constrained office environment. Though they have access to computers, internet connectivity is not reliable, and records storage facilities are insufficient.</p> <p>The key risks for procurement are: (i) staff inexperience in procurement under Bank financed operation; (ii) lack of effective procurement planning; (ii) inadequate contract management; and (iii) moderately satisfactory records management and procurement/contract filing systems, and (iv) constrained office and records storage facilities.</p>		High	Proposed mitigation measures are: (i) Training on Bank procurement procedures, procurement planning and contract management; (ii) hand-holding in the preparation of the first set of bidding documents, terms of references and requests proposals; (ii) maintain files and records in line with procurement cycle coupled with close monitoring by the Procurement Staff; and (iv) provision of conducive and adequate work environment.	Substantial	

Table 3.13. Uganda

Country	Implementing Agency	Procurement Capacity Evaluation	Risk Rating Before Mitigation Measures	Procurement Mitigation Measures	Risk Rating After Mitigation Measures
Makerere University – College of Engineering, Design, Art & Technology, and College of Natural Sciences; College of Agricultural & Environmental Sciences.					
	Makerere University is the oldest and largest public University in Uganda. Initially it was established as a technical college in 1922. Makerere University was established by the Universities and Other Tertiary Institutions' Act 2001(as amended). Being a public institution it is a procuring and disposal entity as per the requirements of the Public Procurement and Disposal of Public Assets Act 2003 as amended in 2014. The Act is enforced by the Public Procurement and Disposal Authority (PPDA) which oversees and regulates procurement and disposal functions in Public entities. Makerere University has a Procurement and Disposal Unit (PDU) as per the requirements of the Act and is referred to as the central/main PDU. Due to the establishment of Colleges under the University, the Procurement and Disposal function was decentralized to be handled at College level by respective Sub-PDUs and Sub-Contracts Committees with delegated authority up to particular thresholds (limits). Two Colleges (College of Engineering, Design, Art & Technology, and College of Natural Sciences) will be implementing the project. The key personnel at the main PDU include Procurement Manager, Senior Procurement Officer, two Procurement Officers, and two Procurement Assistants. Key personnel in each of two College's Sub-PDUs include a Procurement Officer, and two Procurement Assistants. All the key personnel have basic academic qualifications, procurement experience of at least five years and are Chartered Institute of Procurement & Supply (CIPS) qualified. Procurement Officers have some procurement experience (although not up to date) in implementing World Bank funded projects. The rest of the staff members have experience mainly in procurement of goods, works and small value consultancy services financed by Government own resources. In addition they are familiar with International Competitive Bidding (ICB), National Competitive Bidding (NCB) shopping procedures under the PPDA Act. The University has Procurement and Disposal Manual dated November 2014.	Substantial	In mitigating the procurement risk, each of the two Colleges implementing the project should (I) hire/ assign an additional procurement staff to support the project; (ii) the procurement staff in the Sub-PDUs to be trained through workshops, courses and clinics in Good procurement practices, preparation of bidding documents and request for proposals, bids/ proposals evaluation, procurement planning; (iii) Prepare a procurement manual outlining the procurement procedures and internal controls.	Moderate	
Mbarara University of Science & Technology (MUST)					
	Mbarara University of Science & Technology (MUST) is a public University established in 1989. Being a public institution it is a procuring and disposal entity as per the requirements of the Public Procurement and Disposal of Public Assets Act 2003 as amended in 2014. This 2003 Act is enforced by the Public Procurement and Disposal Authority (PPDA) which oversees and regulates procurement and disposal functions in Public entities. MUST has Procurement and Disposal Unit (PDU) as per the requirements of the Act. The Accounting Officer/ University Secretary is the overall supervisor of the procurement function. The PDU has 4 full-time procurement staff. Evaluation/negotiation committees which are adhoc in nature are nominated by the PDU and approved by the Contracts Committee. The Users departments play their roles as prescribed by the PPDA Law The University has a Financial and Accounting Manual dated September 2010 and has a section on Procurement. The Head of the PDU-Senior Procurement Officer has some experience in implementing procurement under World Bank financed projects while the others are familiar with procedures under the PPDA.	Substantial	In mitigating the procurement risk, the University should (i) hire/ assign an additional procurement staff to support the project; (ii) the procurement staff to be trained through workshops, courses and clinics in good procurement practices, preparation of bidding documents and request for proposals, bids/ proposals evaluation, procurement planning; (iii) Prepare a procurement manual outlining procurement procedures and internal controls.	Moderate	
Uganda Martyrs University					
	Uganda Martyrs University is a private University established in October 1993. It has a procurement unit with three procurement staff. The head of the unit has a Bachelor of Procurement and Logistic Management and CIPS with more than five-year experience in carrying out procurement. The other two hold Bachelor of Procurement and Supply Chain Management. The University has a Financial Manual dated April 2015 which includes a section on Procurement and Disposal of Assets. The procurement officers don't have experience in implementing World Bank financed projects. However the	Substantial	In mitigating the procurement risk, the University should (i) train the procurement staff through workshops, courses and clinics in good procurement practices, preparation of bidding documents and request for proposals, bids/	Moderate	

University has handed internationally funded procurements. It has thresholds for contracting powers contained in the manual which are updated regularly. Technical specifications for goods and TORs for consultancy services are prepared both in-house and/ or by external experts depending on the complexity of the assignment.		proposals evaluation, procurement planning.	
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Table 3.14. Malawi

Country	Implementing Agency	Procurement Capacity Evaluation	Risk Rating Before Mitigation Measures	Procurement Mitigation Measures	Risk Rating After Mitigation Measures
Malawi College of Medicine					
		Procurement under College of Medicine follows the Malawi Public Procurement Act of August 2003 which will also apply to the African Centers of Excellence project. Malawi College of Medicine was established by the Government of Malawi and it is one of the statutory corporations that get resources from Government through subvention. There are 7 members of staff and they do not have adequate knowledge and experience in Bank procurement. The College has an oversight procurement committee which clears and awards contracts. The key risks for procurement are (a) delays in processing of documents, preparation of realistic procurement plans of the project, and retention of procurement staff.	Substantial	As part of mitigation it is recommended that (a) staff be trained in good procurement practices, and (b) a dedicated Procurement Specialist be recruited for the project.	Moderate
Lilongwe University of Agriculture and Natural Resources					
		Lilongwe University of Agriculture and Natural Resources will undertake procurement using the Malawi Procurement Act of 2003 which will also apply to ACE project. The University was established under an Act of Parliament as a public university. There are 3 members of staff undertaking procurement and they have adequate experience as they undertaking procurements under another IDA financed project, Skills Development Project which is also using similar approach. Procurement risks for the project include (a) delays in preparation of the annual procurement plan and processing of documents as they are few procurement staff.	Substantial	To mitigate the risks, LUANAR should recruit additional procurement staff to support the project and have them trained in good procurement practices.	Moderate

