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Report No: PAD2581

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 61.8 MILLION
(US$90.0 MILLION EQUIVALENT)

TO THE

KINGDOM OF CAMBODIA

FOR A

HIGHER EDUCATION IMPROVEMENT PROJECT

April 5, 2018

Education Global Practice
East Asia And Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 31, 2018)

Currency Unit	=	Cambodia Riels
KHR 4041	=	US$1
US$1.45712	=	SDR 1

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Victoria Kwakwa
Country Director:	Ellen Goldstein
Senior Global Practice Director:	Jaime Saavedra Chanduvi
Practice Manager:	Harry Anthony Patrinos
Task Team Leader(s):	Tsuyoshi Fukao and Simeth Beng

ABBREVIATIONS AND ACRONYMS

ACC	Accreditation Committee of Cambodia
AEC	ASEAN Economic Community
AOP	Annual Operation Plan
BoD	Board of Directors
CAS	Country Assistant Strategy
CBA	Cost-Benefit Analysis
CEN	Country Engagement Note
CESSP	Cambodia Education Sector Support Project
CQS	Selection Based on the Consultants Qualifications
CTA	Chief Technical Advisor
DA	Designated Account
DGHE	Directorate General of Higher Education
DHE	Department of Higher Education
DoF	Department of Finance
DP	Development Partner
ECoP	Environmental Codes of Practice
EMP	Environmental Management Plan
ERC	Education Research Council
ERM	Emergency Response Manual
ESMF	Environmental and Social Management Framework
ESP	Education Sector Plan
FDI	Foreign Direct Investment
FM	Financial Management
FMIS	Financial Management Information System
FMM	Financial Management Manual
GDP	Gross Domestic Product
GNI	Gross National Income
GPE	Global Partnership for Education
GRS	Grievance Redress Service
HEI	Higher Education Institution
HEIP	Higher Education Improvement Project
HEMIS	Higher Education Management Information System
HEQCIP	Higher Education Quality and Capacity Improvement Project
HR	Human Resource
IAD	Internal Audit Department
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDP	Industrial Development Policy
IFR	Interim unaudited Financial Report

IP	Indigenous People
IPF	Investment Project Financing
IQA	Internal Quality Assurance
IRR	Internal Rate of Return
ITC	Institute of Technology Cambodia
JICA	Japan International Cooperation Agency
M&E	Monitoring and Evaluation
MAFF	Ministry of Agriculture, Forestry and Fisheries
MEF	Ministry of Economy and Finance
MoEYS	Ministry of Education, Youth and Sport
NBC	National Bank of Cambodia
NCB	National Competitive Bidding
NPV	Net Present Value
PAD	Project Appraisal Document
PDO	Project Development Objective
PMC	Project Management Committee
PMT	Project Management Team
POM	Project Operations Manual
PPSD	Project Procurement Strategy for Development
PT	Project Team
R&D	Research and Development
RGC	Royal Government of Cambodia
RUA	Royal University of Agriculture
RUPP	Royal University of Phnom Penh
S&T	Science and Technology
SESSP	Second Education Sector Support Project
SEIP	Secondary Education Improvement Project
SIDA	Swedish International Development Agency
SRU	Svay Rieng University
STEM	Science, Technology, Engineering and Mathematics
TA	Technical Assistance
UBB	University of Battambang

BASIC INFORMATION

Is this a regionally tagged project?	Country(ies)	Financing Instrument
No		Investment Project Financing

[ ] Situations of Urgent Need of Assistance or Capacity Constraints

[ ] Financial Intermediaries

[ ] Series of Projects

Approval Date	Closing Date	Environmental Assessment Category
26-Apr-2018	30-Jun-2024	B - Partial Assessment

Bank/IFC Collaboration
No

Proposed Development Objective(s)

The PDO of HEIP is to improve the quality and relevance of higher education and research mainly in STEM and agriculture at targeted higher education institutions, and to improve governance in the sector.

Components

Component Name	Cost (US$, millions)
Component 1: Improving Teaching and Learning Capacity	63.70
Component 2: Improving Research in STEM and Agriculture	15.80
Component 3: Strengthen Sectoral Governance and Project Management	13.00
Component 4: Contingent Emergency Response	0.00

Organizations

Borrower : KINGDOM OF CAMBODIA

Implementing Agency : Ministry of Education, Youth and Sport

PROJECT FINANCING DATA (US$, Millions)

[✓] Counterpart Funding	[ ] IBRD	[✓] IDA Credit	[ ] IDA Grant	[ ] Trust Funds	[ ] Parallel Financing

Total Project Cost:	Total Financing:	Financing Gap:
92.50	92.50	0.00
	Of Which Bank Financing (IBRD/IDA): 90.00	

Financing (in US$, millions)

Financing Source	Amount
Borrowing Agency	2.50
IDA-62210	90.00
Total	**92.50**

Expected Disbursements (in US$, millions)

Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025
Annual	0.09	6.80	11.79	15.74	18.25	18.79	18.20	0.32
Cumulative	0.09	6.90	18.69	34.43	52.68	71.47	89.68	90.00

INSTITUTIONAL DATA

Practice Area (Lead)

Education

Contributing Practice Areas

Gender
Jobs

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

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	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Low
8. Stakeholders	Moderate
9. Other	
10. Overall	Moderate

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Natural Habitats OP/BP 4.04		✓
Forests OP/BP 4.36		✓
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11		✓
Indigenous Peoples OP/BP 4.10	✓	
Involuntary Resettlement OP/BP 4.12		✓
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

Institutional Arrangements (Section I.A): The Recipient shall maintain, and cause to be maintained, throughout the period of implementation of the Project, the following structures, all with functions, composition, staffing and resources acceptable to the Association: (1) the Project management committee; (2) the Project management team in the MoEYS; (3) Project teams within the DGHE, the ACC, and each HEI participating in the Project; (4) a partnerships and research committee; and (5) a private sector advisory committee.

Sections and Description

Project Operational Manual (Section I.B): The Recipient shall ensure that the Project is carried out in accordance with the arrangements and procedures set out in the Project Operational Manual (provided, however, that in the case of any conflict between the arrangements and procedures set out in the said manual and the provisions of this Agreement, the provisions of this Agreement shall prevail) and, except as the Association shall otherwise

agree in writing, shall not amend, abrogate or waive any provision of the said manual. The Recipient shall, not later than June 30, 2019, finalize and adopt a sub-manual (as part of the overall Project Operational Manual) in form and substance satisfactory to the Association, detailing the eligibility criteria and approval and administration arrangements for Grants to eligible private HEIs.

Sections and Description

Annual Works Plans and Budgets (Section I.C.1 and 2): The Recipient shall furnish to the Association, no later than December 1 of each year, an annual work plan and budget for the Project for the following Fiscal Year, in a manner and substance satisfactory to the Association, and thereafter implement the activities under the Project during the relevant Fiscal Year in accordance with such plan and budget.

Sections and Description

Safeguards (Section I.E.1): The Recipient shall implement or cause the Safeguards Instruments to be implemented in a manner and substance satisfactory to the Association.

Sections and Description

Contingent Emergency Response (Section I.F.1): The Recipient shall adopt a satisfactory Emergency Response Manual (ERM) for Component 4 of the project and, in the event of an eligible crisis or emergency, ensure that the activities under said Component are carried out in accordance with such Manual and all relevant safeguard requirements.

Sections and Description

Subprojects (Section I.D): No Subproject shall be eligible for financing out of the proceeds of the Financing unless such Subproject has been prepared, approved and implemented in accordance with the criteria, guidelines and procedures set forth in the Project Operational Manual, and Grant Agreements have been signed between MoEYS and each selected HEI in accordance with the terms and conditions specified in the Financing Agreement and the Project Operational Manual.

Conditions

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Tsuyoshi Fukao	Team Leader(ADM Responsible)	Education	GED02

Simeth Beng	Team Leader	Operation	GED02
Latharo Lor	Procurement Specialist(ADM Responsible)	Procurement	GGOPP
Reaksmey Keo Sok	Financial Management Specialist	FM	GGOEP
Anna Coronado	Team Member	Operation	OPSIL
Dilaka Lathapipat	Team Member	Economist	GED02
Makathy Tep	Environmental Safeguards Specialist	Environmental	GED02
Manush A. Hristov	Counsel	Legal	LEGES
Martin Henry Lenihan	Social Safeguards Specialist	Social	GSU02
Michael F. Crawford	Team Member	Higher Education	GED02
Mokhlesur Rahman	Team Member	Higher Education	GED06
Ravan Chieap	Team Member	Assistant	EACSF

Extended Team

Name	Title	Organization	Location
Fata No	Education Specialist, Consultant	The World Bank Phnom Penh Office	
Omporn Regel	Consultant		
Will Brehm	Consultant		

CAMBODIA
HIGHER EDUCATION IMPROVEMENT PROJECT

TABLE OF CONTENTS

I. STRATEGIC CONTEXT

A. Country Context

1. Cambodia has experienced macroeconomic stability since the late 1990s and remarkable economic growth. It grew by an average annual rate per capita of 7.7 percent in 2000-2015, ranking among the top 15 economies in the world in terms of economic growth. GDP per capita increased fivefold, from US$ 253 in 1993 to around US$ 1,265 in 2016. Cambodia reached the lower middle income status in 2015. The main drivers of growth have been garment exports, agriculture, tourism and, more recently, construction and real estate. Economic growth eased in the aftermath of the 2009 global crisis, while on average remaining strong, at 7.2 percent in 2010-2015. Growth remained strong in 2016, at 7.0 percent, although some moderation in garment exports and construction has been observed in the first half of 2017. However, robust domestic demand, boosted by rising FDI inflows, continued low oil prices, export diversification, and a recovery in tourist arrivals, are expected partly offset moderation of growth in those sectors.

2. The sustained economic performance has lifted a large proportion of the population above the national poverty line, but Cambodia is still one of the poorest countries in Southeast Asia. Between 2007 and 2013, the incidence of poverty as measured by the proportion of the population living below the national poverty line declined from 47.8 percent to 13.5 percent of the population, leading the country to meet its Millennium Development Goal (MDG) before the 2015 deadline. Most of the poverty reduction occurred between 2007 and 2009, when the headcount rate declined by 20 percentage points, driven by a significant hike in the price of rice, the main agricultural product of Cambodia. Despite this progress, the vast majority of the families that rose above the poverty line did so by a small margin, leaving them at risk in the event of an adverse shock. Poverty reduction in Cambodia has been accompanied by shared prosperity: the real consumption growth of the bottom 40 percent of the distribution was larger than that of the top 60 percent. This was accompanied by a decrease in inequality.

3. The overall welfare of households described by non-monetary indicators has improved significantly throughout the 2004-2014 period, nonetheless, several challenges remain. Cambodia achieved most of the MDG targets, including those related to poverty reduction, child mortality and maternal mortality. Targets in primary education have been nearly achieved, whereas areas such as gender equality and environmental sustainability have seen less progress. Moreover, the incidence of and death rate due to tuberculosis remain high. Cambodia's Human Development Index in 2015 (UNDP) was 0.56, well below the East Asia Pacific average of 0.72, and also lower than the medium income countries average of 0.63.

B. Sectoral and Institutional Context

4. Cambodia’s recent economic success has been built largely on the expansion of relatively low-technology, low wage/skill production in such industries as textiles, apparel, and basic electronics, and sustained by a steady flow of foreign investment. However, Cambodia’s comparative advantage in these

industries is being eroded as wages rise. In order to remain competitive, Cambodia must address an increasingly serious human resource constraint in the form of rising shortages of in Science, Technology, Engineering and Mathematics (STEM) produced by the universities. In 2015-16, few students enrolled in STEM and agriculture fields, including 5 percent in natural and physical sciences, 7 percent in information technology, 3 percent in engineering and related technology, and 4 percent in agriculture and environmental-related studies[1].

5. The Royal Government of Cambodia (RGC) realizes education's potential to spur growth by providing more relevant and better skills needed to move the country up the value chain and produce more sophisticated knowledge-intensive products such as food processing and information technology. The country's National Socio-Economic Development Plan (2014-2018) and Industrial Development Policy (2015-2025) specifically call for creating a competitive economy through knowledge and innovation; The Ministry of Education, Youth and Sport (MoEYS) has approved a Higher Education Roadmap that intends to increase the quality and relevance of the sector; and Higher Education Institutions (HEIs) in two Special Economic Zones aim to help diversify the industrial development of the country.

6. In 1997, there were only eight HEIs. By 2016, the number increased to 121. Much of the growth in the sub-sector came from private HEIs, which were first allowed to open in 1997. Today there are 78 private HEIs, representing 64 percent of the total number of HEIs.[2] Institutional expansion has subsequently increased the total enrollment, from fewer than 20,000 students in the 1990s to 174,000 today, including 106,000 in private HEIs.

7. Although the increase in HEIs has expanded student enrollment, most students have concentrated in social science, business, and law. These fields proliferated because they require low investment and faculty members with less-specialized skills. In scientific fields, by contrast, there has been low enrollment because of the high unit cost and limited availability of highly skilled faculty members, particularly for private HEIs. Today, only one out of five students major in STEM and agriculture. Of these students, only one-third are enrolled in private HEIs, highlighting the low private investment in these subjects.

8. Despite the growth of the sub-sector, higher education in Cambodia lags regional neighbors. Only a small percentage of Cambodians enroll in higher education. According to the latest available data, the share of adult population aged 25 years or more who have completed at least a short cycle tertiary education in Cambodia is a mere 3 percent (2014) while the corresponding figures for Vietnam and Korea are 7 percent (2009) and 35 percent (2010) respectively. The tertiary gross enrollment ratio is also low at 12 percent (2011) compared to 30 percent (2014) for Vietnam and 98 percent (2013) for Korea.

9. Cambodia not only has a relatively small higher education sector, but also has few students enrolled in scientific and technical degrees that require research. Only 12 percent (2011) of Cambodian tertiary graduates completed their studies in STEM subjects. This compares unfavorably to the 24 percent (2013) recorded for Vietnam and 35 percent (2013) for Korea. Gross expenditure on research and development, meanwhile, totals only 0.08 percent of GDP in 2016[3] compared to 0.2 percent (2011) for

[1] Demand and supplies of university graduates in Cambodia (Neak, 2017)
[2] Operating under 16 different ministries/agencies.
[3] Estimated at 0.08 percent by the task team for economic analysis based on available data.

Vietnam and 4 percent (2014) for Korea. International experiences show it takes decades to build high-quality research capacity and a critical mass of human capital in a tertiary education system, so actions need to be taken now to reverse underinvestment and lack of effectiveness.