Table 3.15. Rwanda

Country	Implementing Agency	Procurement Capacity Evaluation	Risk Rating Before Mitigation Measures	Procurement Mitigation Measures	Risk Rating After Mitigation Measures
University of Rwanda (UR), College of Science & Technology, College of Business and Economics and the College of Education					
<p>i) As a public institution, the UR is governed by the national procurement legal frameworks. The Government of Rwanda has accepted public procurement legal framework that is based on UNCITRAL model and is quite robust and covers all aspects of public procurement for use by all levels of government agencies. The law is supported by implementing Regulations and a User Guide to facilitate understanding of the requirements and good practice. There are Standard Bidding Documents to simplify and standardise the bidding process. The Regulations, User Guide and Standard Bidding Documents are made available on Rwanda Public Procurement Authority (RPPA) website.</p> <p>ii) Procurement planning is well prepared on the standard forms provided by RPPA and published on UR website, widely circulated local newspaper and sent to RPPA for publication on RPPA’s web site.</p> <p>iii) According to the structure, procurement unit of UR has 5 positions; 1 procurement director, 1 senior procurement officer and 3 procurement officers. Except the senior procurement officer’s position, which is under the hiring process, all the positions are already filled. All the existing staffs have the required qualification and experience. The procurement unit is assessed to have adequate capacity to handle procurement of the centers of excellence in addition to their current responsibility.</p> <p>iv) Similar to other public institutions in the country, UR has a structure for a single project implementation unit (SPIU), but not yet fully staffed to enable take the project implementation responsibility. Despite, it is a requirement by the law that the SPIU will have to take over the implementation of all development partners funded projects including the centers of excellence. So far the project coordinator is assigned and recruitment of other staffs is underway. The SPIU has a typical organizational structure, with procurement and financial management staffs.</p> <p>Until the UR-SPIU will be fully staffed and ready to overtake, procurement of the center of excellence will be implemented by the existing procurement unit under the “Chief Budget Manager” (Deputy Vice Chancellor, Administration and Finance) of the university. As these units are busy with execution of budget from the government, there is a risk that the project may suffer delay from lack attention.</p> <p>v) Procurement records are kept in secured and well organized shelves in the office of procurement staffs. Each contract has a separate box file and clearly marked with contract description. However, some important records such as bids/proposals evaluation reports and copies of payments are missing in some files; and needs much improvement.</p> <p>vi) UR has not yet put in place the internal audit, though despite its mandate of procurement and financial management. Besides, neither RPPA nor Office of Auditor General has conducted procurement auditing on UR, since its restructuring two years back. In the contrary, colleges have been audited by the Office of Auditor General during this fiscal year for the two colleges and in FY13/14 for the College of Education. The implication is that, UR is currently implementing procurements in the absence of adequate oversight; while the colleges, with no procurement responsibility have better control and oversight.</p>		Moderate	As a mitigation measure to risk of delay during the transition to the UR-SPIU; (a) UR should expedite the hiring and staffing of the SPIU to overtake the project implementation role, ASAP; (b) Though procurement and FM mandate is that of UR; as owner of the center of excellence projects, colleges, should assign a project coordinator and involve in the contract management, to ensure close monitoring and sense of ownership of the project. (c) Assign a procurement officer responsible for maintaining records of all procurement activities of complete cycle, by using check list of important records. (d) UR should strengthen the internal audit unit by filling the vacant positions and ensure the internal auditing practiced before the project effectiveness. (e) UR to request RPPA to conduct procurement auditing for FY16 and on regular basis the following FYs.	Low	

Table 3.16. Mozambique

Country	Implementing Agency	Procurement Capacity Evaluation	Risk Rating Before Mitigation Measures	Procurement Mitigation Measures	Risk Rating After Mitigation Measures
Universidade Eduardo Mondlane – Faculty of Engineering					
		A procurement capacity assessment of the UGEA ⁶² of Faculty of Engineering of the Eduardo Mondlane University was carried out on February 9, 2016. The institutional and organizational arrangements were reviewed and found to be adequate; the UGEA is staffed by 5 persons including the head, with 3 of them being procurement officers, including the head. They are adequately experienced in local procurement regulations. However, there is limited exposure to large value contracts that are normally managed by the University Central UGEA. The main potential risk is the lack of experience with large value contract for construction rehabilitation. The number of contracts from the financing are limited and are unlikely to adversely impact the normal work of the UGEA.	Moderate	Support from UEM Central UGEA should be provided to the Faculty's UGEA for the large value contract above the instituted competency for the Faculty of Engineering.	Low

D. ENVIRONMENTAL AND SOCIAL (INCLUDING SAFEGUARDS)

Social (including Safeguards)

67. The project takes into account the issue of gender inclusion. Its Results Framework offers disaggregated indicators on gender (number of female vs. number of male students, number of female faculty and student exchanges etc.). As part of continuous social risk and impact assessment for the project, the ACEs will need to assess other emerging risks including issues related to social inclusion during project implementation. However, the ACE institutions in general have less capacity to continuously assess social risks and impacts as well as implement and track performance. Given the project complexity and its regional nature (eight ACE hosting countries with different Environment and Social regulatory frameworks), the project will support and train an Environment and Social team at the RFU level that will work with a focal point on social and environmental aspects of the project implementation in each ACE. The Bank will support the training of the Environment and Social focal points in the ACEs to ensure a good understanding of the social concerns including safeguards policies.

Environment (including Safeguards)

68. **Environmental impacts are expected to be low to moderate.** The Environmental Assessment category is B (Partial Assessment). Some of the ACEs will undertake some rehabilitation and extensions of the selected institutions. However, there will be no new land acquisition for the ACEs; they will be based within existing institutions. In general, the project will focus on quality enhancements of the ACEs, which primarily requires "softer items" i.e. faculty and curriculum development, and learning resources, while construction will be capped at maximum 25 percent of the funding. The rationale for the proposed new construction has been scrutinized to ensure that it is critical for excellence. Each selected ACE has prepared an ESMP that was reviewed by the Bank Safeguards specialist and cleared. The ESMPs have been disclosed in each institution in the country, and by IUCEA and the Bank.

⁶² UGEA – Procurement Unit as per local Procurement Regulations.

E. MONITORING & EVALUATION (M&E)

69. The project design has a strong focus on M&E to ensure the successful implementation of the DLI operational model. The participating countries and selected ACEs are committed to using a common Results Framework for monitoring performance of the project as described in Annex 1. To the extent possible, the Results Framework uses existing institutional indicators and data sources to measure the progress of both the selected ACEs and the overall project. The M&E will be undertaken by each of the selected ACEs for Component 1, and by the RFU (IUCEA) for Components 2 and 3. Each ACE is expected to have an established M&E system with the ACE being responsible for collecting data on the agreed upon outcome and output indicators. This data will be collected by the ACEs through their existing databases and, where required, through consultancies. The tools for M&E are: (a) reports on institutional progress, internal quality, and efficiency audits; (b) reports on results that are verified by an independent external verifier for disbursements and performance audits; (c) policy and system research studies and external verification of research publication and program/course accreditations; (d) institutional financial and audit reports; and (e) interactions with stakeholders. Regional-level responsibility for aggregating the data and results of the participating ACEs will be located with the RFU (hosted within IUCEA).

70. The selected ACE is expected to indicate an M&E capacity assessment in its proposal. This assessment includes an M&E focal point who will be responsible for submitting the performance indicators for the conditionally selected ACE. If the M&E capacity is not fully in place at the time of the signing of the PFA, it is expected that a plan detailing the process of enhancing the M&E capacity will be included in the action plans. Adequate on-the-job training will be provided to the identified M&E staff at the regional level through capacity building programs managed by the RFU (IUCEA).

71. Support to improve the availability, reliability, and timeliness of routine institutional data is an important part of the project, especially since disbursements will be linked to the agreed performance indicators. As such, capacity building for data collection and monitoring will be provided through the RFU (IUCEA).

72. Implementation of the M&E framework will be tracked throughout project implementation, and will be a central task of project implementation support. For disbursements to be processed, a third party verification will be undertaken biannually and managed by the RFU (IUCEA). The mid-term review of the project would offer the opportunity to amend the indicator series or target values based on evolving circumstances.

Annex 4: Implementation Support Plan

AFRICA: Eastern and Southern Africa Higher Education Centers of Excellence Project (P151847)

Strategy and Approach for Implementation Support

1. The strategy for Implementation Support has been developed based on the nature of the project and its risk profile. The strategy aims to make implementation support to the client flexible and efficient. It focuses mainly on implementation of the risk mitigation measures.
2. The Bank's approach to Implementation Support strongly emphasizes open and regular communication with all actors directly involved in the project (such as the selected ACEs, the NSC, the RSC and RFU), constant information exchange, and adequate flexibility to accommodate the specificities of each of the participating countries. During project preparation, the team developed communication channels, informal links, and trust with the implementing agencies, all of which are expected to help facilitate the project supervision.
3. The strategy is based on several mechanisms that will enable enhanced implementation support to the government, and timely and effective monitoring. The implementation support thus comprises: (a) joint review missions; (b) regular technical meetings and field visits by the Bank between the formal joint review missions; (c) ACE reporting based on the performance agreements; and (d) internal audit and FM reporting.

Implementation Support Plan

4. The Bank will provide strong implementation support to the ACEs and the RFU as well as to the relevant agencies regarding technical, fiduciary, social, environmental and safeguards issues. Formal implementation support and field visits will be carried out as required.

Technical Inputs

5. **Fiduciary requirements and inputs.** The Bank's FM and procurement specialists will provide training before project effectiveness, and during project implementation. The training will allow teams from the ACEs and the RFU to build capacity in matters of FM and procurement, particularly as it relates to Bank procedures. As part of the project supervision plan, supervision of FM arrangements will be carried out, and support provided on a timely basis as per project needs. Procurement supervision will be carried out on a timely basis as required by the country.
6. **Safeguards.** The Bank's social specialist will ensure that training is provided to relevant counterpart staff, and undertake field visits as required. On the environmental side, support will focus on ensuring the project's compliance with the ESMPs developed by each ACE with respect to activities executed by the selected centers of excellence under Component 1, ensuring that they comply with the Bank's safeguards policy on Environmental Assessment (OP/BP 4.01).

7. **Country Relations.** The Task Team Leaders (TTLs) will coordinate with the Country Co-TTLs, the Bank Team at large and the RFU to ensure project implementation is consistent with the Bank requirements as specified in the legal agreements. Moreover, the TTLs and the Country Co-TTLs will meet with the governments, the NSC and senior staff of selected ACEs on a regular basis to keep them informed of the project’s progress and issues that require resolution at their level. Constant channels for information exchange will be maintained with all major actors, taking advantage of the trust and communication capacity built during the project preparation phase.

The main focus of implementation support is summarized below.⁶³

Table 4.1. Focus of Implementation Support

Time	Focus	Resource Estimate	Partner Role
First twelve months	Technical Review/Support	TTLs 12 SWs Country Co-TTLs: 8 SWs	NA
	FM training and supervision	FM specialist 8	
	Environment and Social monitoring & reporting	Environment Specialist 2 SWs	
	Higher Education Topics	Higher Education Specialist 2 SWs	
	Institutional arrangement and project supervision coordination and Team Leadership	TTLs 15 SWs	
12-48 months	Technical Review/Support	TTLs 6 SWs Country Co-TTLs 8 SWs	‘
	Environment and Social monitoring & reporting	Environment Specialist 2 SWs Social Development Specialist 2 SWs	
	Civil works support	Infrastructure Specialist 8 SWs	
	Financial management disbursement and reporting	FM Specialist 6 SWs	
	Procurement management	Procurement Specialist 4	
	Institutional arrangement and project supervision coordination and Team Leadership	TTLs 12 SWs	

⁶³ Ws – weeks; SWs – Staff weeks.

The staff skill mix required is summarized below.

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Operations	8 SWs annually	Fields trips as required.	Headquarters and Country office based
Higher Education	8 SWs annually	Two	Externally based
M&E	4 SW annually	Fields trips as required.	Country office based
Procurement	5 SWs annually	Fields trips as required.	Country office based
Social Safeguards	2 SWs annually	Fields trips as required.	Country office based
Environment	2 SW annually	Fields trips as required.	Country office based
Infrastructure	3 SW annually	Field trips as required	Headquarters/Regionally based
FM	8 SWs annually	Fields trips as required.	Country office based
Task Team Leaders	15 SWs first year, then 12 SWs annually in the following years	Field trips as required	Headquarters Based

Annex 5: Economic and Financial Analysis

AFRICA: Eastern and Southern Africa Higher Education Centers of Excellence Project (P151847)

1. **The economic and financial analysis section provides the rationale for: (a) public investment in post-graduate level (higher) education in ESA; (b) a regional approach to a higher education investment project; and (c) the cost effectiveness of ACE II.** This analysis consists of economic analysis (external efficiency of higher education), cost-benefit analysis (CBA), and fiscal impact (sensitivity and suitability analysis). The economic analysis starts with the rationale for investment in higher education (with the focus on industry, agriculture, health and education and statistics), with a justification for a regional approach, followed by the returns to higher education—labor market’s response to higher education degree, and social benefits from investing in higher education. Through employment probability, and positive externalities through spill-overs, the linkages are analyzed between (a) higher education and research and development (R&D) innovation; (b) acquisition of higher education and broader returns (benefits) to the society; and (c) higher education and social mobility/inclusion. This further demonstrates that higher education not only generates wage premium for individuals and stimulates technology advancement, but also plays an important role to help alleviate poverty and promote shared prosperity by enhancing labor activeness for the underprivileged and bridging the poor to break through social barriers. The CBA estimates the returns to investment in higher education in general and the expected labor market returns for ACE II beneficiaries in particular. Finally, the fiscal impact of ACE II and potential risks are explored through sensitivity and suitability analysis.

Economic Analysis

2. The economic analysis of ACE II attempts to answer four questions: (a) what is the rationale for investment in higher education in ESA; (b) why a regional approach to producing graduates and strengthening R&D capacity, and promoting growth and innovation; (c) in addition to private gains for individuals from training at the post-graduate level, what are the social returns to investments; and (d) what is the Bank’s value added.

Rationale for Investment in Higher Education and the ACE

3. **Higher education in ESA is facing a crisis due to the rising demand for higher education opportunities and inadequate supply and quality.** The success of ESA policies due to the Millennium Development Goals and the expansion of secondary education have extended the aspiration and demands for higher education, beyond the traditional elite. ACE II addresses this challenge in two ways: (a) It effectively provides more seats for those who aspire to pursue higher education. According to the most recently available data, the number of tertiary graduates in ESA countries fluctuates from year to year. Countries such as Mozambique experienced a decrease from 2010 to 2012, but generally the number of secondary graduates has steadily increased. The current capacity of the higher education system is not meeting the demand. (b) Through a joint effort of government and project funds, ACE II effectively helps finance higher

education expansion.⁶⁴ Public unit costs in higher education are extremely high in ESA. Countries that intend to expand access to higher education often come across financial difficulties.

4. **Total factor productivity (TFP)⁶⁵ is a determining factor to stimulate economic growth. Investment in higher education can contribute to pushing the productivity frontier among the ESA countries.** Global best practices have proved that TFP played an important role in boosting economic growth, with South Korea and Japan being two great examples. The neoclassical economics model implies that economic growth comes from changes in capital, labor, and TFP.⁶⁶ Advancement in technology, labor skills, and investment in capital are essential for emerging markets to grow economically. Human capital theory confirms that these changes are more efficient through human capital accumulation achieved by investing in education and training. At the country level, higher education is widely regarded as having a strong effect on stimulating economic growth (Baro and Sala-i-Martin, 2004; Bloom, Hartley and Rosovsky 2006).⁶⁷ Acquisition of higher education helps to enhance labor productivity and skills development, and to promote entrepreneurship and job creation (Solow, 1956; Cass, 1965; Bloom, Canning and Sevilla, 2002; Vandenbussche, Aghion and Meghir, 2006; and Andersson, Quigley and Wilhelmsson, 2009).⁶⁸ At the individual level, Mincerian and Heckman models (Mincer, 1974; Heckman 1976)⁶⁹ testify that private returns to higher education greatly exceed private returns to primary and secondary education, especially for the female population and in emerging markets (Montenegro and Patrinos, 2014). Most ESA countries have had fast growth in the past decade. They are stepping into a critical transition—a bifurcate demand of both mid-skilled and high-skilled labor force. Keeping the momentum of improved productivity can only be achieved through strengthening the capacity of technical and vocational education and training (TVET) and higher education institutions.