10. Cambodia's future economic competitiveness depends, inter alia, on producing quality tertiary graduates in STEM and agricultural subjects as well as increasing its research and development capacity. Improvement of higher education in STEM and agriculture will produce highly-skilled graduates who can fill leadership roles in Cambodia's technological transformation. This will help Cambodia to transition its economy to high-skill industries.

C. Government Reform Agenda Responding to Challenges

11. To address the requirements of the IDP, Directorate General of Higher Education (DGHE) of MoEYS developed and approved a Higher Education Road Map. The Road Map is a holistic strategy for higher education sector development and aims to equip Cambodian graduates to meet the rapidly changing economic demands and the increasing opportunities for mobility and technology transfer within the AEC and beyond. The Road Map focuses on three key sectoral policy areas: (a) **quality and relevance**; (b) **access and equity**; and (c) **governance**.

12. With respect to **quality and relevance**, the Road Map prioritizes the improvement of human resources and physical infrastructure. The current environment is marked by a low ratio of PhD holders among HEI lecturers (less than 8 percent in 2015), minimal research opportunities for both professors and students, and limited facilities and student services (e.g. the student classroom ratio at four top HEIs is 114:1, and the student laboratory ratio is 230:1). Major strategies to improve quality and relevance focus on: (a) making curriculum (e.g., syllabi) more relevant to economic needs; (b) strengthening human resources to conduct inquiry-based teaching and learning; (c) increasing advanced research opportunities in priority subject areas; and (d) modernizing physical infrastructure in line with the investment on human resources and research.

13. Increasing the quality of higher education requires more than physical infrastructure. Highly skilled faculty members capable of teaching students and conducting research are also needed. However, the limited number of faculty members in STEM and agricultural subjects is a main constraint in producing highly skilled graduates. Even in the top HEIs that offer courses in STEM, many faculty members hold only master degrees. In addition, professors conduct few research projects because HEIs lack sufficient funding, facilities, and incentives. Moreover, research is often neither connected to industry nor producing needed data for policy making.[4]

14. Ample room exists to improve **access and equity, including gender-related gaps**. Not only is the enrollment rate of tertiary education in Cambodia lower than neighboring countries; but also most of the enrolled students are from better-off households, creating a high level of inequality. In Cambodia, 68 percent of enrolled students come from the top income quintile, while only 3 percent of students come from families who occupy the bottom 40 percent of nation-wide income levels (2012). An enrollment disparity exists between Phnom Penh and other provinces. In Phnom Penh, higher education enrollment rate reaches to 34 percent versus 11 percent in the provinces (2014). Gender inequality exists too.

[4] For example, there is no data on annual rain fall by province. Producing such data would have an immediate impact on society by improving policy making, in the same way as research that connects to industry.

Whereas 46 percent of enrolled students in university are female, that number drops to 27.9 percent in the sciences (2016). Interestingly, at the grade 12 level, 50.6 percent of enrolled students in the science track are female (2016), suggesting many female students stop studying sciences once they enroll in HEIs. High cost of accommodation is a key constraint preventing entrance to HEIs located in Phnom Penh, and is particularly limiting for female students as their male peers have a wider range of options for accommodations due to social norms and perceptions of personal safety. Finally, lower qualifications among female teaching staff persist, and limit women's academic and research contributions in STEM areas.

15. To address these issues of access and equity, the following strategies have been discussed to: (a) include stipends for the ongoing government scholarship program to ensure higher retention[5] for students from poor households as well as female students[6], (b) increase the enrollment capacity of provincial HEIs; and (c) provide targeted, in-kind support, such as dormitories, for disadvantaged and female students to improve retention and completion rates.

16. Lastly, it is critical to strengthen the sectoral **governance** framework to improve the higher education system. There are four areas of governance that have been found to be important for higher education sectors worldwide: a strategy setting guiding reform, supportive legislation, development of quality assurance mechanisms and frameworks, and information systems used for policy, planning, and evaluation. In Cambodia, MoEYS has outlined a clear strategy setting in its Higher Education Road Map, which connects to the IDP 2015-25 and the Higher Education Vision 2030. Legislatively, MoEYS has reviewed the current policies and has been working on new legislation to create an enabling environment for HEIs to make decisions on all affairs that are concerned with their operations (primarily related to financial and human resource management) while also holding HEIs accountable. Quality assurance has developed in fits-and-starts. Although the accreditation system has been inactive since 2015, it has been able to develop and have approved National Standards, select and train assessors, and pilot institutional accreditation in 48 HEIs. The main information system for the higher education sector is the Higher Education Management Information System (HEMIS). HEMIS has been developed in line with Cambodia's strategy setting and piloted in eight HEIs. The goal is to make HEMIS the standard system across the sector, informing policy creation both inside HEIs as well as MoEYS.

17. The achievements made in the sector – as well as the specific areas in need of improvement – provide a strong foundation and justification for the government to seek additional funding from International Development Association (IDA). Additional funding will support a program of interventions at HEIs to strengthen teaching and research capacity mainly in STEM and agriculture as well as to strengthen governance in the higher education sector in the areas of quality assurance and information systems. These investments will ensure increases in the skilled workforce in line with the IDP.

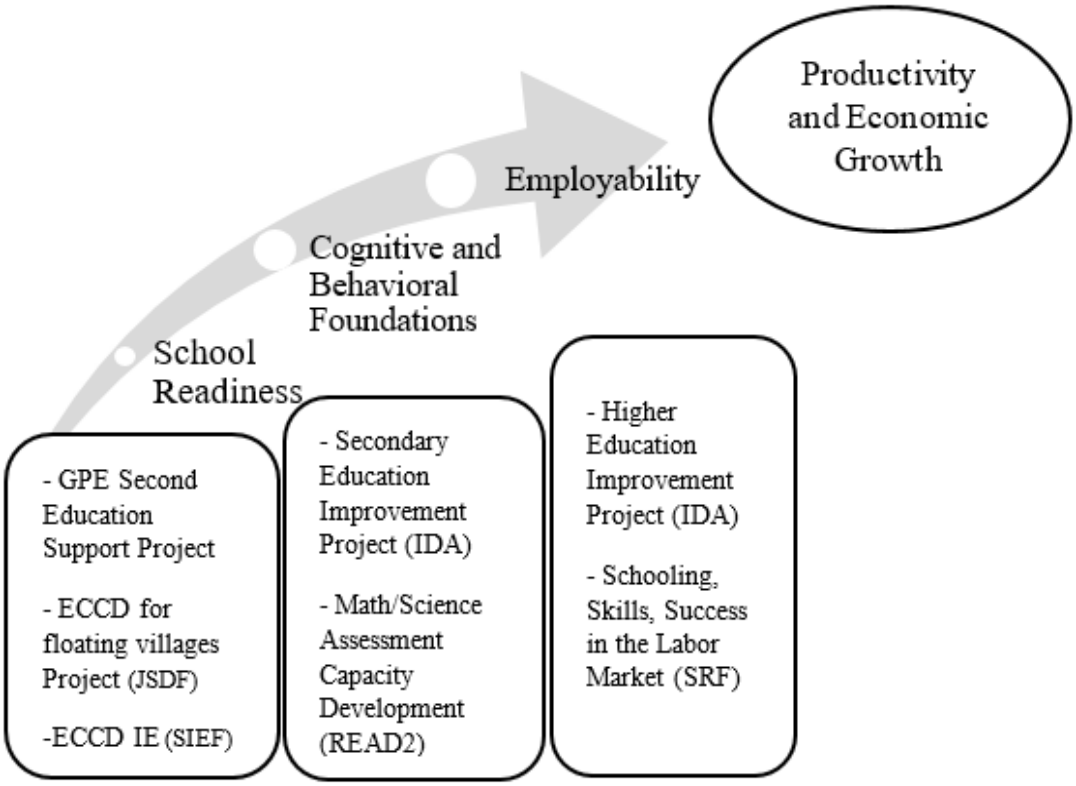
D. World Bank Involvement in the Sector

[5] An impact evaluation comparing pilot poverty-focused scholarship program (tuition waiver with stipends) and government scholarship program (tuition waiver with no stipends) found that completion rate for the pilot scholarship students was 86 percent versus 57 percent for the government scholarship students.

[6] The current government scholarship programs target disadvantaged students, including females. In 2017, 59.8 percent of scholarship beneficiaries were female.

18. The strategy of the Bank's support to the education sector in Cambodia has focused on three areas: school readiness, establishing the cognitive and behavioral foundations for success, and supporting employability (Figure 1). The Global Partnership for Education (GPE)-funded Second Education Sector Support Project (SESSP, administered by the Bank) expanded access to early childhood education. The Secondary Education Improvement Project (SEIP) aims to improve the cognitive and technical skills of secondary students by supporting lower secondary teacher upgrading, strengthening school based management, and improving school facilities. The IDA-financed Higher Education Quality and Capacity Improvement Project (HEQCIP) (2010-2017) focused on improving the quantity and quality of the skills of tertiary students and relevance of higher education provision.

Figure 1. A Schematic of World Bank Engagement in Cambodia's Education System



19. As a part of Cambodia Education Sector Support Project (CESSP: 2005-2010), the higher education sector has been supported by IDA since 2005, particularly on strengthening capacity of Department of Higher Education (DHE) and Accreditation Committee in Cambodia (ACC), as well as library expansion at the Royal University of Phnom Penh (RUPP). In 2010, HEQCIP launched to respond to the growing concerns that the rapid increase in higher education enrollments had not been accompanied by similar changes in educational or institutional quality. HEQCIP (a) built the basic foundations for sector governance; (b) piloted institutional management capacity development program at a target HEI; (c) improved the quality and relevance of higher education provision through fellowship programs as well as a series of training sessions; (d) piloted a poverty focused scholarship program to increase equitable

access to higher education; and (e) improved HEI research capability through a pilot research grant program.

20. The proposed IDA investment in higher education is a strategic continuation from the recent higher education project and advances the Bank's engagement with a strong focus on relevant skills in the labor market, STEM and agriculture fields, and sectoral governance reform. HEQCIP built a foundation of sectoral capacity as well as created a good policy environment to advance to a larger investment in HEIs and sectoral strengthening.

E. Higher Level Objectives to which the Project Contributes

21. The World Bank's Cambodia Country Engagement Note (CEN) for FY2016-2017 (CEN: 10483-KH) is aimed at improving service delivery and reducing vulnerability. The project is consistent with both the Education Strategic Plan (ESP) and the CEN, and aims to improve teaching and research at selected HEIs and strengthen the higher education system in order to equip Cambodian graduates with relevant skills to meet the rapid economic demands and the increasing opportunities for mobility and technology transfer within the AEC and beyond.

22. While the new Country Partnership Framework (CPF) is currently under preparation, higher education reforms and strengthening STEM and agriculture will be among the main areas of focus as highlighted in the Systematic Country Diagnostic (2016).

23. The interventions under the proposed project are aligned with the Bank's twin goals of eradicating extreme poverty and increasing shared prosperity. The literature on human capital has documented a positive correlation between investment in human capital and social and economic development. Investments in higher education significantly contribute to poverty eradication and wealth creation as higher education increases the availability of well-trained public and private sector leaders, including managers, technical specialists, and high-level professionals to support its national industrial development objectives. The higher education system is the primary provider of such leaders.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

24. The Project Development Objective (PDO) of Higher Education Improvement Project (HEIP) is to improve the quality and relevance of higher education and research mainly in STEM and agriculture at targeted higher education institutions and to improve governance in the sector.

B. Project Beneficiaries

25. The project will support activities in five targeted public HEIs, relevant departments in MoEYS, and selected private HEIs. The public HEIs include three within Phnom Penh – the Institute of Technology Cambodia (ITC), the Royal University of Agriculture (RUA), the Royal University of Phnom Penh (RUPP), – and two in the provinces – the Svay Rieng University (SRU), and University of Battambang (UBB). The

Phnom Penh-based public HEIs were selected because they represent the top institutes[7] in the areas of STEM and agriculture education and research in the country. The two provincial HEIs, one in the north-west bordering on Thailand and the other in the south-east bordering on Vietnam, were selected because of their geographical proximity to Special Economic Zones and economic corridors that have a high-volume of cross-border trade, thus increasing HEI-industrial linkages and graduate's labor market participation. In addition, since private HEIs enroll one-third of students in STEM and agriculture, this project will support selected private HEIs that mainly provide courses in STEM, Agriculture, and other priority subjects in line with the IDP. These private HEIs will be competitively selected through a call for proposals (see Annex 2).

26. The direct beneficiaries of HEIP include approximately 16,356 students[8] (5,070 females: 31.0 percent) in the relevant departments at targeted HEIs who will enhance learning from: (a) improved teaching; (b) additional research opportunities; (c) more learning materials; and (d) upgraded facilities. Other beneficiaries include academic staff at targeted HEIs who will benefit from the higher education partnership programs and research funds. In addition, MoEYS staff members from selected departments and HEIs will benefit from sectoral governance activities supported by the project. Female students will in particular benefit from the building of dormitories, increasing access and retention in the program.

C. PDO-Level Results Indicators

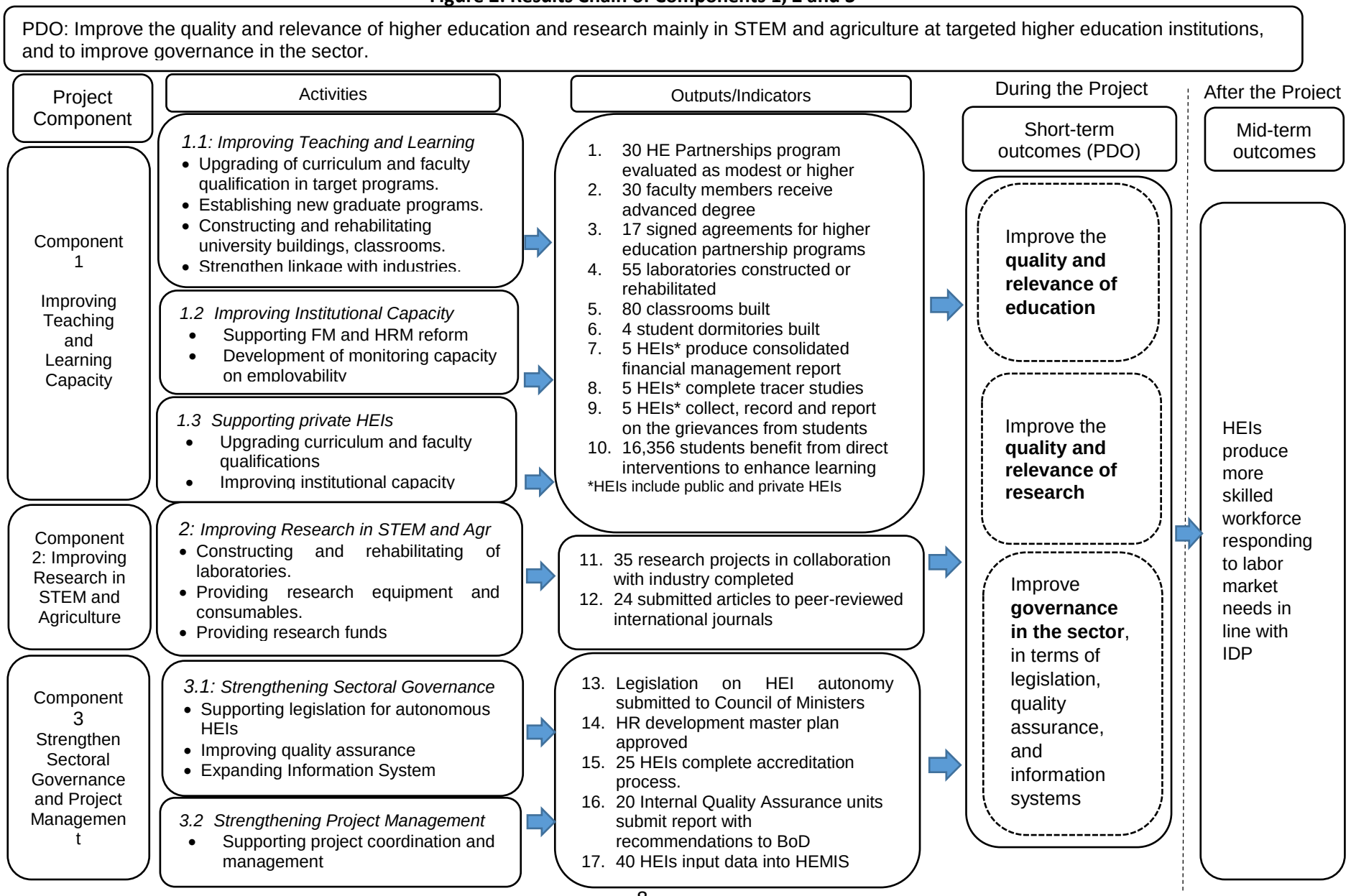
27. The PDO-level indicators are:

(a) Number of HE partnership programs evaluated as modest or higher by expert panels (to measure quality)
(b) Number of research projects in collaboration with industry completed (to measure relevance)
(c) Number of HEIs that complete accreditation process (to measure governance and quality)

28. These indicators aim to achieve outcomes that will collectively improve STEM and agriculture education and research. The specific indicators are summarized in section III and elaborated in the Results Framework and Monitoring. Each indicator will be monitored by MoEYS. In addition, core IDA indicators, including (a) direct project beneficiaries; and (b) female beneficiaries, will also be updated as information is available in order to monitor long-term outcomes in the education sector. See Figure 2 for a complete Results Chain.

[7] Although these HEIs are considered "top" in Cambodia, they still lag neighboring countries in terms of research and teaching.
[8] The beneficiaries are calculated based on first-year enrollment in the target faculties, applying 74 percent completion rate provided in IIPs and assuming that 4 cohorts will benefit from the project.

Figure 2: Results Chain of Components 1, 2 and 3



III. PROJECT DESCRIPTION

A. Project Components

29. The proposed project aims to enhance Cambodia's competitiveness by increasing the relevance and quality of higher education provision in line with industrial needs. The proposed project will target two priority areas. The first is to improve the teaching, learning, and research in the fields of STEM and agriculture in HEIs that are connected to industries prioritized in the IDP. The second part of the funding strengthens the higher education sectoral governance.

Component 1: Improving Teaching and Learning Capacity (approximately US$ 63.7 million equivalent)

30. **This component aims to enhance quality of teaching and learning capacity of targeted HEIs in the fields of science, technology, engineering, mathematics (STEM), and agriculture, while other complementary areas deemed necessary for economic development will also be supported[9].** The proposed sub-components are: 1.1: Improving teaching and learning, 1.2: Improving Institutional Capacity, and 1.3: Supporting private HEIs. Private Advisory Committee will be formed including members from the private sector to support the formulation and implementation of the sub-components 1.1 and 1.3, to improve the relevance of activities. Sub-components 1.1 and 1.2 will support five targeted public HEIs and sub-component 1.3 will support selected private HEIs.

31. **Sub-component 1.1: Improving Teaching and Learning (approximately US$ 52.7 million equivalent).** This sub-component aims to improve the quality of teaching and learning mainly in STEM and agriculture fields within the five public HEIs based on their Institutional Improvement Plans (IIP). The sub-component will include the provision of grants to the public HEIs for implementation of collaborative activities through partnership agreements with international and/or domestic HEIs, to support improvements in three main areas: (i) provision of technical support for curriculum review and facility assessment including the establishment of new undergraduate and graduate programs, (ii) provision of short courses and mentoring programs for faculty staff, and (iii) implementation of faculty exchange and collaborative research programs. Additionally, the provision of grants to public HEIs will be used for the improvement of facilities and collaborative activities with private sector partners based on each HEIs IIP and assessment by partner HEIs through: (i) construction and rehabilitation of university buildings, laboratories, classrooms, and dormitories for female students and students from poor households; (ii) provision of teaching and learning equipment and materials, and (iii) provision of technical support to the target HEIs to strengthen industrial linkages by arrangement of guest lecturers from industry, establishment of job placement and/or industrial linkage units at the HEIs, internships, interdisciplinary exchanges, and alumni activities. Special attention will be paid to gender-specific needs at target HEIs. Target HEIs will be encouraged to prioritize female faculty participation in upgrade program. The project will track the gender-disaggregated indicator on use of dormitory as well as upgrading faculty qualification

[9] In order to connect STEM and agricultural fields to industry and/or policy making, complementary fields such as, but not limited to, economics, management, or sociology must be improved. Graduates from these complementary fields play a crucial role in macro planning/policy making during the transition to a knowledge-based economy.

as a part of regular monitoring activity.

32. **Sub-component 1.2: Improving Institutional Capacity (approximately US$ 3 million equivalent).** This sub-component aims to improve the internal and external accountability of the five targeted public HEIs by strengthening their institutional governance (strategic plan, IQA system, M&E, HEMIS, etc.), their financial and human resource management, and monitoring of graduates' participation in the labor market. This sub-component will provide grants to the public HEIs to finance technical assistance, equipment, training, and operational costs in line with IIP in support of these activities. Through these activities, HEIs are expected to improve institutional capacity in line with the accreditation standards[10]; produce consolidated annual financial reports and tracer studies to be accountable to the Royal Government of Cambodia, industry, and other external stakeholders. Some activities, such as the tracer study, will be coordinated by the Directorate General of Higher Education (DGHE). The tracer studies will include gender-disaggregated data and analysis, and will identify gender-related barriers to entry into STEM and relevant professions.

33. **Sub-component 1.3: Supporting private HEIs (approximately US$ 8 million equivalent).** This sub-component aims to support selected private HEIs[11] in improving the quality of teaching and learning mainly in STEM and agriculture fields based on submitted proposals, and in improving the internal and external accountability of the selected private HEIs. The sub-component will include the provision of grants to the private HEIS for implementation of: (a) collaborative activities through partnership agreements with international and/or domestic HEIs, to support improvements in three main areas: (i) provision of technical support for curriculum review and facility assessment including the establishment of new undergraduate and graduate programs, (ii) provision of short courses and mentoring programs for faculty staff, and (iii) implementation of faculty exchange programs; and (b) activities aimed at strengthening the private HEIs' internal and external accountability in line with the accreditation standards, including strengthening their institutional governance (strategic plan, Internal Quality Assurance (IQA) system, M&E, HEMIS, etc.), their financial and human resource management, and monitoring of graduates' participation in the labor market.

Component 2: Improving Research in STEM and Agriculture (approximately US$ 15.8 million equivalent)

34. **This component aims to improve the quality and relevance of research in STEM and agriculture fields by providing grants to the targeted public HEIs for the development and implementation of research projects** that result in peer reviewed publications. Research projects, implemented by teams of researchers from targeted public HEIs are selected and approved by HEIP, will be designed and/or implemented in collaboration with industrial partners, international HEIs, and/or generate scientific evidence for public policy making. There will be two rounds of funding for research projects. The first round will take place in year 1 while the second round will take place in year 3 over the six-year project period. The project will finance: research equipment and facilities/laboratories; research consumables; research operation costs; and researcher incentives. The researcher incentives will be financed by counterpart funds. In addition, target HEIs will be encouraged to prioritize female staff led research projects. The project will track the gender-disaggregated indicator on research project completion as a part of regular monitoring activity.

Component 3: Strengthening Sectoral Governance and Project Management (approximately US$13 million equivalent)

35. **This component aims to strengthen the system of higher education sector to produce graduates equipped with transferable skills and knowledge, especially in STEM and agriculture.** The proposed sub-components are: 3.1: Strengthening sectoral governance, and 3.2: Project management and monitoring and evaluation.

36. **Sub-component 3.1: Strengthening Sectoral Governance (approximately US$7.5 million equivalent).** This component aims to strengthen the system of higher education through the improvement of quality assurance mechanisms; expansion of information systems; and support the development of legislation for autonomous HEIs. The sub-component will specifically support (a) the implementation of institutional accreditation; (b) the development and implementation of internal quality assurance guidelines for HEIs; (c) the expansion of HEMIS to be used for policy and planning; (d) provision of technical support to develop/process needed policy documents, including HEI autonomy, PhD standards, Human Resource Master Plan[12], and other relevant areas; and (e) coordination of activities related to Financial Management (FM) and Human Resource (HR) reform and capacity development to track graduate employment data for target HEIs (see sub-component 1.3). These areas will build on the strategic setting developed by MoEYS as well as the sectoral foundations supported by HEQCIP. These activities will be implemented by DGHE and the ACC.

37. **Sub-component 3.2: Project Management and Monitoring and Evaluation (approximately US$ 5.5 million equivalent).** This sub-component will support day-to-day implementation, coordination, and management of project activities on planning and execution, FM, procurement, supervision and reporting, internal and external audits, environmental and social safeguards management, and monitoring and evaluation. These activities will ensure efficient project management and early identification of corrective measures to solve implementation problems. In addition, this component will provide necessary vehicles, training/workshops, logistics and operational costs, and data collection survey. Given the large size and high complexity of investment, critical/strategic technical assistance (TA) is required in relevant MoEYS departments and HEIs. International TA is required in the areas of, but not limited to, coordination, STEM, quality assurance, HEMIS, and FM/HR reform. The sub-component will also finance development of a comprehensive gender strategy for the project to be prepared during year 1 of project implementation.

Component 4: Contingent Emergency Response (US$0 million)

38. The objective of the contingent emergency response component, with a provisional zero allocation, is to allow for the reallocation of financing in accordance with the IDA Immediate Response Mechanism in order to provide an immediate response to an eligible crisis or emergency, as needed. An Emergency Response Manual (ERM) will be developed for activities under this component, detailing

[10] There are nine standards: (1) vision/mission, (2) governance and management, (3) academic staff, (4) academic program, (5) student services, (6) learning resources, (7) physical resources, (8) financial resources, and (9) internal quality assurance.

[11] Private HEIs are competitively selected through a call for proposals. More detail procedure will be guided by a POM to be developed during the first year of the project. Please see Annex 2 for more detailed information.

[12] The HR Masterplan will be developed taking into consideration on situation analysis of current human resources in higher education sub-sector, and forecasting of future skills needs that require the sub-sector to well respond.

streamlined FM, procurement, safeguard, and any other necessary implementation arrangements. In the event that the component is triggered, the results framework would be revised through formal restructuring to include appropriate indicators related to the emergency response activities.

B. Project Cost and Financing

39. **The lending instrument will be Investment Project Financing with a six-year implementation period.** In addition to the IDA Credit of SDR 61.8 million (US$90 million equivalent), the Borrower will provide US$2.5 million. The Borrower's contribution will comprise support of staff and researcher costs, office space, and utilities.

Table 1. Project costing (in Million US Dollar)

Project Components	Project cost	IDA Financing	% IDA Financing	Counterpart Financing	% of Counterpart Financing
1. Improving Teaching and Learning Capacity	63.7	62.7	98.4	1.0	1.6
2. Improving Research in STEM and agriculture	15.8	15.0	94.9	0.8	5.1
3 Strengthening Sectoral Governance and Project Management	13.0	12.3	94.6	0.7	5.4
4.Contingent Emergency Response	0.0	0.0	-	0.0	0.0
Total Costs					
Total Project Costs	92.5	90.0	97.3	2.5	2.7
Front-End Fees					
Total Financing Required	92.5	90.0	97.3	2.5	2.7

C. Lessons Learned and Reflected in the Project Design

40. The project is informed by various operational and analytical work on the critical need to improve higher education. The project incorporates lessons primarily from HEQCIP, Cambodia Education Sector Support Project (ESSP), the new Secondary Education Improvement Project, and World Bank global experience in higher education operations in Vietnam, Myanmar, Mali, Tanzania, Tunisia and Montenegro. The project also referred to lessons learnt from other education projects in Cambodia including on-going GPE funded SESSP, the recently closed Education Sector Support Scale Up Action Program (ESSSUAP). Key lessons learned that have been incorporated into the HEIP design include:

Key lessons for higher education programs:

a) Higher education policies should give priority to quality and equity objectives.
b) Partnerships with international institutions, specialist professors, specialized consultants, and HEI administrators are effective ways to improve the quality of professional performance.
c) Forging long term relations with HEIs overseas can reduce training and capacity development costs as well as offer sustainable ways of providing consistent capacity development.
d) Research is an essential way to engage with global knowledge networks and to train postgraduate research students.
e) HEIs are more successful in research activities when they: (i) set a clear vision shared by all members of the HEI community; (ii) develop and implement a strategic plan; (iii) engage in the procurement and financial process associated with research projects; (iv) limit financial or management tensions between research and teaching demands; and (v) involve students.
f) Research grants are more successful when they: (i) encourage dialogue between government and university leaders on national priorities and institutional goals; (ii) combine autonomy with added accountability for results; (iii) stimulate institutional strategic planning and improvement processes; (iv) encourage quality research; and (v) are designed with a flexible funding mechanism with transparent procedures.