5. **ACE II will play an essential role in driving this transformation for the ESA region in areas such as industry, agriculture, health, education and applied statistics.** Higher education is widely regarded as a catalyst for economic growth because it imparts the knowledge, skills, and capacity necessary for productivity increases in service, manufacturing, and agriculture sectors. Romer (1986) and Lucas (1988) emphasized the importance of technology advancement

⁶⁴ The specific amount of funding each ACE will share the cost with will be explained in further detail in the later sections.

⁶⁵ TFP is calculated as: $TFP = \text{total value of output} / \text{total value of input}$, where $\text{input} = \text{labor} + \text{material} + \text{equipment} + \text{energy} + \text{capital}$.

⁶⁶ Cobb–Douglas production function $Y = AL^{\beta}K^{\alpha}$

⁶⁷ Barro, R.J., and X. Sala-i-Martin. 2004. *Economic Growth*. 2nd Edition. Cambridge: MIT Press; Bloom, D.E., M. Hartley, and H. Rosovsky. 2006. “Beyond Private Gain: The Public Benefits of Higher Education.” In James J.F. Forest and Philip G. Altbach, eds., *International Handbook of Higher Education*;

⁶⁸ Solow, R. 1956. “A Contribution to the Theory of Economic Growth,” *The Quarterly Journal of Political Economy*, 94: 1002-37; Cass, D. 1965. “Optimum Growth in an Aggregative Model of Capital Accumulation,” *The Review of Economic Studies*, 56: 358-69; Bloom, D.E., D. Canning and J. Sevilla. 2002. Technological Diffusion, *Conditional Convergence and Economic Growth*. NBER Working Paper No. 8713. Cambridge; Vandenbussche, J., P. Aghion and C. Meghir. 2006. “Growth, distance to frontier and composition of human capital,” *Journal of Economic Growth*, 11: 97-127; and Andersson, R., J. Quigley and M. Wilhelmsson. 2009. “Urbanization, productivity and innovation: Evidence from investment in higher education,” *Journal of Urban Economics*, 66 (1): 2-15.

⁶⁹ Mincer, J. 1974. *Schooling, Experience and Earning*. New York: NBER; Heckman, J. 1976. “The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models,” *Annals of Economic and Social Measurement*, 5: 475-92.

as a key contributor to the economic growth.⁷⁰ Higher education helps facilitate diversification into higher value-added products, promotes innovation and leads to the development of new products and services. Investing in higher education not only brings private benefits such as higher earnings and skills, but it also benefits society, as it addresses human capital requirements for generating and sustaining growth at the macro level. Empirical research shows that returns to higher education are higher than those for primary and secondary education. These returns are also greater in low-income economies than in higher income economies (Montenegro & Patrinos, 2014).⁷¹ Acquisition of higher education degrees is associated with higher earnings in some ACE II participating countries (Montenegro & Patrinos, 2014).⁷² The private rate of returns for the ACE II participating countries are: 17 percent for Ethiopia (2005), 22.4 percent for Kenya (2005), 24.2 for Malawi (2010), 17.7 percent for Mozambique (2008), 28.8 percent for Rwanda (2010), 19.4 percent for Tanzania (2011), and 18.2 percent for Zambia (2010).

6. High-skilled labor in industry, agriculture, and health is however in great shortage in ESA. Though enrollment tripled during the past decade in SSA (2.8 million in 2000 to 7.3 million in 2013, UNESCO), the expansion is not sufficient to meet either the aspiration for higher education or the increased human capital demand. Two additional concerns emerge from this rapid expansion: the poor quality of higher education and the few graduates in the fields of Industry, agriculture, health and cross-cutting foundational areas such as science and math education and applied statistics.⁷³ Most higher education graduates concentrate on disciplines such as education, social sciences, business and law. In the countries listed in Table 5.1, the four disciplines together account for more than 70 percent of the entire graduating class in higher education institutions in Africa. **More importantly, many ESA countries have experienced declining enrollment in STEM disciplines during the period of rapid economic growth.** This is very different from emerging economies such as Vietnam, mid-income countries such as Malaysia, and advanced economies such as South Korea. The low number of higher education graduates in the fields of industry, agriculture, and health in ESA countries also impacts the overall teaching quality (teaching force availability and capacity) within these disciplines at lower levels of education.

Table 5.1. Percentage of higher education graduates by field of Study

	Eastern and Southern African Countries					Asian Countries		
	Ethiopia (2010)	Kenya (2001)	Mozambique (2013)	Rwanda (2012)	Uganda (2004)	Vietnam (2013)	Korea (2013)	Malaysia (2013)
Education	33.55	20.40	28.21	8.82	34.84	25.22	7.37	13.51
Humanities and Arts	7.82	6.28	3.42	3.14	5.49	3.15	17.62	11.56
Science	10.36	12.78	2.00	11.25	3.13	34.86	7.15	9.53
Social Sciences, Business and Law	30.14	25.52	47.47	48.18	37.57	...	21.84	25.10
Agriculture	7.68	7.96	4.61	7.90	2.61	5.28	1.21	1.88
Engineering, Manufacturing	4.88	17.45	3.82	11.20	6.40	24.15	23.91	21.37

⁷⁰ Romer, P. 1986. "Increasing returns and long-run growth," *Journal of Political Economy*, 94: 1002-37; Lucas, R. 1988. "On the mechanics of economic development," *Journal of Monetary Economics*, 22: 2-42.

⁷¹ Montenegro, C.E., and H. Patrinos. 2014. *Comparable Estimates of Returns to Schooling around the World*. Policy Research Working Paper No. 7020. Washington, DC: World Bank.

⁷² See footnote # 71.

⁷³ UNESCO Institute of Statistics

and Construction Health and Welfare	5.36	8.99	5.45	9.51	4.19	3.64	14.37	11.63
Services	0.11	0.62	5.01	...	2.82	3.68	6.52	5.4
Unspecified programs	0.11	...	...	...	2.95	2.00	...	0.08
Total Number of Graduates	102,633	38,683	10,255	16,048	21,164	406,068	618,281	261,819

Source: UIS Database

7. **Maintaining the status quo among in the types of higher education graduates produced will not address the needs of the labor market.** Extractives and manufacturing are the two largest sectors in the region and they have been growing fast. Agriculture productivity has been low and to enhance productivity localized advancements through R&D and innovation will be key. A very large portion of the world’s arable land is located in ESA. Zambia, for example, ranks among the top ten sources for at least one major mineral. Uganda is a leading producer on hydrocarbon products. The service industry is growing fast as well. All these sectors will need high-skilled labor that will have to come from the existing labor market or will need to be produced by higher education institutions. ACE II will support the establishment of new centers of excellence or support existing centers in these critical areas. The project, through various development linked indicators, will support the teaching and training of graduates and strengthening the quality of faculty and research (which directly feeds into the quality of teaching), while cultivating a research environment that addresses the region’s development challenges.

A Regional Approach to R&D Capacity, Innovation and Creativity

8. **ACE II will focus on priority areas such as industry, agriculture, health, education and applied statistics, with the purpose of producing graduates and strengthening applied research capacity.** To sustain economic growth, SSA needs more high-skilled professionals in the areas of S&T to lead innovation, production, and to strengthen the teaching capacity in TVET and higher education in these areas. Strengthening research capacity in these critical areas is also important for the purposes of ensuring that the human capital is established to develop localized solutions to key development challenges. Developing and enabling such capacity in the region is necessary to ensure, for example, that drug development prioritizes the region’s key ailments, or that agricultural research focuses on enhancing the productivity of ESA crops; areas that are not always prioritized by western researchers and research organizations.