Key lessons for program design and management in Cambodia:

g) The project design should be simple, with a well-developed and clear PDO. The project comprises mutually supportive activities focused on a limited set of achievements.
h) Effective contract management is essential to quality service delivery. Civil works contracts and construction deadlines can be managed well by implementing a set of measures to prevent delays. These measures include: (i) agreeing on detailed milestones to monitor the implementation of contracts; (ii) making amendments to the contract if the expected final completion date is modified; (iii) enforcing penalties for failure to achieve milestones; and (iv) setting and monitoring cash flow requirements.
i) Open dialogue, flexibility and a willingness of all parties to solve problems together is key to achieving successful outcomes in complex and innovative projects.
j) To ensure that targets are met in a timely and effective manner the project management or coordinating entity must commit sufficient resources, especially manpower to regularly monitor project activities as a whole and take an active part in supporting successful implementation.
k) Climate Resilient Designs[13]. In hazard prone areas, such as Svay Rieng province and other similar areas, flooding and drought hazards have been taken into the design of facilities. Mitigation

measures would include raising plinth level of buildings, raising terrain level of facilities, and installing drainage systems to cope with flooding. For withstanding dry spell and hot temperatures, electric ventilation and natural ventilation systems will be included in the designs in areas accessible to electricity and non-accessible to electricity, respectively.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

41. The project will be implemented at the national and institutional levels over a period of six years. MoEYS will assume overall responsibility for coordination and implementation of the project, including procurement, disbursement, and financial management (FM) and will be in close collaboration with targeted HEIs.

42. At the highest level, the project management arrangements will require strong support from MoEYS leadership. Under the current arrangement for ongoing projects, the Minister has established a Project Management Committee (PMC) responsible for the oversight of the Education Sector Plan (ESP). The PMC is led by the Minister and the Secretaries of State responsible for all sectors in MoEYS. The PMC will be responsible for: (a) approving the project's annual activities, operational plan, and budget allocations; and (b) overseeing progress and compliance with agreed project guidelines. Project Director of HEIP will be the member secretary of the PMC for providing adequate information for decision making.

43. The implementation arrangements will be based on the existing MoEYS structure with clear responsibilities. At the project management level, the Project Management Team (PMT) will be chaired by the Secretary of State (or the Under Secretary of State) responsible for the Directorate General of Higher Education. The PMT will include senior representatives from targeted HEIs, ACC, and DGHE. The main roles of PMT are to provide day-to-day implementation oversight, monitoring financial management and procurement, project reporting, auditing, Monitoring and Evaluation (M&E), and reviewing operational plans.

44. Project Teams (PTs) will be arranged at DGHE, ACC Secretariat, and the five targeted public HEIs, and will include members of the Finance Department within each institution. Project implementation will be carried out by each PT, supported by existing MoEYS technical departments, including Construction Department, Finance Department, and Procurement Unit. The five public HEI PTs will be established to coordinate and implement the project component activities. The PTs will assume responsibility for work plans and budgets, progress reports, financial reports, monitoring, and procurement and safeguards.

45. In addition to the abovementioned project management structure, two oversight committees will be established. First, Partnership and Research Committee will review and endorse draft partnership

[13] The Climate and Disaster Risk Screening (2017) identified that Cambodia's weak adaptive capacity, poor infrastructure and limited institutions exacerbate the country's vulnerability to climate variability and change. Floods are recognized by the government as one of the main drivers of poverty. Increased intensity of rainfall during the monsoon seasons could significantly impact flood response management across the Mekong.

agreements and research proposals submitted by the target HEIs. Second, Private Advisory Committee will regularly provide strategic guidance on the project activities including the relevance of the curriculum contents and research topics and the promotion of academic-industry linkage.

46. At the outset of the project implementation, a two-party Sub-Grant Agreement will be drawn up to be signed by MoEYS and each target HEIs regarding the activities for Components 1 and 2. The contents of these agreements will include the implementation, procurement, financial management, safeguards, and monitoring and reporting rights and responsibilities of all parties, agreed activities and eligible expenditures under the Subprojects including HEI counterpart funding requirements, an agreed payment schedule, and possible sanctions for misuse of funds and non-compliance with the terms of the agreement. Subprojects will be prepared, approved and implemented in accordance with the criteria, guidelines and procedures set forth in the POM. A sample Sub-Grant Agreement for public and private HEIs will also be included in the POM.

B. Results Monitoring and Evaluation

47. The relevant departments of MoEYS and targeted HEIs will monitor the indicators of the project. This will be done within the monitoring and evaluation framework of HEIP. The proposed monitoring indicators are provided in Section VII. The data related to output indicators will be provided semi-annually, while MoEYS will provide outcome-related data annually. The progress in meeting the monitoring indicators will be reviewed by World Bank (WB) team semi-annually and mid-term review (approximately 2 years after the effectiveness) will be carried out to assess implementation status. Where appropriate, all data collected will be disaggregated by gender and in some cases by location, in order to understand and respond to specific issues.

C. Sustainability

48. The project is aligned with the government's national development agenda outlined in the IDP. The sector has experienced slow increases in public investment (8 percent in 2014, 9 percent 2015, and 12.6 percent in 2016), but continues to lag behind neighboring countries. As a result, higher education continues to be a priority development area as it has for the past decade. In recent years, the government has placed a high priority on upgrading the institutional management capacity of HEIs by making them accountable and transparent to provide academic and non-academic autonomy. This project will support the government to achieve its Higher Education Roadmap.

49. By investing in STEM and agriculture capacity through the activities of Component 1, the project also helps achieve the IDP in the mid-term. Through strengthening human resource capacity of teaching and research in STEM and agriculture subjects coupled with investment in facilities and research, this project will enable the government, through its higher education sector, to participate effectively in a knowledge-based economy. Graduates from the five targeted HEIs will be better equipped to enter the labor market in priority sectors. The project will therefore enable lasting change not only by improving STEM and agriculture education but also by producing graduates who will lead and/or manage Cambodia's national industrial development.

50. **Financial Sustainability**. The project is designed to promote financial sustainability. A financial analysis was carried out to determine whether resources would be available for MoEYS and HEIs to manage the post-project recurrent costs of the project's investments. The impact of recurrent costs on MoEYS' budget will be affordable. These impacts will likely be offset, to some extent, by anticipated revenue that these HEIs will receive from research and development activities.

D. Role of Partners

51. The World Bank was the first development partner (DP) to provide sector-wide support to higher education through HEQCIP. Other DPs have focused support at the institutional level. For example, Japan International Cooperation Agency (JICA) supported ITC on education quality improvements by introducing new teaching and learning approaches together with construction and innovation of some laboratories. The Swedish International Development Agency (SIDA) has been assisting RUPP in the development of an Information Communication Technology (ICT) system to improve (a) teaching and learning, and (b) institutional governance. SIDA is now implementing the ICT Master Plan, which was jointly produced by SIDA and RUPP. The private sector has also played crucially important roles as it has been cooperating with and assisting HEIs in improving teaching and learning and research by sitting as board members, providing technical support for curriculum reforms to link higher education outcomes to job markets, providing venues for students to intern or carry out practicum, providing financial or in-kind supports to HEI research teams, and others. Building upon the current status at the target HEIs, HEIP will further enlarge the cooperation between HEIs and private sector, so that the quality and relevance of higher education and research will be in place to realize the goals of IDP and the country's mid-term and long-term visions.

52. After HEQCIP concluded, the higher education sub-sector suffered from a shortage of resources to carry out reforms to realize the goals of the IDP, in which this sub-sector plays a vital role. HEIP is deemed necessary to continue the good progress of the sub-sector and contribute to the achievement of ambitious IDP goals. The support from HEIP is aligned with that of other DPs who have been working at the institutional levels. While the current JICA project is working on enhancing the teaching and learning approaches in some HEIs, HEIP will complement JICA support by building good learning facilities, environments, and institutional capacity to enable the targeted HEIs to introduce the new approaches into the classroom to ultimately improve learning outcomes and relevance. Similarly, at RUPP, the project will utilize the good ICT system set up by SIDA support to build innovative institutional governance to improve the quality of teaching, learning, and research. In short, the project has mapped the work of other DPs to avoid overlapping support while jointly maximizing the impacts of resources channeled into targeted HEIs.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

53. The overall implementation risk is Moderate. Although political events, such as the national elections in July 2018, might increase the project's political risks, the overall project risk is moderate as (i) the country demonstrates steady macroeconomic growth; (ii) MoEYS shows a good record on setting strong sector strategies and implementing policy reforms; (iii) MoEYS successfully narrowed down the project scope and made the project design straight-forward; (iv) environment and social risks are assessed as low for the design and operational characteristic of HEIP; and (v) this project is in line with the Industrial Development Policy, enhancing private sector involvement in higher education. Key project risks identified during preparation and corresponding mitigation measures are specified in the next paragraph.

54. **Institutional capacity and fiduciary risks are rated Substantial.** In terms of institutional capacity and fiduciary risks, the project's five targeted HEIs have limited experience with the World Bank guidelines and procedures, and implementation will involve several agencies (HEIs, line ministries, MoEYS, etc.). While the DGHE and other line departments of MoEYS have developed implementation capacity under past World Bank projects, there is a lack of fiduciary capacity, knowledge, and experience on FM and procurement implementation, especially with regards to World Bank-financed projects, among the staff of the HEIs. They have little experience in implementing the World Bank's Procurement Framework dated July 2016 that is applicable to the proposed project. Two of the targeted HEIs located outside of Phnom Penh, which were added to the project in the middle of project formulation, and private HEIs, which will be selected during the first year of the project, have limited fiduciary capacity as well as implementation experience. Bank implementation supports should be intensified for the first few years of the project to provide hands-on technical and fiduciary support at the five targeted HEIs. In addition, a series of training sessions and technical support for HEI staff by MoEYS as well as TAs are scheduled as part of project activities to mitigate the implementation and fiduciary risk of HEIs.

55. **Governance risk is rated Substantial.** Governance of the higher education sub-sector has been constrained by (a) limited ability of the government to manage and coordinate the sub-sectoral initiatives, and (b) ineffective regulation of public and private HEIs. The project intends to strengthen sectoral governance through the improvement of quality assurance mechanisms; expansion of information systems; and support the development of legislation for autonomous HEIs.

VI. APPRAISAL SUMMARY

A. Economic Analysis

56. The broad objectives of HEIP are to strengthen teaching and learning, enhance research capacity in STEM and agricultural subjects, and strengthen sectoral governance. In order to determine if the proposed activities are economically justified, HEIP will employ two approaches under the cost-benefit

analysis (CBA) framework in order to:

a. Evaluate the direct impact of the interventions being envisioned on increasing the skills and employability of the beneficiary graduates from these HEIs and the resulting impacts on their expected lifetime wage earnings; and

b. Quantify the return to Research and Development (R&D) expenditure from the macroeconomic perspective. In other words, the second CBA approach aims to determine the contribution of R&D investment to the economy's output by estimating the return to each dollar invested in R&D activities.

Cost-Benefit Analysis for Improvement in the Skills and Employability of Graduates[14]

57. The CBA framework is employed here to estimate a plausible range of net economic benefits and internal rates of return (IRR) which could result from the project interventions being envisioned on increasing the skills and employability of the beneficiary graduates.

58. Specifically, it is assumed that the tertiary students in the targeted higher education institutions will benefit from the interventions through improved teaching and learning environment and better research capacity of the universities. As a result, future graduates of these universities are assumed to possess higher level of skills and will benefit from higher lifetime earnings streams.

59. Four cases are explored for our CBA. In the first case scenario, we assume that the improvement in learning outcome will be equivalent to 0.25 year of tertiary education. The net benefit for each beneficiary graduate arising from the Project are based on the total increase in the net present value of his/her lifetime earnings stream over his/her 43-year working life, assuming that the graduate enters the labor market at the age of 22 and retire at the age of 64. Another conservative assumption that we employ is that the total number of student beneficiary in each cohort for the targeted universities will remain the same at around 4,068 students throughout the timeframe under analysis (it is assumed that 15 cohorts of tertiary students will benefit from the interventions).

60. Employing the assumed 4,068 beneficiary students in each of the 15 cohorts and the current annual public expenditure estimate of US$1,467 per tertiary student (obtained from UNESCO Institute of Statistics) together means that the amount of per student public spending per annum will increase by around 39 percent to US$2,040 (in real terms). Using a 5 percent real discount rate, the envisioned interventions will result in a total increase in (the present value of) public expenditure in the amount of US$90 million (the present value of total project cost). The results of the CBA under the stated assumptions are summarized below in the first column of Table 2.

[14] Full economic analysis in files.

Table 2. Cost-Benefit Analysis of Improving the Skills and Employability of Graduates

	Case 1 US$	Case 2 US$	Case 3 US$	Case 4 US$
Benefits from increase in lifetime earnings	41,997,061	84,982,478	128,979,523	174,012,019
Less:				
Increase in public recurrent cost	90,000,000	90,000,000	90,000,000	90,000,000
Net Present Value (5% discount rate)	**(48,002,939)**	**(5,017,522)**	**38,979,523**	**84,012,019**
Internal Rate of Return	**0.96%**	**4.65%**	**7.45%**	**9.89%**
Selected parameters:				
Private return to each year of tertiary education (male)	9.5%	9.5%	9.5%	9.5%
Private return to each year of tertiary education (female)	10.0%	10.0%	10.0%	10.0%
Improvement in learning outcome (years)	0.25	0.50	0.75	1.00

61. The net present value (NPV) of the Project for the Case 1 scenario is estimated at US$-48 million, with an internal rate of return (IRR) of 0.96 percent.

62. Three other cases are also evaluated in our sensitivity analysis. In Case 2, we assume that the improvement in teaching and learning will result in higher graduate skills equivalent to 0.5 year of tertiary education. This increases the NPV to US$-5.02 million, with an estimated IRR of 4.65 percent.

63. In Case 3 and Case 4, we assume that the improvement in teaching and learning will result in higher graduate skills equivalent to 0.75 and 1 year of tertiary education respectively. These assumptions result in positive NPV estimates of US$38.98 million (IRR of 7.45 percent) for Case 3 scenario and US$84.01 million (IRR of 9.89 percent) for Case 4 scenario. We therefore conclude that the Project is expected to yield positive NPVs and IRRs greater than the assumed real cost of capital of 5 percent (net of inflation) in two of the scenarios considered in our sensitivity analysis. Specifically, with the 5 percent real cost of capital, the Project can be seen to yield positive NPV only when the improvement in average graduate skills exceeds the threshold of 0.529 year.

Economic Analysis of R&D Investment

64. This section employs various estimates of the gross rate of return to R&D expenditure to determine the net economic benefits and internal rate of return (IRR) of the R&D component of the HEIP Project. It is important to note that the IRR is the one that equates a dollar of investment in R&D to the present value of the marginal productivities of that investment in the future.

65. Assuming a zero rate of depreciation for research knowledge stock and taking into account the real cost of public funding (assumed to be 5 percent per annum), we obtain a marginal net internal rate

of return for each of the three models estimated under the fixed effects country panel framework (Model (1), (3), and (4)) as shown below in Table 3. The resulting net IRR's are in the range of 68.8-139 percent, while the corresponding net present values of each US$1 invested in R&D are in the range of US$1.69-2.39.

66. Using the gross rate of return estimates obtained from an alternative two-step random coefficient model (see the full economic analysis for more details), we assume that Cambodia is furthest away from the world technological frontier among our country sample (i.e. around the same development level as Kyrgyzstan) so that the gross rate of return is expected to be around 28.5 percent. The resulting net IRR is 22.4 percent, while the corresponding net present values of each US$1 invested in R&D is US$1.22. Due to the endogeneity problem present in this type of random coefficient model, we believe that the true gross rate of return to R&D for Cambodia would likely to be much higher and in the range of the fixed effects specifications.

Table 3: Cost-Benefit Analysis for Each US$1 Invested (R&D capital depreciation rate 0 percent and real cost of public fund 5 percent)

	Model (1)	Model (3)	Model (4)	2-Step Rand coef
Gross rate of return to R&D (Percent)	77.2	98.0	151.0	28.5
Net present value (5% real discount rate)	1.688	1.886	2.391	1.224
Net internal rate of return (Percent)	68.8%	88.6%	139.0%	22.4%

B. Technical

67. The technical design for the project was arrived at after extensive review of the analytical work already undertaken by MoEYS, IDA, and other DPs in the country. It also relied on: experience of on-going education projects; lessons learned from successful previous education projects in Cambodia and other countries; extensive stakeholder consultations; and the expertise and experiences of the invited experts, consultants, and IDA team. The country's context on the status of the higher education system, concerns around quality of higher education, and planned reforms in Public Financial Management (PFM) systems, along with insights available from global experiences in similar contexts, have informed the project design. This has been important to ensure that all the planned activities are well grounded in the realities of the situation, and consider the various constraints and challenges that Cambodia still faces.

C. Financial Management

68. The Department of Finance (DoF) of MoEYS and targeted HEIs will be responsible for financial management of the project. The DoF of MoEYS has an acceptable FM system under the on-going IDA financed SEIP; the DoFs of targeted HEIs, however, need more improvement in their financial management systems. HEIP will apply the current FM system with some modification to further enhance the project's new elements in FM, such as projected cash requirement and additional guidance to improve FM system of targeted HEIs.

69. The FM risk is rated as high. The main risks are associated with: (i) possible insufficient time devoted by the FM staff of RGC to the project due to their normal government work commitments; (ii)

lack of experience of targeted HEIs' DoFs in implementing the Bank financed project; and (iii) the project's FM outside the MoEYS' designed Financial Management Information System (FMIS). Some of the key measures to address those risks are: (i) a supplementary FM manual (SFMM) detailing the payment processes for MoEYS and targeted HEIs, service standards, and monitoring mechanisms of the advance made to targeted HEIs, (ii) alignment of HEIP's FM to the RGC's chart of accounts and how to do realistic six-month projected cash requirements; (iii) provision to have one contracted FM consultant to support capacity building of targeted HEIs and MoEYS in FM for the start of the project and a Finance Assistant to support MoEYS' DOF; (iv) adoption of the accounting software as an interim measure for MoEYS and targeted HEIs before all HEIP's FM are integrated in the MoEYS' FMIS; and (d) risk-based internal audits of the project by the Internal Audit Department of MoEYS and Ministry of Agriculture, Forestry and Fisheries (MAFF), for operations under MoEYS and RUA, respectively. The residual FM risk after mitigating measure is considered as substantial.

D. Procurement

70. Procurement under HEIP will be governed by World Bank Procurement Framework 2016, Procurement Regulations for Borrowers. Procurement under National Procedures will be carried out in accordance with the Kingdom of Cambodia's Updated Standard Operating Procedures and Procurement Manual for All Externally Financed Projects/Programs ("Procurement Manual"), promulgated through the Sub-decree 74 dated May 22, 2012, which is issued pursuant to Article 3 of the Kingdom of Cambodia's Law on Public Procurement dated January 14, 2012 subject to the additional provisions that would be included in the Procurement Plan. Under the proposed project World Bank planning and tracking system, Systematic Tracking of Exchanges in Procurement (STEP), will be used to prepare, clear and update Procurement Plans and conduct all procurement transactions for the Project. Accordingly, all the procurement activities under the proposed project will be entered into, tracked and monitored online through the system. The procurement unit of MoEYS will be responsible for overall procurement work for the project including processing large procurement packages for HEIs, while HEIs procurement teams are responsible for processing small procurement packages. See details in annex 2.

E. Social (including Safeguards)

71. **Involuntary Resettlement:** The World Bank's policy on Involuntary Resettlement will not be triggered for this operation. Land acquisition, resettlement, or impacts on livelihoods are not expected to result from the civil works that will be financed from the project. An initial social screening of the proposed sites for civil works confirmed that they will be taking place on land owned by the HEIs, and are unencumbered by residential or livelihood activities.

72. **Indigenous People:** The World Bank's operational policy on Indigenous People (OP/BP 4.10) is triggered for this operation. This is because improving equity and access to STEM and agricultural subjects in higher education is central to the project development objective. Among the groups of potentially disadvantaged students, for whom access can be improved are members of ethnic groups in Cambodia, who can be considered indigenous people, based on the four criteria laid out in the World Bank's operational policy. Because ethnic people are not the only marginalized group to benefit from these activities, the client has prepared an Equity Assessment and Plan, which will also serve as an

Indigenous Peoples Plan. The Equity Assessment and Plan was developed, translated and disclosed on November 27, 2017.

73. **The Equity Assessment** involves a rapid social assessment of the challenges faced by students from ethnic groups, (as well as female students, students from poor households and remote areas) face in participating in STEM and agriculture programs at the tertiary level. This assessment included a review of the administrative data available on participation among these groups in STEM and agriculture programs at the relevant institutions, as well as focus group discussions with representatives of students from these groups at these institutions. These participatory discussions with students (including ethnic students) included the identification of specific actions which were included in the equity plan, and to validate a number of activities already included in the project. These focus group discussions also served as the basis for free prior and informed consultation. Based on this assessment, an equity plan was developed which describes complementary measures to maximize participation in STEM and agriculture (e.g. accommodation, student support groups, mentoring etc.).

74. **Gender** is a critical cross-cutting theme of the project. The equity assessment and plan prepared for the project included a specific focus on gender equity, and was based on participatory discussions with female students. As the higher education sub-sector is characterized by a degree of gender inequality for female students, each component activity will pay attention to gender dimensions to improve participation, completion, and quality of teaching-learning practices and research projects for female students and faculty members that will be further elaborated under a gender strategy for the project to be prepared during year 1 of project implementation. The strategy will inform Institutional Improvement Plans that will address the context-specific gender disparities in targeted HEIs. Specific project activities to address gender disparities in target HEIs include (i) construction of student dormitories for female and disadvantaged students; (ii) promotion of participation of female faculty in the upgrade program; (iii) promotion of female led research project; and (iv) tracer studies and an impact evaluation of higher education on employability with gender-disaggregated analysis. These activities will be key to addressing gender gaps identified and thus will be monitored regularly under the project's Results Framework.

75. **Citizen Engagement:** This project will strengthen existing mechanisms that helps ensure greater citizen engagement. This process will be done by strengthening internal accountability of HEIs through effectively applying institutional accreditation standard five as a part of the sectoral governance reform under component 3. Institutional Accreditation Standard five requires HEIs to have a mechanism for students to submit grievances without repercussion. Target HEIs (both public and private) are expected to document, report, and address grievances in a systematic manner. "The number of HEIs that collect, record and report on the grievances from students" is one of the project's intermediate indicators in the results framework. It is a proxy indicator to measure citizen engagement in the project because it specifically measures the number of HEIs collecting, recording, and reporting on the inputs received from students.

F. Environment (including Safeguards)

76. The project safeguards are categorized B, and the safeguards policy OP/BP 4.01, environmental assessment, triggered by the project. The investments under this project may involve construction of new ITC campus and/or buildings and facilities (to be determined), construction/rehabilitation of student

classrooms, building for a business incubation center, laboratories, student training center, an agro-industry lab, and upgrading lab facilities in the current HEIs' campuses (sub-component 1.1 and 1.2 above). The impacts, primarily from the construction activities and from operation of the buildings and facilities, will be minor and reversible and can be mitigated by applying good construction practices. The Environmental and Social Management Framework (ESMF) was developed as an overarching HEICIP's instrument for mitigating impacts and for further developing site specific instruments where relevant. The ESMF provides guidance on social and environmental screening, generic EMP and Environmental Codes of Practice (ECoPs) for managing simple and small scale construction works, and proposed implementation budget. Once location for the proposed new ITC center is known, the Directorate General of Higher Education (DGHE), with the support of ITC, will carry out screening of the location for potential adverse impacts, and site specific EMP would be developed. ESMF has been developed, translated and disclosed on November 27, 2017.

77. MoEYS has been implementing several education projects financed by the Bank, where staff and site supervision engineers (especially Construction Department/DoC, and Monitoring and Evaluation Department/ME) had received safeguards training primarily on project implementation and monitoring. Although the capacity has been significantly enhanced overtime, further capacity development is needed.

78. **Climate Change:** this project will support client to promote climate change adaptation in two ways under component 1.1: (a) through ensuring that facilities are designed so that they are resilient to climate change-related shocks and impacts, as applicable; and (b) through integrating climate change-related elements into curriculum improvement activities.

G. Other Safeguard Policies

79. No other safeguard polies are triggered for the Project.

H. World Bank Grievance Redress

80. 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/en/projects-operations/products-and-services/grievance-redress-service*.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY : Cambodia
Cambodia Higher Education Improvement Project

Project Development Objectives

The PDO of HEIP is to improve the quality and relevance of higher education and research mainly in STEM and agriculture at targeted higher education institutions, and to improve governance in the sector.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Number of HEIs that complete accreditation process		Number	0.00	25.00	Biannual	Accreditation Report	ACC
Description:							
Name: Number of research projects in collaboratin with industry completed		Number	0.00	35.00	Biannual	HEIP activity report	DGHE
Number of research projects in collaboratin with industry completed, led by female faculty		Number	0.00	10.00	Biannual	HEIP Activity Report	DGHE

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: Collaboration includes (i) documented connection between the development of a research project with industry; (ii) membership of industry employees on research teams; or (iii) industrial funding for additional research activities.							
Name: Number of HE partnership programs evaluated as modest or higher by expert panels			0	30	Binannual	Partnership activity completion report	DGHE
Description: the revised curriculum and other improved outputs under the HE Partnership Program will be evaluated by multi-dimensional evaluation panel (led by Cambodian chair and includes international experts). The evaluation process will be based on a four-tier scoring.							
Name: Students benefiting from direct interventions to enhance learning	✓	Number	0.00	16356.00	Biannual	HEIP activity report	DGHE
Students benefiting from direct interventions to enhance learning - Female	✓	Number	0.00	5070.00	Biannual	HEIP activity report	DGHE
Description:							

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Signed agreements		Number	0.00	17.00	Biannual	Signed agreement	DGHE

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
for higher education partnership programs							
Description:							
Name: Faculty members who receive advanced degree		Number	0.00	30.00	Biannual	HEIP activity report	DGHE
Number of female faculty members who receive advanced degree		Number	0.00	10.00	Biannual	HEIP Activity Report	DGHE
Description:							
Name: Number of submitted articles to peer-reviewed international journals		Number	0.00	24.00	Biannual	Journal submission document	DGHE
Description: Journal submission document means the PDF version of the submitted article through an online system or an email from the journal's editor with submitted article.							
Name: number of laboratories constructed or rehabilitated		Number	0.00	55.00	Biannual	HEIP activity report	DGHE
Description:							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Number of classroom built		Number	0.00	80.00	Biannual	HEIP activity report	DGHE
Description:							
Name: Number of dormitories built		Number	0.00	4.00	Biannual	HEIP activity report	DGHE
Share of female students living in newly constructed dormitories under the project		Percentage	0.00	60.00	Biannual	HEIP activity report	DGHE
Description:							
Name: Number of HEIs that produce consolidated FM reports		Number	0.00	5.00	Biannual	HEIP activity report	DGHE
Description: Consolidated FM reports based on HEIP FM guidelines for HEIs.							
Name: Number of target HEIs that complete tracer studies		Number	0.00	5.00	Biannual	Completed tracer study	DGHE
Description: HEIs that complete annual tracer studies are counted one.							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Number of HEIs that input data into HEMIS		Number	5.00	40.00	Biannual	HEIP activity report	DGHE
Description: HEIs must input data through the system.							
Name: Number of IQA units that submit report with recommendatins to BoD		Number	0.00	20.00	Biannual	HEIP activity report	DGHE
Description: HEIs that submit are counted once. The report must follow the MoEYS IQA guidelines.							
Name: Human resource development master plan approved		Yes/No	N	Y	Biannual	HEIP activity report	DGHE
Description:							
Name: Draft legislation on HEI autonomy submitted to Council of Ministers		Yes/No	N	Y	Biannual	HEIP activity report	DGHE
Description:							
Name: Number of HEIs that collect, record and report on the grievances from students		Number	0.00	5.00	Biannual	HEIP Activity Report	DGHE

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description:							

Target Values

Project Development Objective Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	End Target
Number of HEIs that complete accreditation process	0.00	0.00	5.00	10.00	15.00	20.00	25.00	25.00
Number of research projects in collaboratin with industry completed	0.00	0.00	0.00	15.00	15.00	15.00	35.00	35.00
Number of research projects in collaboratin with industry completed, led by female faculty	0.00	0.00	0.00	2.00	4.00	6.00	10.00	10.00
Number of HE partnership programs evaluated as modest or higher by expert panels	0	0	7	14	21	25	30	30
Students benefiting from direct interventions to enhance learning	0.00	0.00	2044.00	4089.00	8178.00	12267.00	16356.00	16356.00
Students benefiting from direct interventions to enhance learning - Female	0.00	0.00	634.00	1268.00	2536.00	3802.00	5070.00	5070.00

Intermediate Results Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	End Target
Signed agreements for higher	0.00	4.00	8.00	12.00	17.00	17.00	17.00	17.00

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	End Target
education partnership programs								
Faculty members who receive advanced degree	0.00	0.00	0.00	0.00	7.00	20.00	30.00	30.00
Number of female faculty members who receive advanced degree	0.00	0.00	0.00	0.00	2.00	5.00	10.00	10.00
Number of submitted articles to peer-reviewed international journals	0.00	0.00	0.00	0.00	8.00	16.00	24.00	24.00
number of laboratories constructed or rehabilitated	0.00	0.00	30.00	45.00	55.00	55.00	55.00	55.00
Number of classroom built	0.00	0.00	0.00	40.00	80.00	80.00	80.00	80.00
Number of dormitories built	0.00	0.00	0.00	2.00	4.00	4.00	4.00	4.00
Share of female students living in newly constructed dormitories under the project	0.00	0.00	0.00	60.00	60.00	60.00	60.00	60.00
Number of HEIs that produce consolidated FM reports	0.00	0.00	0.00	3.00	5.00	5.00	5.00	5.00
Number of target HEIs that complete tracer studies	0.00	0.00	0.00	3.00	5.00	5.00		5.00
Number of HEIs that input data into HEMIS	5.00	5.00	13.00	21.00	29.00	40.00	40.00	40.00
Number of IQA units that submit	0.00	0.00	5.00	10.00	15.00	20.00	20.00	20.00

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	End Target
report with recommendatins to BoD								
Human resource development master plan approved	N	N	Y	Y	Y	Y	Y	Y
Draft legislation on HEI autonomy submitted to Council of Ministers	N	Y	Y	Y	Y	Y	Y	Y
Number of HEIs that collect, record and report on the grievances from students	0.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY : Cambodia
Higher Education Institutions Capacity Improvement Project

1. In order to enhance Cambodia's competitiveness, it is important to increase the relevance and quality of higher education provision in key target areas. HEIP promotes STEMs and agriculture education and research at targeted HEIs and strengthens sectoral governance. Each of these will contribute towards improving the quality, relevance and equity of education and research in higher education.