9. **A broader regional approach is justifiable as a number of market failures undermine optimal investment in research and innovation and the production of graduates in the region.** This is particularly so, when such investments can have regional benefits which are not internalized when making such investment decisions. Innovation, particularly in the area of S&T is often a public good and the inability to appropriate all the benefits from an investment in its production results in under investment. There are also a number of positive externalities from research and innovation which is often not accounted for and results in underinvestment. Perhaps most important is the benefit of having a quantum amount of skilled workers, not available before, which allows for new types of research and innovation, and economic production (including greater entrepreneurship). There are also knowledge spillovers which allows newly trained workers to

share new knowledge with other less skilled workers which results in enhanced productivity (i.e. within firms and in universities).

10. **ACE II will effectively enforce regional collaboration, networking, and partnerships to solve development issues.** The strategic establishment of ACEs provides a solution with a strong collaboration among centers of excellence, a broad sources-sharing network, and innovative partnership mechanisms to connect closely with the private sectors. Through the collaboration among ACEs, R&D capacity could be reconstructed by sharing high quality faculty, researchers, and well-trained students. The ACEs bring together resources through information technology, best utilize local strengths and advantages, and advance technology through the most cost-efficient way. A stronger partnership with the private sector not only ensures the greater private returns on higher education for ACE graduates, but also stimulates a system that enables more institutional autonomy and practicality of program design.

11. **Setting up regional centers through ACE II is a cost-efficient way to improve S&T capacity, innovation initiatives, and the quality of teaching.** Building on existing higher education institutions in the region, ACE II complements other regional initiatives in Africa that focus on S&T skills development through collaboration and partnership. To address talent and skill shortcomings, there are potential high costs associated with establishing individual and separate centers of excellence by each country or institution. Instead, ACE II sets up regional centers of excellence to best utilize geographical specialties and existing human capital resources to maximize benefits, and ensure spill-over effects across countries. This will help create a larger public good for the region, and help countries in ESA to share knowledge and best practices in a cost-efficient way. Teaching staff of good quality is a scarce commodity in Africa, particularly in priority areas such as education, applied statistics and scientific disciplines. The regional ACEs will help concentrate the limited available faculty on a greater possibility of innovation and productivity. The ACEs will also create a demonstration effect by initiating innovative and practical higher education training programs, and help pilot higher education reforms that cultivate innovation in these priority areas.

12. **Some ACEs will have an industry focus in critical priority areas.** These include ACEs in the oil and gas sector, sustainable energy, phytochemicals, textiles sector, mining and ICT. Development in industry cuts across sectors, and can be put to work in businesses to innovate or produce. Natural resource abundant countries such as Kenya, Mozambique and Uganda are demanding civil, electrical and petroleum engineers, mechanical technicians and geoscientists. In countries where mining is important, there is a shortage of workers with skills and knowledge of mineral extraction and process. Energy generation is expected to grow by nine percent annually with a projected annual investment of over US\$10 billion. However, firm surveys state a shortage of highly skilled staff especially those with civil and electrical engineering degrees. Industry is important as professionals within these fields generate technological advancements and eventually set the speed for development.

13. **The ACEs that focus on agriculture aim to help increase agriculture productivity, which currently relies heavily on capacity and advancement in technology.** It is evident that agriculture will remain important for food security in ESA and some countries in the region such

as Uganda, which have the potential to become regional suppliers of food for an expanding food market. Building productive capacities in agriculture and strengthening the linkages between agriculture and higher education R&D are important to support sustainable economic development in the region. Impressive progress has been made in countries such as Uganda where technology is creating a considerable impact on aquaculture and organic farming. However, agricultural-productivity remains low and agriculture is still slow in adopting innovations in technology, such as fertilizer usage, mechanization and seeds of higher yield. ACE II focuses on essential areas that help with agriculture productivity, such as agribusiness, climate and environmental smart agriculture, and agricultural land management.

14. Africa’s unfavorable epidemiological, political, and demographic environment indicates a severe need in the health sector. There has been significant improvement in infant mortality and life expectancy rates in Africa, yet in overall terms, the level of health development in Africa is low compared with measures of health status in continents at similar stages of socioeconomic development. Life expectancy is 60 and 59 for Eastern and Southern Africa respectively, much lower than the global average of 71.⁷⁴ ESA is home to the largest number of malaria cases, and tuberculosis is spreading across the region. Although, the recent outbreak of Ebola caused more than 10,000 deaths in West Africa, nothing precludes similar outbreaks from occurring in ESA. Another issue is the lack of qualified health professionals. The current higher education system produces an insufficient number of healthcare professionals and many of them choose to emigrate.⁷⁵ In addition, the existing facilities and equipment mostly rely on foreign support and imports, which are not always best suited to the conditions at home. In light of the needs in the health development and healthcare sector, ACE II will focus on strengthening the capacity in pharm-bio technology, bio-medical engineering, molecular biology, and bio-physics among others.

15. Applied statistics capacity and quality of education are in great need of improvement. ACE II focuses on cross-cutting foundational themes such as applied statistics. The post-graduate training program will also help strengthen teaching quality in post-secondary schools. SSA is home to 150 million primary school students, 52 million secondary education students, and 7.2 million tertiary education students⁷⁶. Student teacher ratios at all education levels is higher than the rest of the world. The current teaching force is not sufficient to meet the demand with regard to both quantity and quality, especially in science disciplines. The rapid expansion on all education levels will drive more students into the education system and this needs teachers with better training and qualification. ACE II will effectively address the capacity issues by enhancing the quality of education, teaching development, e-learning, and creative design thinking. This will improve the quality of teachers, as well as help ESA countries seek innovative approaches to provide greater access to education and foster innovations in industry, and applied statistics—including big data, bioinformatics, and more.

⁷⁴ Accessed at: <http://www.statistica.com/statistics/274511/life-expectancy-in-africa/>;
<http://apps.who.int/gho/data/view.main.690?lang=en>.

⁷⁵ Accessed at: NEPAD <http://www.nepad.org/humancapitaldevelopment/news/1585/africa%E2%80%99s-health-%E2%80%93burden>.

⁷⁶ Accessed on November 1, 2015 at World Bank Edstats: <http://datatopics.worldbank.org/education/>

Private and Social Returns to Higher Education

16. In the field of economics of education, the private rate of return to an investment in higher education can be estimated by finding the rate of discount that equalizes the stream of discounted benefits to the stream of costs at a given point in time.⁷⁷ The Mincerian model⁷⁸ provides a more straightforward and clear method through linear regression to estimate returns using the semi-log earnings function. It compares additional earnings by different levels of education (Becker and Chiswick, 1966).⁷⁹ This model accounts for the costs and benefits of schooling as incurred and realized by the individual student who undertakes the investment (Mincer, 1974).⁸⁰ Simply put, earning differences (dependent variable) are associated with independent variables such as individuals' levels of education (primary, secondary and tertiary/university), labor market potential experience, and other parameters.

17. Private rates of return to higher education are higher than returns to primary and secondary education in the majority of ESA countries participating in this project. Enhancement in labor productivity through investment in human capital delivers a wage premium for those with higher qualifications. Empirical research shows that schooling helps propel individual labor productivity and subsequently increase earnings. Returns to schooling are high at the higher education level, and decrease at the secondary level. Tanzania has a 19.4 percent return to higher education, while it is 14.6 percent to primary education and 15 percent to secondary education levels. Estimated returns to schooling are higher for women than for men, especially in Africa. This is the case for Tanzania, Rwanda, Kenya, Mozambique, and Malawi. To a broader extent, social and non-market benefits are also associated with schooling—child health status and well-being, efficiency of consumer choices, and social capital (Montenegro & Patrinos, 2014).⁸¹

Table 5.2. Average returns to schooling by education levels and region

Country	Total			Male			Female		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
Tanzania (2011)	14.6	15	19.4	...	12.6	...	4.8	18.3	18.7
Rwanda (2010)	34.1	19.7	28.8	30.4	20.6	26	35.8	20.7	32.9
Uganda (2010)	24.8	16.7	...	22.2	16.3	...	31.9	18.8	...
Ethiopia (2005)	32.7	16.2	17	31.7	13.6	16.9	25.9	20.7	16.8
Kenya (2005)	17.6	15.9	22.4	19.1	14.5	21.2	9.6	19.6	24.9
Mozambique (2008)	20.2	13.3	17.7	19.5	13.2	17.6	22.5	14.3	17.7
Malawi (2010)	...	...	24.2	...	...	23.9	...	...	26

⁷⁷ $\sum_{i=1}^{65-23} \frac{(W_U - W_S)_t}{(1+r)^t} = \sum_{i=1}^{23-18} (W_S + C_U)_t * (1+r)^t$ (1)

⁷⁸ $\ln(w_i) = \alpha + \beta_p Dp_i + \beta_s Ds_i + \beta_t Du_i + \beta_1 X_i + \beta_2 X_i^2 + \mu_i$ (2)

⁷⁹ Becker, G.S., and B.R. Chiswick. 1966. "Education and the distribution of earnings," *American Economic Review*, 56: 358-69.

⁸⁰ See footnote #69.

⁸¹ See footnote #71.

Zambia (2010)	...	8.2	18.2	...	9.5	19.6	2.9	8.1	16.6
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Source: Montenegro, C.E., and H. Patrinos. 2014. *Comparable Estimates of Returns to Schooling around the World. Policy Research Working Paper No. 7020. Washington, DC: World Bank.*

18. **Social returns to higher education come in various forms and are significant in the region.** By definition, social returns are based on the costs and benefits of education to the state or society as a whole. Separate from the students’ out of pocket payments and the opportunity costs with regard to forgoing current earnings, the society bears the costs of providing pre-tertiary education and subsidizing higher level education. Similarly, in setting aside the private earnings before tax (because taxes are a zero-sum-game regarding the social calculus), society benefits from the overall productivity differential caused by one additional higher education graduate (Psacharopoulos, 2009).⁸² In the context of developing countries, a simplified calculation of social returns accounts for the cost differences follows: social cost of higher education equals to forgone earning (difference in average number of years of schooling) plus additional cost of schooling (public investment plus private investment/household spending into higher education); private cost of certain education equals forgone earnings (difference in average number of years of schooling) plus additional cost of schooling (only private investment/household spending). Through this type of calculation, social returns to higher education are significantly high in ESA countries.

Table 5.3. Examples of market and non-market benefits of education⁸³

	Private	Public and Social
Market:	Employability and higher earnings; Less unemployment; Labor market flexibility; Greater mobility	Higher productivity; Higher net tax revenue; Less reliance on government financial support
Non-market:	Better consumer efficiency; Better individual and family health; Better children quality	Reduced crime; Less spread of infectious diseases; Lower fertility; Better social cohesion; Voter participation

19. **In addition to addressing skills shortage and strengthening R&D capacity, investing in higher education in Africa also brings positive externalities to the society.** Better informed and educated individuals are possibly bringing more potential positive externalities to the society. This includes: the overall labor productivity enhancement—skilled workers raise the productivity of non-skilled workers, known as the **cluster effect**; and the government tax income increase from individuals’ higher salaries and consumption, known as the **multiplier effect**. These positive externalities could be seen as part of the public and social returns to higher education. Though they are widely recognized in academia and industry, the amount of externalities is extremely difficult to measure. **Entrepreneurial innovation** is another important externality from higher education. Better educated individuals bring more innovation and initiate more activities to the benefit of their own, stimulate market dynamics, and potentially create more employment opportunities for the less educated. Social and public returns concern benefits of the entire society from investments into higher education. Some other positive externalities such as **benefits to the**

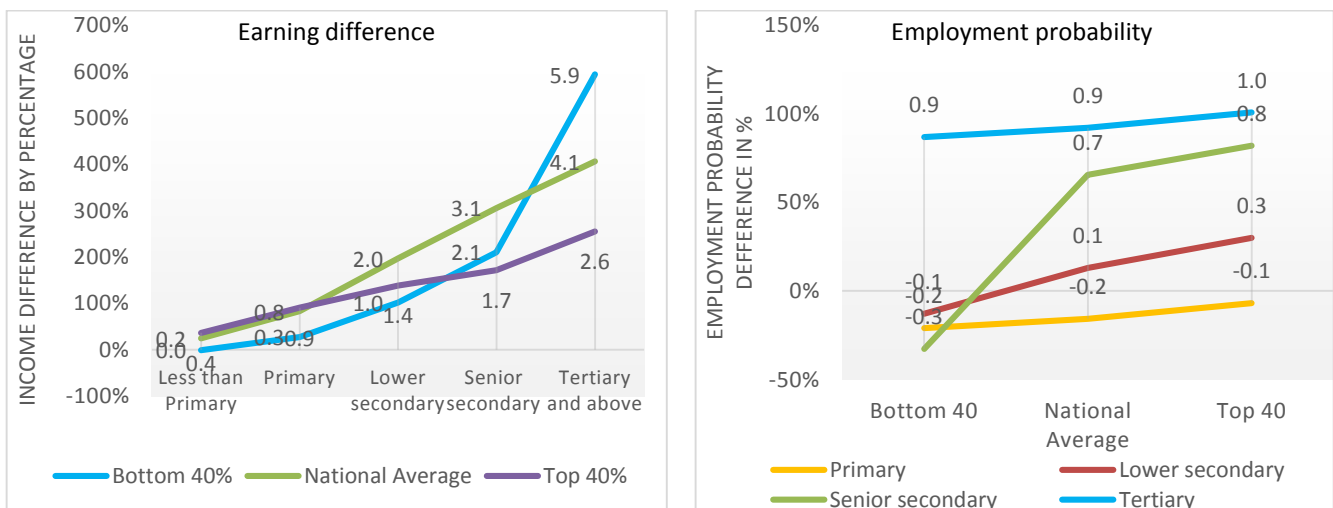
⁸² Psacharopoulos, G. 2009. “Returns to investment in higher education. A European Survey,” a contribution to the Higher Education Funding Reform Project CHEPS-led consortium for the European Commission.

⁸³ Source: Psacharopoulos, 2009 (see footnote #84).

environment, social health, and community services such as education, common safety and others are harder to measure and attribute. Investing in higher education helps a country accumulate human capital and in turn brings a more productive labor force.

20. **Social mobility could be stimulated through changes in education, health, and income status across different socioeconomic levels.** Earning differences and employment probabilities are projected through the Heckman model calculation. Through a two-step statistical approach, the Heckman model computes income differences and employment probabilities by correcting the non-randomly selected sample biases. The first stage is to calculate the probability of working/employment in a *probit regression* of the form: $Prob(D = 1|Z) = \varphi(Z\gamma)$ (3) where D represents dummy variable employment, Z is a vector of explanatory variables, γ is a vector of unknown parameters, and φ is the cumulative distribution function of the standard normal distribution. In the second stage, the model corrects itself through self-selection by incorporating a transformation of predicted probabilities. The conditional expectation of wage is $E[\omega|X, D = 1] = X\beta + E[u|X, D = 1]$ (4).⁸⁴ In the case of Rwanda, the results of the calculation prove that higher education not only increases earnings for the higher education graduates from low income families, but also dramatically boosts their probability for employment in the labor market. The Heckman model shares the finding with conventional observation in the labor markets in ESA countries—the unemployment rate for people who have completed higher education or received some level of higher education is almost close to zero. In other words, people with some level of higher education are much more likely to obtain jobs than those without. This is another justification that investment in higher education in ESA countries is not producing an oversupply of higher degree holders with corresponding demands from the labor market. In fact, the labor markets and the economies are dynamic enough to absorb high-skilled professionals.

Figure 5.1. Earning and employment probability differences by education level and income groups, Rwanda



Source: Author Estimates.

⁸⁴ Under the assumption that the error terms are jointly normal, the function then goes to $E[\omega|X, D = 1] = X\beta + \rho\sigma_u\lambda(Z\gamma)$ (5).