Component 1: Improving Teaching and Learning Capacity (approximately US$63.7 million equivalent)

2. **This component aims to enhance quality of teaching capacity of targeted HEIs in the fields of science, technology, engineering, mathematics (STEM), and agriculture,** while other complementary areas deemed necessary for economic development will also be supported.[15] The proposed sub-components are: 1.1: Improving teaching and learning, 1.2: Improving Institutional Capacity, and 1.3: Supporting private HEIs. Private Advisory Committee will be formed including members from the private sector to support the formulation and implementation of the sub-components 1.1, and 1.3 to improve the relevance of activities. Sub-components 1.1 and 1.2 will support five targeted public HEIs and Sub-component 1.3 will support selected private HEIs.

Sub-component 1.1: Improving Teaching and Learning Capacity (approximately US$52.7 million equivalent)

3. This sub-component aims to improve the quality of teaching and learning mainly in STEM and agriculture fields within the five public HEIs based on their Institutional Improvement Plans (IIP). The sub-component will include the provision of grants to the public HEIS for implementation of: (a) collaborative activities through partnership agreements with international and/or domestic HEIs, to support improvements in three main areas: (i) provision of technical support for curriculum review and facility assessment including the establishment of new undergraduate and graduate programs, (ii) provision of short courses and mentoring programs for faculty staff, and (iii) implementation of faculty exchange and collaborative research programs; and (b) improvement of facilities and collaborative activities with private sector partners based on each HEIs IIP and assessment by partner HEIs through: (i) construction and rehabilitation of university buildings, laboratories, classrooms, and dormitories for female students and students from poor households; (ii) provision of teaching and learning equipment and materials. and (iii) provision of technical support to the target

4. HEIs to strengthen industrial linkages by arrangement of guest lecturers from industry, establishment of job placement and/or industrial linkage units at the HEIs, internships, interdisciplinary exchanges, and alumni activities. Special attention will be paid to gender-specific needs at target HEIs. Target HEIs will be encouraged to prioritize female faculty participate in upgrade program. The project

[15] In order to connect STEM and agricultural fields to industry and/or policy making, complementary fields such as, but not limited to, economics, management, or sociology must be improved. Graduates from these complementary fields play a crucial role in macro planning/policy making during the transition to a knowledge-based economy.

will track the gender-disaggregated indicator on use of dormitory as well as upgrading faculty qualification as a part of regular monitoring activity.

5. To improve teaching and learning, this sub-component requires targeted HEIs to develop partnerships with select international and/or domestic HEIs that have expertise in relevant areas. Each partnership program will be based on a partnership agreement signed between targeted HEIs and partner universities, leveraging, where possible, existing partnerships. Partnership agreements should detail the purpose of the partnership; description of activities; review and monitoring practices; implementation arrangement; reporting requirements; and expected outputs and timeline. Although the partnership programs will be implemented by each targeted HEI, an Operations Manual has been drafted for guidance. There are three main activity areas under the partnership programs: curriculum improvement; faculty upgrading; and new program establishment. This sub-component will also support facility rehabilitation and construction and activities to promote industry linkages in line with IIPs.

6. Curriculum improvement: Given the rapid development in science and technology, relevant curriculum is critical to ensure that HEI courses match labor market needs, both presently and in the future. Curriculum improvement will be carried out by the targeted HEIs in partnership with partner universities based on the IIP. The targeted HEIs will be responsible for establishing a new or using its existing curriculum review unit. This unit will be at the faculty level and will comprise representatives from the IQA office. The unit will work closely with partner universities in reviewing the appropriateness of the existing curriculum, including core and elective courses, and suggest changes to ensure relevance. They will also provide hands-on training on teaching practices as well as needed teaching and learning materials. In doing so, both parties will: (a) jointly examine the existing curriculum framework by using the National Qualification Framework or other relevant frameworks suitable to the HEIs, and (b) take in to account key priorities skills needed by the economy as mentioned in the IDP and other policy documents. In addition, the climate change elements[16] are potential areas to be incorporated into the existing curriculum in the relevant STEM and Agricultural fields.

7. *Faculty upgrading*. Cutting edge knowledge of faculty members is critical to ensure quality programs offered at targeted HEIs. The sub-component will support improved andragogy of faculty members through short course training, and faculty exchange, and/or faculty/student mentoring with partner universities. The prioritized areas for improvement will be identified in the HEI's IIP and specific activities will be agreed in a signed partnership agreement. Target HEIs will be encouraged to prioritize female faculty participate in upgrade program. The project will track the gender-disaggregated indicator on upgrading faculty qualification as a part of regular monitoring activity.

[16] Climate Change has started to impact Cambodian agriculture. The 2016 World Risk Report identified Cambodia as the ninth most disaster-prone country in the world with floods, storms and droughts as the most predominant threats (UNU 2016). Some provinces experienced food shortages during the 2016 drought while farmers were unable to irrigate their crops because of insufficient water (ACAPS 2016). Climate change adaptation technologies and policies in agriculture are important for Cambodia given the sector's critical roles in the economy and social welfare in terms of employments of millions of smallholder farmers, national income, and food security. Persistent food insecurity and poverty, especially rural poverty; and high vulnerability to climate shocks and disasters make it especially critical to understand the impacts of climate change on the agriculture sector in Cambodia and to formulate appropriate policy and investments to deal with these shocks.

8. *New program establishment*. To support the IDP, this sub-component will establish new STEM and agriculture programs. Partner universities will guide targeted HEIs in program design, course structure, and curriculum development. Training and upgrading of necessary human resources will also be carried out, in conjunction with the faculty upgrading activities described above.

9. *Facility rehabilitation and construction*. To complement the improved curriculum, upgraded faculty, and new program establishment, the project will also support the: (a) construction and rehabilitation of university buildings, laboratories, classrooms, and dormitories; and (b) equipment, learning materials, and office/laboratory supplies. The needed inputs for improving teaching and learning will be mainly determined through the partnership and jointly implemented so as faculty from targeted HEIs can learn from faculty from partner universities. Student dormitories will also be built on HEIs' campuses for female students as well as students from poor household. This is intended to overcome a constraint preventing students from studying at university, particularly in Phnom Penh where accommodation costs are high.

10. *Industry linkages*. This sub-component will promote targeted HEIs to strengthen industrial linkages. Supported activities include, but are not limited to, establishment of centers/offices that promote industry linkages, guest speakers from industry, job placement units at HEIs, internships, interdisciplinary exchanges, and alumni activities

Sub-component 1.2: Improving Institutional Capacity (approximately US$3 million equivalent)

11. This sub-component aims to improve the internal and external accountability of the five targeted public HEIs by strengthening their institutional governance, financial and human resource management, and monitoring of graduates' participation in the labor market. This sub-component will provide grants to the public HEIs to finance technical assistance, equipment, training, and operational costs in line with IIP in support of these activities. Through these activities, HEIs are expected to improve institutional capacity in line with the accreditation standards;[17] produce consolidated annual financial reports and tracer studies to be accountable to the Royal Government of Cambodia, industry, and other external stakeholders. Some activities, such as the tracer study, will be coordinated by DGHE. The tracer studies will include gender-disaggregated data and analysis, and will identify gender-related barriers to entry into STEM and relevant professions.

12. The sub-component will support institutional capacity development at the targeted HEIs to meet the national standards for institutional accreditation. Activities include, but are not limited to, strategic plan development, guidelines for board of directors, reforms to FM and HR management, and capacity to track employability of graduates. Each targeted HEI will develop an institutional capacity development plan based on its needs. These activities will be supported by TAs and will incorporate lessons learned from pilot activities from the HEQCIP. DGHE will coordinate activities related to FM and HR management, as well as capacity to track employability of graduates for targeted HEIs.

Sub-component 1.3: Supporting private HEIs (approximately US$8 million equivalent)

[17] The nine national standards are: (1) vision, mission, goals, (2) governance and management, (3) academic staff, (4) academic program, (5) student services, (6) learning resources, (7) physical resources, (8) financial resources, and (9) internal quality assurance.

13. This sub-component aims to support selected private HEIs[18] in improving the quality of teaching and learning mainly in STEM and agriculture fields based on submitted proposals, and in improving the internal and external accountability of the selected private HEIs. The sub-component will include the provision of grants to the private HEIS for implementation of: (a) collaborative activities through partnership agreements with international and/or domestic HEIs, to support improvements in three main areas: (i) provision of technical support for curriculum review and facility assessment including the establishment of new undergraduate and graduate programs, (ii) provision of short courses and mentoring programs for faculty staff, and (iii) implementation of faculty exchange programs; and (b) activities aimed at strengthening the private HEIs' internal and external accountability in line with the accreditation standards, including strengthening their institutional governance, their financial and human resource management, and monitoring of graduates' participation in the labor market.

14. The selection of private HEIs and the implementation of their proposals will be guided by a Project Operations Manual (POM) to be developed and completed by the end of first year of the project (June 30, 2019). To be eligible for participation in the selection process for this sub-component, HEIs must meet the criteria stated in the POM. Once the call for proposals is announced, DGHE will provide private HEIs guidance during the submission process. Proposals will be submitted to a section committee within MoEYS. The top proposal will be selected based on criteria outlined in the POM as well as the allocated budget for this sub-component. Private HEIs will be expected to make a financial contribution to the proposed activities. Private HEIs will be notified of the outcome of selection by the DGHE, at which point activities will commence.

15. Curriculum review: Since private HEIs have few degrees in science and technology because of the high unit cost, curriculum must be developed to ensure courses match labor market needs, both presently and in the future. Curriculum reviews will be carried out by the selected private HEI in partnership with partner universities based on the HEI's proposal. The selected private HEIs will be responsible for establishing a new or use its existing curriculum review unit. This unit will be at the faculty level and will comprise representatives from the IQA office. The unit will work closely with partner universities in reviewing the appropriateness of the existing curriculum, including core and elective courses, and suggest changes to ensure relevance. They will also provide hands-on training on teaching practices as well as needed teaching and learning materials. In doing so, both parties will: (a) jointly examine the existing curriculum framework by using the National Qualification Framework or other relevant frameworks suitable to the HEIs and (b) take in to account key priorities skills needed by the economy as mentioned in the IDP and other policy documents.

16. *Faculty upgrading*. Cutting edge knowledge of faculty members is critical to ensure quality programs offered at selected private HEIs. However, teaching staff at most private HEIs do not hold advanced degrees. This sub-component will therefore support improved andragogy of faculty members through short course training, and faculty exchange, and/or faculty/student mentoring with partner universities. The prioritized areas for improvement will be identified in the HEI's proposal and specific activities will be agreed in a signed partnership agreement.

[18] Private HEIs are competitively selected through a call for proposals. More detail procedure will be guided by a POM to be developed during the first year of the project. Please see Annex 2 for more detailed information.

17. *Industry linkages*. This sub-component will promote selected private HEIs to strengthen industrial linkages. Supported activities include, but are not limited to, establishment of centers/offices that promote industry linkages, guest speakers from industry, job placement units at HEIs, internships, interdisciplinary exchanges, and alumni activities.

18. *Institutional capacity.* The sub-component will also support institutional capacity development at the selected private HEIs for the above activities to meet the national standards for institutional accreditation. Activities include, but are not limited to, strategic planning, guidelines for board of directors, reforms to FM and HR management, and capacity to track employability of graduates. These activities will be supported by the DGHE.

Component 2: Improving Research in STEM and agriculture (approximately US$15.8 million equivalent)

19. The objective of this component is to improve the quality and relevance of research in STEM, agricultural, and other priority fields by providing grants to the selected public HEIs in the development and implementation research projects that result in peer reviewed publications. The research projects will be relevant to industrial and/or societal needs. The following activities will be financed: research equipment and facilities; research consumables; research operation costs; and researcher incentives. Details will be provided in the POM.

20. *Project Operations Manual.* Research projects, implemented by teams of researchers from targeted HEIs that are selected by HEIs and approved by HEIP, will be designed and/or implemented in collaboration with industrial partners, international and/or domestic partner universities, and/or generate scientific evidence for public policy making. A detailed POM will provide guidelines for teams to prepare, implement, and complete projects, as well as detail monitoring and evaluation of each research project. The POM will incorporate the lessons learned from the HEQCIP and update the fiduciary arrangements in conformity with the country and the Bank's requirements. The POM can be updated in consultation with the Bank.

21. *Process.* There will be two rounds of funding for research projects. The first round will take place in year 1 while the second round will take place in year 3 over the six-year project period. The maximum budget ceiling for research projects will not exceed US$500,000 per project. Training will be organized by HEIP to HEIs in areas such as procurement, financial management, and implementation of the POM. Teams of researchers will submit standardized proposals that will not only include technical research design and methodology, but also detail the relevance to industry and society of the given project.

22. *Research Selection***.** The selection process for research projects will be carried out sequentially, first at the HEI level and then at MoEYS. The research teams will submit full research proposals, which should be in line with the IDP, to a Research Committee or a Scientific Council, whichever currently exists in the HEI. This Committee/Council will review and improve proposals, ensuring all internal HEI and HEIP requirements are met. The Committee/Council will include members as decided by each HEI. Once the Committee/Council approves proposals, they will be submitted to MoEYS by each targeted HEI. target HEIs will be encouraged to prioritize female staff led research projects. The project will track the gender-disaggregated indicator on research project completion led by female staff as a part of regular monitoring activity.

23. *Committee.* At the MoEYS level, a Research Approval Committee will be in charge of approving the final proposal. The Research Approval Committee will: (a) review the relevance of the research proposals (e.g., in terms of its industrial linkages, societal value, or connection to the IDP); (b) ensure all necessary paperwork is complete; and (c) provide clearance for each proposal. The Research Approval Committee will include members from DGHE, ACC, and HEIs, while representatives from other relevant ministries and departments may also be included. Experts from academics and/or industry in specialist areas will be invited as required to participate in technical discussions.

24. *Duration of projects.* Each research project under US$200,000 should be completed within 18 months. Those above US$200,000 will be completed in 24 months. Completion is defined as completion of the research program as well as the Project Completion Report, which will be submitted to the Research Committee/Scientific Council and then passed on to the Research Approval Committee. If well justified, extensions will be given to those projects that have completed at least 50 percent of planned execution. During and after the lifetime of the research projects, it is expected that research teams will submit and publish in peer-reviewed journals. The project will finance: research equipment and facilities/laboratories; research consumables; research operation and maintenance costs; and researcher incentives. The researcher incentives will be financed by counterpart funds.

Component 3: Strengthen Sectoral Governance and Project Management (approximately US$13 million equivalent).

25. **This component aims to strengthen the system of higher education sector wide** to ensure that the higher education system can produce graduates equipped with transferable skills and knowledge, especially in STEM and agriculture. The proposed sub-components will be: 3.1: Strengthening Sectoral Governance; and 3.2: Project Management and Monitoring and Evaluation.

26. **Sub-component 3.1: Strengthening Sectoral Governance (approximately US$7.5 million equivalent).** This component aims to strengthen the system of higher education through the improvement of quality assurance mechanisms; expansion of information systems; and support the development of legislation for autonomous HEIs. The sub-component will specifically support (a) the implementation of institutional accreditation; (b) the development and implementation of internal quality assurance guidelines for HEIs; (c) the expansion of HEMIS to be used for policy and planning; (d) provision of technical support to develop/process needed policy documents, including HEI autonomy, PhD standards, Human Resource Master Plan[19], and other relevant areas; and (e) coordination of activities related to Financial Management (FM) and Human Resource (HR) reform and capacity development to track graduate employment data for target HEIs (see sub-component 1.3). These areas will build on the strategic setting developed by MoEYS as well as the sectoral foundations supported by HEQCIP. These activities will be implemented by DGHE and the ACC.

27. Support from this project will be provided for accreditation activities to begin as outlined in the ACC's strategic plan. This includes ensuring both HEIs and assessors are prepared for accreditation activities, without conflict of interests, as well as developing sound information management systems for the expected data. Specific activities include, (a) support to HEIs on the self-assessment report, assessors

[19] The HR Masterplan will be developed taking into consideration the demographic projection, country skill needs over the next two/three decades, situation analysis of labor market, forecasting of future skills needs to align the training and educational plans, and program of the country.

on the national standards, and ACC staff on effective management of accreditation teams; (b) implementation of a knowledge management information system to keep track of the accreditation process; (c) information dissemination to the public about the results of accreditation; and (d) development of PhD standards. The details of the specific activities of the ACC will be based on its Scope of Work plan.

28. Accreditation is only one piece of effective quality assurance systems. HEIs must also develop internal systems of quality assurance to guide university policy and support the implementation of teaching and learning practices. Indeed, internal quality assurance is one of the National Standards for Institutional Accreditation assessed during the accreditation process. Although HEIs are mandated to have quality assurance units, most do not function or are nonexistent. This sub-component will therefore support the DGHE in developing guidelines for internal quality assurance units within HEIs as well as training to HEIs on the implementation of the guidelines. These units will be responsible for both managing the accreditation process as well as ensuring quality within the university. The details of the specific activities of the DGHE will be based on its Scope of Work plan.

29. The sub-component will also support the expansion of the HEMIS to be used both by MoEYS and HEIs. Under HEQCIP, a working HEMIS was developed and piloted in five public and private HEIs. The system has been designed to collect and analyze data in terms of the Education Sector Plan monitoring indicators as well as the Higher Education Road Map indicators. The next step in developing HEMIS is populating it with data from HEIs. This will require capacity development of MoEYS and HEI staff in using the system and analyzing data. HEIs need to be trained on organizing data in a way that can easily integrate into HEMIS and MoEYS staff need to learn how to link HEMIS data to results based planning, monitoring and evaluation frameworks, and international quality assurance frameworks.

30. The sub-component also supports the development/processing of needed policy documents. This will include, among others: (a) processing legislation of HEI autonomy policy, (b) development of national PhD standards, and (c) development of Higher Education Human Resource Master Plan. These activities will be led by DGHE and ACC with TA support. Under this sub-component, in addition, DGHE will coordinate activities related to FM and HR reform and capacity development to track graduate employment data for target HEIs.

31. The activities in this sub-component are intended to reach the entire higher education sub-sector. As reforms are implemented, they will be strategically piloted in the five targeted public HEIs in Component 1, especially through sub-component 1.3 activities on improving institutional management.

Sub-component 3.2: Strengthening Project Management and Monitoring and Evaluation (approximately US$5.5 million equivalent).

32. This sub-component provides technical and operational assistance for the coordination, administration, monitoring, evaluation, and audit of the Project. It also provides technical assistance to the implementation of Sub-component 2.1 activities.

33. This sub-component will support day-to-day implementation, coordination, and management of project activities on planning and execution, financial management (FM), procurement, supervision and reporting, internal and external audits, environmental and social safeguards management, and

monitoring and evaluation. These activities will ensure efficient project management and early identification of corrective measures to solve implementation problems. In addition, this component will provide necessary vehicles, training/workshops, logistics and operational costs, and data collection survey. Given the large size and high complexity of investment, critical/strategic technical assistance (TA) is required in relevant MoEYS departments and HEIs. International TA is required in the areas of, but not limited to, coordination, STEM, quality assurance, HEMIS, and FM/HR reform. The sub-component will also finance development of a comprehensive gender strategy for the project to be prepared during year 1 of project implementation.

34. To support monitoring and evaluation of project activities and sector wide indicators, the project will strengthen the existing mechanisms for monitoring and data collection, and supporting project specific data collection when needed. This component will finance TA and training, and the development and use of monitoring tools to the monitoring and evaluation offices in targeted HEIs and DGHE. The sub-component will also support an impact evaluation on STEM and agriculture education and labor market outcomes.

35. In order to track the PDO indicator 1, quality of Higher Education Partnership Program, the revised curriculum and other improved outputs under the Higher Education Partnership Program will be evaluated by multi-dimensional evaluation panel. The evaluation process will be based on a four-tier scoring.

Component 4: Contingent Emergency Response (US$0 million equivalent).

36. The objective of the contingent emergency response component, with a provisional zero allocation, is to allow for the reallocation of financing in accordance with the IDA Immediate Response Mechanism in order to provide an immediate response to an eligible crisis or emergency, as needed. An Emergency Response Manual (ERM) will be developed for activities under this component, detailing streamlined FM, procurement, safeguard, and any other necessary implementation arrangements.

37. In the event that the component is triggered, the results framework would be revised through formal restructuring to include appropriate indicators related to the emergency response activities.

ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY : Cambodia
Higher Education Institutions Capacity Improvement Project

Project Institutional and Implementation Arrangements

38. The project will be implemented at the national and institutional levels over a period of six years. MoEYS will assume overall responsibility for coordination and implementation of the project, including procurement, disbursement and financial management (FM) and in close collaboration with targeted HEIs.

39. At the highest level, the project management arrangements will require strong support from MoEYS leadership. Under the current arrangement for ongoing projects, the Minister has established a Project Management Committee (PMC) responsible for the oversight of the ESP. The PMC is led by the Minister and the Secretaries of State responsible for all sectors in the MoEYS. This management structure has been designed to ensure that overall educational policy direction is analyzed from a variety of angles; and that policy decisions are followed into implementation through the overall coordination of the Directors General. Since the PMC also has the mandate to provide oversight responsibility for all donor-financed projects, and given the existing structure, the PMC will be responsible for: (a) approving the project's annual activities, operational plan, and budget allocations; and (b) overseeing progress and compliance with agreed project guidelines. Project Director of HEIP will be the member secretary of the PMC for providing adequate information for decision making.

40. The implementation arrangements will be based on the existing MoEYS structure with clear responsibilities. At the project coordination level, the Project Management Team (PMT) will be chaired by the Secretary of State (or the Under Secretary of State) responsible for the Directorate General of HE. He will be the Project Director, with overall responsibility for project direction and management and act as key point of liaison with IDA. The Director General of Higher Education will be the Project Manager. The PMT will include senior representatives from targeted HEIs, ACC, and DGHE. It will be responsible for: (a) monitoring the overall project implementation and its adherence to the project objectives; (b) day to day implementation oversight and liaise with Project Teams at each targeted HEI on all operational matters; (c) monitoring financial management and procurement, (d) commissioning and approving required accounts and reports; (e) ensuring project audit requirements are satisfied; (f) approving quarterly progress reports, and procurement plans; (g) conducting quarterly progress monitoring of project targets; (h) overseeing M&E of the project (i) reviewing the annual operation plan with recommendations of approval or disapproval to the Project Director; (j) providing oversight for civil works programs, and (k) ensuring compliance with safeguards policy.

41. Project Teams (PTs) will be arranged at DGHE, ACC Secretariat, and the five targeted public HEIs, and will include members of the Finance Department within each institution. Project implementation will be carried out by each PT, supported by existing MoEYS technical departments, including Construction Department, Finance Department, and Procurement Unit. The five public HEI PTs will be established to coordinate and implement the project component activities. The PTs will assume responsibility for work plans and budgets, progress reports, financial reports, monitoring, and procurement and safeguards.

42. Management structure. MoEYS/PMC will ensure close coordination and collaboration among project implementers and relevant RGC agencies (including the Ministry of Economy and Finance (MEF), and MAFF) and other people and entities involved with the project and will report the overall project progress to IDA and related RGC agencies.

43. Reporting arrangements and supervision. The PTs at HEIs will report to their line ministries, MoEYS, MEF, and MAFF for overall monitoring and PMT for information, which in turn will report to the MoEYS. To ensure that the project is implemented with the full participation of and close coordination between the PMT and PTs and between line ministries and PTs at HEIs, regular field visits and workshops will be conducted by the PMT/PT managers, staff, and consultants throughout the year. IDA will conduct its formal supervision mission at least every six months with more frequent on the ground support from the field based project team. The project midterm review will be conducted about two and a half years following the start of project implementation. The project implementation structure is presented in Figure 3.

44. In addition to the aforementioned project management structure, two oversight committees will be established. First, a Partnership and Research Committee will review and endorse draft partnership agreements and research proposals submitted by the target HEIs. The Committee will be comprised of representatives from relevant ministries, HEIs, private sector and existing professional bodies. Second, a Private Advisory Committee will regularly provide strategic guidance on the project activities including the relevance of the curriculum contents and research topics and the promotion of academic-industry linkage. The committee will be comprised of relevant private industries in the fields of STEM and agriculture.

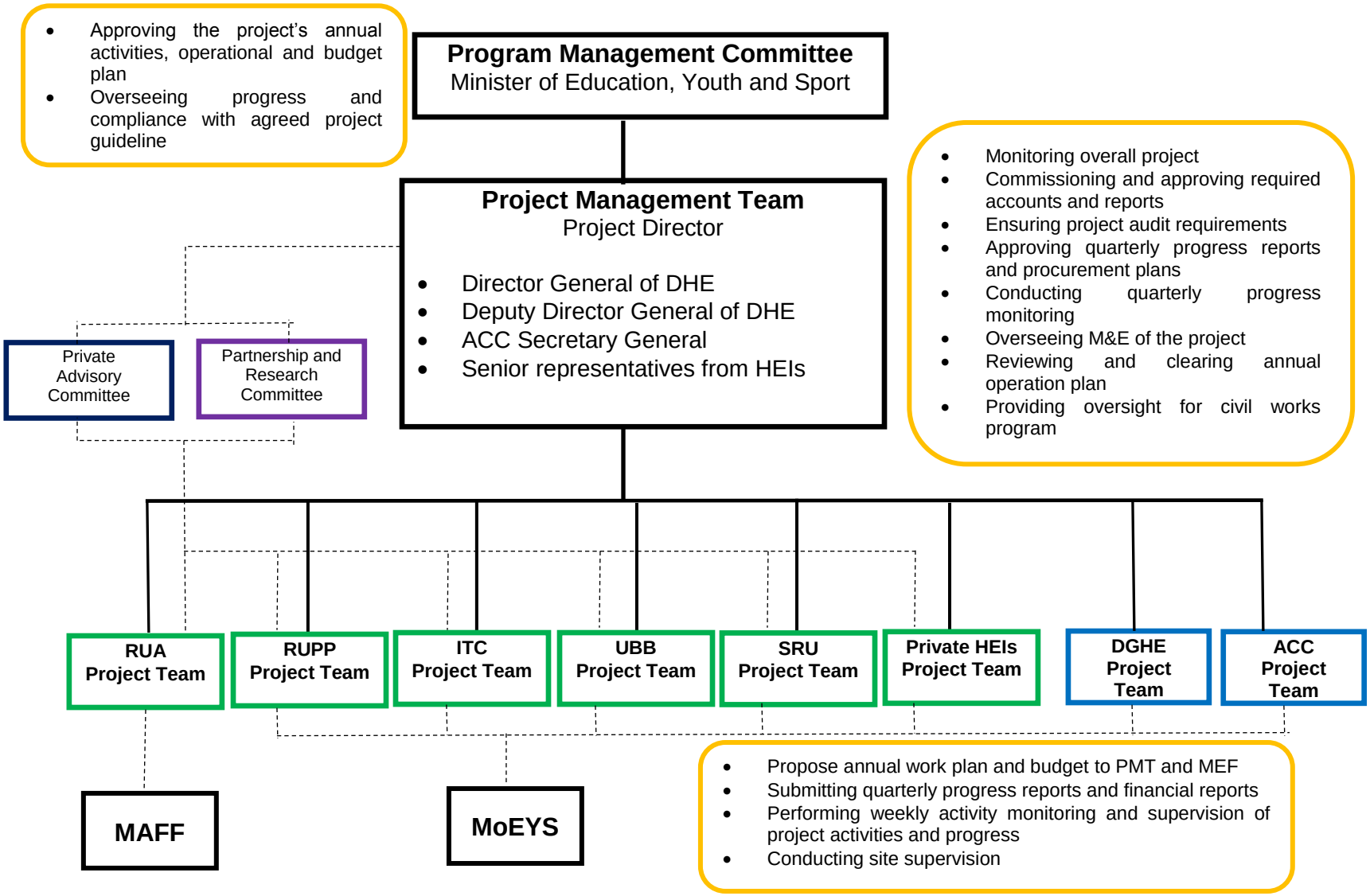
45. Staff composition of the PMT and PTs. The detailed staff plan for the PMT and PTs will be outlined in the Project Operational Manual (POM). The PMC is a shared project management structure at MoEYS. Thus, the structure will be decided by MoEYS as a whole. Staff to be mobilized for this project will be defined in the POM. At the HEI level, each PT will be the lead Vice Rector and supported by a full-time senior staff member. Each PT will have focal persons responsible for the implementation of all three components: 1.1 Improve Teaching and Learning Capacity, 1.2 Improving Research in STEM and agriculture, and 1.3. Improve Institutional Capacity. Addition staff will include FM and accounting teams, a procurement coordinator, M&E, safeguards, administration, quality assurance, construction, and communication. The PMTs can hire Technical Assistants if the requisite skills are not available at the HEIs. In addition, two HEIs that receive large amount of funds (ITC and RUPP) are recommended to have National TAs for project coordination, FM and procurement tasks.