21. **Higher education helps stimulate social mobility among different socioeconomic classes, and enhances social inclusion.** Social mobility is realized by changes in education, employment, and income. When there is predominant inequality in access to resources, education plays a key role in leading individuals to break through social barriers. Social and family origins determine occupation choices and wages. Returns to schooling and employment probability dynamics suggest that tertiary education stimulates social mobility. Earnings are significantly higher for higher education graduates. Typically, people who come from higher socioeconomic classes tend to remain privileged. However, obtaining higher education makes tremendous differences for students who come from poorer family backgrounds. This is the effect across a single generation. In addition, higher education also makes changes in inter-generational occupational choices possible. Studies have shown that students who do not receive better education and come from poorer families will most likely stay within the “family business.” This means that the descendants of farmers and businessmen will mostly likely stay as farmers and businessmen if they do not continue schooling. Those from higher income groups on the other hand may continue to pursue careers that maximize private returns and those with significant upward mobility may select occupations that keep them close to their communities (teachers, nurses, etc.). Higher education also helps people with a better employment probability in the labor market. The employment probability and wage premium impact on poor people is much higher than on richer people.

Justification of Public Investment

22. **Market failures in ESA are causing under-investment in higher education, and therefore justify public sector involvement.** Information asymmetry and poaching for better skilled labor are two of the main reasons for market failure in the region. Human capital theories argue that individuals’ investment in education is proportionate to their perceived costs and expected returns. However in imperfect markets in SSA, it is difficult for individuals to assess costs and benefits and pursue optimal plans. Employment probability, job types, and income level do not purely reflect the productivity and skill level of employees. Therefore, individuals may choose to under-invest in skills development. This may set constraints to the increasing business and investments in oil, gas, mining and agriculture. Firms are dis-incentivized in providing internal training due to the potential loss of talent and the high turnover rate of skilled workers. ACE II and public sector involvement are critical because lower scaled capacity training in science, technology, agriculture, health, and engineering fail to address the gap between the supply and demand of high-skilled professionals in the labor market.

The World Bank’s Value Addition

23. **The Bank’s convening role in bringing global expertise to help ESA on the ACEs, along with its rich experience in higher education will ensure that its involvement is effective and valuable.** The Bank has supported higher education investment and systematic interventions in many countries and regions across the world. The past years of activities have also entailed detailed reviews and impact evaluations on these projects. In addition, technical experts and research groups within the Bank have conducted numerous studies to evaluate and assess the effectiveness of higher education interventions donor agencies in the world (the Bank included). This will serve as a solid foundation to guide operational activities and direction for government policies.

24. **The successful implementation of ACE I is a good example of the Bank's value addition.** With similar project objectives, ACE I supports recipients in promoting regional specialization among participating universities in areas that address regional challenges and strengthen the capacities to deliver quality training and applied research. With eight ACEs in Industry, five ACEs in agriculture, and six ACEs on health established, the Bank helps mobilize resources to fulfill regional needs in West and Central Africa. The partnering countries have responded very positively to the Bank's intervention and expertise. The demand for similar projects in ESA is significant.

25. **The proposed project is one of the two largest investments in the region, specifically on higher education with a practical target on regional needs.** The project aims to invest in higher education and help build capacity in a larger scale across countries in ESA. The ACEs will broadly and positively influence R&D capacity, S&T advancement, innovation and creativity in various disciplines and agriculture productivity. This is in line with the need for high-skilled labor, pioneering higher education institutions, and the overall economic and industrial sector development trends in ESA.

Cost-Benefit Analysis

26. **This section summarizes CBA for this project and the results indicate that in select project countries the IRR⁸⁵ is significant.** The economic feasibility of the project is measured by the calculation of the IRRs for each country. The calculations were done for six countries where data was available using wage compensation data for 75 occupations from the International Comparison Program (ICP).⁸⁶ The IRR is calculated based on the proposed investment for the project, and the probability of ACE selection across countries. The calculation of the IRR for the countries ranges from nine percent to 15 percent, and is conducted by the following method:

$$R_{k/(k-1)} = \frac{\pi_k \overline{Y}_k - \pi_{k-1} \overline{Y}_{k-1}}{N_{k-1/k} \pi_{k-1} \overline{Y}_{k-1} + N_k C_k} \quad (6)$$

where π_k is the employment rate of individuals with education level k; \overline{Y}_k is the simulated income of level k, N_k is the average duration of schooling years, within level k, $N_{k-1/k}$ is the difference between levels k and k-1 (years of schooling attended) and C_k is the direct training cost.

27. **The CBA mainly focuses on private costs and benefits.** Private benefits are solely measured through life-long individual earnings. It is hard to quantify other benefits such as quality of life, mobility, and externalities, such as the impact of higher education graduates on co-workers, and knowledge sharing. Private costs are calculated through university costs and opportunity costs of forgone earnings.

⁸⁵ The IRR is a profitability metric that is used to determine which projects are likely to yield the greatest return per dollar of investment. Though it is closely related to the net present value, the IRR reflects anticipated gains as a percentage of the initial investment rather than as a net dollar amount.

⁸⁶ The ICP is a worldwide statistical partnership to collect comparative price data and compile detailed expenditure values of countries' GDP, and to estimate purchasing power parities of the world's economies. Using purchasing power parities instead of market exchange rates to convert currencies makes it possible to compare the output of economies and the welfare of their inhabitants in real terms (that is, controlling for differences in price levels).

28. **The CBA estimates the gains that an individual with an undergraduate degree avails after enrolling in a Master's Degree, Specialized Short Course or Doctorate Degree.** Five steps are conducted in the analysis to compute the private IRR. First, using detailed occupational data from ICP, average wage earnings are computed for a selected set of occupations that correspond to undergraduate degree and post-undergraduate degrees. This gives the average income of those with an undergraduate degree and Master's and above. Second, private costs are computed through measuring education⁸⁷ and opportunity costs of enrolling in post-undergraduate programs. It is assumed that on average, every individual who enrolls in higher education takes three years to complete their degree and that he or she works for 40 years. Third, based on the total projected graduates and project investment in each country, project costs are measured for each individual over a 43 year period.⁸⁸ Fourth, total cost and benefits are computed and discounted at various rates. The total benefits are measured by the wage earnings after completing a post-undergraduate degree and total cost is a sum of education cost, opportunity cost and project cost. Lastly, net benefits are calculated using the discounted costs and benefits to get the IRR for each country.

Assumptions:

29. **The CBA analysis is done for each country⁸⁹ based on the expected ACEs in each client country and the likely graduates produced during the lifetime of the project.** The base-case assumes an "average" individual who has completed an undergraduate degree and is deciding between enrolling in higher education (Master's and above) or entering the workforce. The IRRs for each individual in each country are calculated under the following assumptions.

- (a) **Higher education degree duration.** It is assumed that on average, every individual in the CBA analysis takes three years to complete post-undergraduate degree. It includes all individuals who enroll in Master's degrees, short courses, and doctorate degrees, but because each of these degrees take different amounts of time to complete, it is assumed that the average degree completion period is three years.
- (b) **No scholarships.** It is assumed that no scholarships are awarded to any of the graduates. If scholarship is awarded, it will increase the individual's private IRR, because education costs will be zero.
- (c) **Employment.** According to studies on returns to higher education and labor force surveys, higher education graduates are more likely to be employed than those without a higher education degree. This analysis assumes that all graduates find employment after graduation. The sensitivity analysis is done with employment levels at 60 percent and 80 percent and the IRR results are reported in Table 5.5.
- (d) **Annual wage.** Annual earnings grow at a rate of 1.5 percent for post-undergraduate graduates and 1.2 percent for undergraduates. Average annual earnings are calculated using wage compensation data from the ICP.
- (e) **Projected ACE II placement.** This represents the probability of the number of ACEs being selected for each country, based on the enrollment of students in tertiary education.

⁸⁷ Education costs are calculated by looking at various university tuition fees for post-undergraduate degree programs.

⁸⁸ Three years of education and 40 years of work experience.

⁸⁹ Country for which data is available.

- (f) **Projected project investment.** This represents the likely investment in each country, based on the probable number of ACEs selected.
- (g) **Projected graduates.** This represents the amount of projected graduates from the ACEs over the five year project term.
- (h) **Drop out.** It is assumed that no enrolled graduate in the ACE project drops out.
- (i) **Benefits.** These are measured in terms of income earned by the individual after completion of post-undergraduate training.⁹⁰
- (j) **Opportunity Cost.** Forgone income earnings that an individual with undergraduate degree would have otherwise earned if not enrolled in post-undergraduate training.
- (k) **Retirement Age.** It is assumed that on average, every graduate works for 40 years after the completion of the degree program. This average includes people who would work less than 40 years as well as more than 40 years.
- (l) **Inflation.** Analysis uses inflation rates varied by country, according to Consumer Price Index rates.

30. **Table 5.4 details the IRR for the eight countries participating in ACE II.** The IRR ranges from 9 percent to 15 percent (Ethiopia – 12 percent, Kenya – 10 percent, Malawi – 9 percent, Mozambique – 14 percent, Rwanda – 15 percent, Tanzania – 14 percent, Uganda – 11 percent, and Zambia – 15 percent). The rates of return to the project are positive, even though the reported results account for only a small percentage of the overall benefits of the project.

Table 5.4. Private Internal Rate of Return

Country	Projected Project Investment (USD)	Projected ACE Placement	Projected Graduates	IRR (%)
Ethiopia	24,000,000	6	698	12
Kenya	18,000,000	4	160	10
Malawi	12,000,000	1	200	9
Mozambique	6,000,000	2	130	14
Rwanda	20,000,000	1	364	15
Tanzania	24,000,000	2	323	14
Uganda	24,000,000	3	170	11
Zambia	12,000,000	1	422	15

Source: Author's calculations using the available data from ICP and various Living Standards Measurement Study surveys⁹¹

⁹⁰ The economic analysis for ACE II is not comparing the ACE II programs to the skills development specialized or TVET programs existing in particular countries. The majority of the ACE II graduates will be coming from one year short-term skills training program.

⁹¹ Ethiopia – *Household Income, Consumption And Expenditure Survey Questionnaire*, 2005; Kenya – *Integrated Household Budget Survey*, 2005; Malawi – *Integrated Household Survey (III)*, 2010; Mozambique – *Household Budget Survey – Iof*, 2009; Rwanda – *Enquete Intégrale Sur Les Conditions De Vie Des Ménages*, 2010; Tanzania – *National Panel Survey*, 2010; Uganda – *National Panel Survey*, 2010; and Zambia – *Living Conditions Monitoring Survey Vi*, 2010.

Sensitivity Analysis

31. **The sensitivity analysis relaxes the base-case assumptions in order to observe the fluctuations of the IRR under different scenarios.** Sensitivity analysis can be performed in various ways by changing the assumptions mentioned above. Given that benefits are mainly measured using wage earnings, the sensitivity analysis is conducted using different levels of employment. The reported results show that the IRRs remain positive. Table 5 shows IRR fluctuations based on 60 percent employment and 80 percent employment.

Table 5.5. Sensitivity Analysis

	60% Employment		80% Employment	
	Graduates	IRR (%)	Graduates	IRR (%)
Ethiopia	419	7	559	10
Kenya	96	4	128	7
Malawi	120	2	160	6
Mozambique	78	7	104	11
Rwanda	218	8	291	13
Tanzania	194	9	258	12
Uganda	102	3	136	8
Zambia	253	13	338	14

Summary of Financial Indicators

32. **The cost of an ACE represents only a small portion of the public expenditure on higher education.** An ACE will be awarded up to US\$6 million over five years. However, the total annual expected expenditure for the ACEs will vary by country. For example, the only ACE in Mozambique, will have an annual expected expenditure of US\$1.2 million, whereas an ACE in Ethiopia, Uganda and Tanzania will have an annual expected expenditure of US\$4.8 million. The share of ACE expenditure as a percentage of government expenditure on tertiary education is only 0.5 percent in Ethiopia, 1.2 percent in Rwanda, 1.7 percent in Mozambique, 2.4 percent in Tanzania, 2.8 percent in Malawi and 6.4 percent in Uganda.

Table 5.6: Key Financial Indicators for Higher Education

Country (2013)	Govt. Exp. – Education as % of GDP (%)	Govt. Exp. – Tertiary Educ. as % of GDP (%)	Exp. – Educ. as % of Total Govt. Exp. (%)	Exp. – Tertiary as % of Govt. Exp. On Educ. (%)	GDP Current (USD) (billions)	Annual expected ACE Exp. – Country (US\$) (millions)	Expected Annual ACE (% Exp. – Share of Govt. Exp. – Tertiary Educ.
Ethiopia	4.5	1.9	27.0	42.7	47.6	4.8	0.5
Malawi	7.7	2.2	20.4	28.4	3.9	2.4	2.8
Mozambique	6.7	0.9	19.0	13.7	7.5	1.2	1.7
Rwanda	5.0	0.7	16.6	14.0	44.4	3.6	1.2
Tanzania	3.5	0.8	17.3	13.8	27	4.8	2.4
Uganda	2.2	0.3	11.8	21.4	24.7	4.8	6.4

Annex 6: ACEs selected under the ACE II Project

AFRICA: Eastern and Southern Africa Higher Education Centers of Excellence Project (P151847)

Country	Institution	Africa Center of Excellence (ACE)
Ethiopia	Addis Ababa University	ACE for Water Management
	Addis Ababa University	African Railway Education & Research Institute
	Addis Ababa University	Center for Innovative Drug Development & Therapeutic Trials for Africa
	Haramaya University	ACE for Climate Smart Agriculture and Biodiversity Conservation
Kenya	Egerton University	Center of Excellence in Sustainable Agriculture & Agribusiness Management
	Jaramogi Oginga Odinga University of Science & Technology	Center of Excellence in Sustainable Use of Insects as Food and Feeds
	Moi University	Center of Excellence in Phytochemicals, Textiles and Renewable Energy
Malawi	Lilongwe University of Agriculture & Natural Resources	African Center of Excellence for Aquaculture and Fisheries Science
	University of Malawi – Malawi College of Medicine	African Center of Excellence for Public Health and Herbal Medicine
Mozambique	Universidade Eduardo Mondlane	Center of Studies in Oil and Gas Engineering and Technology
Rwanda	University of Rwanda -College of Business & Economics	African Center of Excellence for Data Sciences
	University of Rwanda – College of Science & Technology	African Center of Excellence in Energy for Sustainable Development
	University of Rwanda – College of Science & Technology	African Center of Excellence in Internet of Things
	University of Rwanda – College of Education	African Center of Excellence for Innovative Teaching and Learning Mathematics and Science
Tanzania	Nelson Mandela African Institution of Science & Technology	Collaborating Center for Research, Evidence, Agricultural Advancement & Teaching Excellence & Sustainability
	Nelson Mandela African Institution of Science & Technology	Water Infrastructure & Sustainable Energy Center for the Future
	Sokoine University of Agriculture	African Center of Excellence for Innovative Rodent Pest Management & Biosensor Technology Development
	Sokoine University of Agriculture	Southern African Center for Infectious Disease Surveillance
Uganda	Makerere University	Center of Materials, Product Development and Nanotechnology
	Makerere University	Makerere University Center for Crop Improvement
	Mbarara University of Science & Technology	Pharm-Biotechnology and Traditional Medicine Center
	Uganda Martyrs University	African Center for Agro-Ecology & Livelihood Systems
Zambia	Copperbelt University	Africa Center of Excellence for Sustainable Mining
	University of Zambia	Africa Center of Excellence for Infectious Diseases of Humans & Animals