46. The POM has been drafted with inputs from related project entities and will be finalized and adopted by MoEYS before Project effectiveness. The manual will be maintained and updated from time to time as needed. It will detail the project management, FM, procurement, and disbursement arrangements. It will include the specific details of the HEI subproject cycle, including subproject development, review, approval, implementation, monitoring, and reporting, as well as the respective roles of MoEYS, PTs, beneficiaries and IDA in that process.

47. At the outset of the project implementation, a two-party Sub-Grant Agreement will be drawn up to be signed by MoEYS and each target HEIs regarding the activities for Components 1 and 2. The contents of these agreements will include the implementation, procurement, financial management, safeguards,

and monitoring and reporting rights and responsibilities of all parties, agreed activities and eligible expenditures under the Subprojects including HEI counterpart funding requirements, an agreed payment schedule, and possible sanctions for misuse of funds and non-compliance with the terms of the agreement. Subprojects will be prepared, approved and implemented in accordance with the criteria, guidelines and procedures set forth in the POM. A sample Sub-Grant Agreement for public and private HEIs will also be included in the POM.

Figure 3: Project Implementation Structure



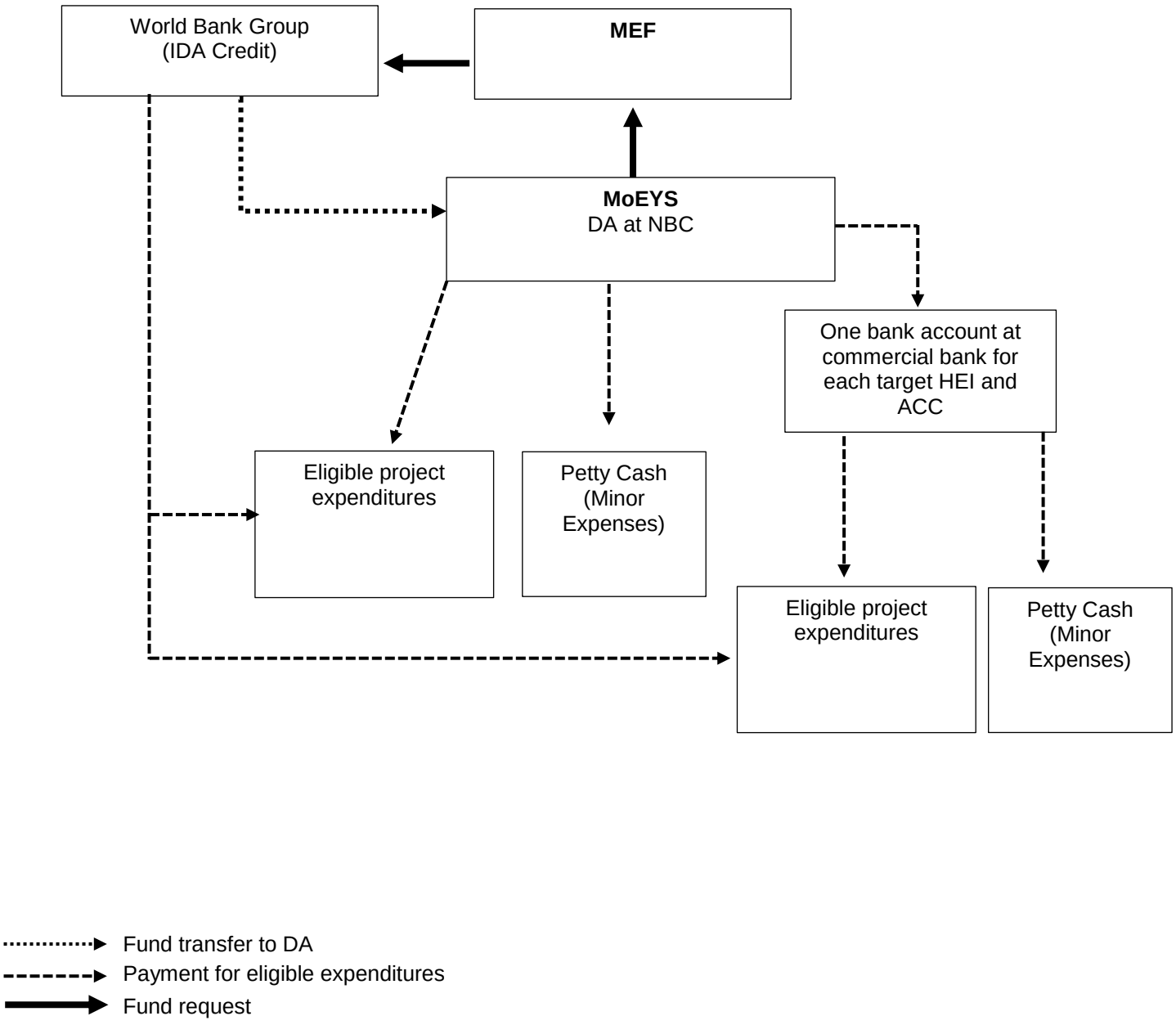
Financial Management

46. **An FM Assessment** was carried out in accordance with OP/BP 10.0 for the Department of Finance (DoF) of MoEYS and in all targeted HEIs. The assessment is based on discussion with the MoEYS and HEIs' FM team and knowledge gained from FM reviews during the implementation of the Second Education Sector Support Project (SESSP) and Higher Education Quality and Capacity Improvement Project (HEQCIP). The Finance Department of the Directorate General of Administration and Finance (DGAF) of the MoEYS will be responsible for all FM and disbursement under the project, including providing cash advances and monitoring advance clearance to the targeted HEIs and Accreditation Committee of Cambodia (ACC); while the DoFs of each targeted HEI and ACC will be responsible for managing its own financial management. The implementing agency, MoEYS, has an acceptable FM system that was developed under the World Bank financed SESSP. The FM risk specific to the project assessed as high. A number of risk mitigating measures to enhance the FM system will be implemented to control the specific risks of the project. The FM risk is assessed as substantial after mitigation measures.

47. **Budgeting and counterpart funding**: MoEYS, ACC and targeted HEIs are implementing Program-Based Budgeting under the Public FM Reform. All targeted HEIs and ACC have authority to manage their own spending for the government budget. The project will follow government budgeting principles as outlined in the Standard Operating Procedure/Financial Management Manual (SOP/FMM) for externally financed projects issued by the government in May 2012. The quality of budgeting and cost forecasting will be further strengthened to enable the project to adopt variable ceiling of the designated account based on six-month cash forecasts. The government will provide contributions, including office space, staff time spent on the project, electricity, and other administrative cost for smooth operations under a normal government's working arrangements.

49. **Flow of funds**: Funds from IDA will be channeled directly to a segregated US$ denominated Designated Account (DA) maintained by MoEYS at the National Bank of Cambodia. MoEYS (Directorate General of Higher Education – DGHE-, with a support from DoF) will be responsible for certifying and approving expenditures incurred during project implementation and administer the DA's operations. Each targeted HEI and ACC will maintain a bank account in US$ at the commercial bank to get a rolling three-month projected cash advance from MoEYS for its operations according to the World Bank's no-objection and MEF's approved annual work plan. The project will prepare work plans and budget plans for implementing activities leading to achieving of agreed indicators. The project fund flow is presented in Figure 4.

Figure 4. Fund Flow Diagram



48. **Staffing**: MoEYS (DoF), ACC and targeted HEIs will assign sufficient government FM staff (such as Finance Officer, Accountant and Cashier and one or more Assistant Accountants if there are more works on FM) under its Finance Department to carry out the day-to-day FM functions and to ensure controls and procedures in FM are adhered to. One local FM consultant to support the FM operations for MoEYS, ACC and all targeted HEIs may be hired for the first 18 months and one Finance Assistant will be engaged to support MoEYS' DOF in financial management during the project period. A provision for other FM consultancy support will be assessed during the project implementation as and when it is necessary.

49. **Accounting and maintenance of accounting records**: The project will adopt a cash basis of accounting, which is in line with the government's public financial management reform, and adopts the RGC's chart of accounts. In consultation with MEF, MoEYS (Directorate General of Higher Education), ACC and each HEI will appoint management having delegated authority to authorize payments of expenditures under their respective parts. The same Sage accounting software used in SESSP will be used as the FM tool to manage financial transactions and producing timely and reliable financial reports. Each targeted HEI and ACC is required to adopt a simple accounting software for their own project part until it has developed its own software for its entity wide operations. The original supporting documents will be retained by MoEYS (DoF), ACC and each targeted HEIs for a period of 10 years according to the SOP.

50. **Internal controls and internal audit**: The project adopts the SOP/FMM which contain sound internal control over FM. The existing supplementary financial management manual (SFMM), developed for HEQCIP, will be updated to include some new elements in the project's FM such as projected cash requirement and IFR based disbursements, cash advances to each HEI and ACC, and reporting by HEIs and ACC to MoEYS for report consolidation. There is a need to apply the government's chart of accounts into the project's FM system and to design the financial reports in the accounting software. Appropriate controls will be established in SFMM to address the project's specific risks, such as payment for research funds, training and operating costs. It is suggested that, as part of their normal internal audit work program, the MoEYS's Internal Audit Department (IAD) will include the project activities implemented by MoEYS, and entities under MoEYS, in their samples selected and report on them in their normal internal audit report for the period. Similarly, IAD of MAFF will do the same for project activities implemented by RUA. The IAD of MoEYS and MAFF will report results of internal audit work on the project to the management of the ministries. The Project Management will include internal audit findings into the Project Progress Report to be submitted to the Bank.

51. **Periodic financial reporting**: DoF of MoEYS is responsible for consolidating financial reports for its part and from all targeted HEIs and ACC. IFRs will be prepared on a semester basis and submitted to IDA within 45 days after the end of each calendar semester, starting from the first semester following the project's first disbursement. The format and contents of the IFR will be modified and agreed with IDA and included in the SFMM.

52. **Arrangements for external audit**: An independent external auditing firm would be engaged by MEF under the external audit bundling to audit the project's annual financial statements in accordance with Terms of Reference (ToR) acceptable to IDA. The audited financial statements and management letters are required to be submitted to IDA within six months after the end of each fiscal year. The cost of the audit would be financed from the project proceeds. The audited financial statements should be

disclosed on MoEYS's website. IDA would also make the audits available for the public on its external website as required by the Policy on Access to Information.

Disbursements

53. The IDA Credit proceeds will be disbursed against eligible expenditures as follows:

Table 4. Allocations of Credit Proceeds

Category	Amount of the Financing Allocated (expressed in US$ equivalent)	Amount of the Financing Allocated (expressed in SDR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, non-consulting services, consulting services, training and operating costs under Component 3 of the Project	12,300,000	8,450,000	100%
(2) Grants under Components 1.1, 1.2 and 2 of the Project	69,700,000	47,850,000	100% of amounts disbursed
(3) Grants under Component 1.3 of the Project	8,000,000	5,500,000	100% of amounts disbursed
(4) Emergency Expenditures under Component 4 of the Project	0	0	100%
TOTAL AMOUNT	90,000,000	61,800,000	

54. **Disbursement Arrangements for Components 1-3**: MoEYS is authorized to operate a DA in US$ under acceptable terms and conditions. The DA has a variable ceiling equivalent to a two-quarter six-month cash forecast minus: (a) the cash balance at DA; and (b) requested-amount-but-yet received amount at the bank statement date. The primary disbursement methods will be reimbursement, advances, special commitment, and direct payments. Supporting documentation required for eligible expenditures paid from the DA is the IFR. Direct payments will be documented by records. Prior review expenses will be supported by a summary sheet. The frequency of reporting of expenditures paid from the DA shall be quarterly. The minimum application size for reimbursements, special commitment, and direct payments will be equivalent to US$100,000.

55. **Disbursement for Component 4—Contingent Emergency Response**: No withdrawal can be made under Component 4 until the government has (a) prepared and disclosed all safeguards instruments required for activities under Component 4 of the project, if any, and the government has implemented any actions which are required to be taken under said instruments; (b) established adequate implementation arrangements, including a positive list of goods and/or specific works and services required for emergency recovery, satisfactory to IDA, including staff and resources for the purposes of said activities; and (c) prepared and adopted an Emergency Response Manual (ERM), acceptable to IDA, so as to be appropriate for the inclusion and implementation of activities under Component 4. The ERM

is expected to be developed during the first year of project implementation, or in any event before the release of any funds under Component 4.

56. The project will have a disbursement deadline date (final date on which IDA will accept applications for withdrawal from the recipient or documentation on the use of the credit proceeds already advanced by IDA) of four months after the closing date of the project.

57. The project will provide retroactive financing for the project's eligible expenditures under Category 1 and 2 paid by the Government on or after February 22, 2018, but before signature date, for the amount not exceeding SDR 350,000.

58. **Implementation Support and Supervision Plan**: Implementation support for FM functions will be provided more frequently to the task and client teams in the first year of project implementation. The Bank will then limit its review biannually thereafter depending on the updated project FM risk assessment and progress. The FM missions will, inter alia, include reviews of the continuous adequacy of the FM arrangements, progress with FM capacity building activities, adequacy, and timeliness of preparation of the IFRs, and progress in implementation of the agreed FM actions and recommendations from project audits.

Procurement

59. Procurement under HEIP will be governed by World Bank Procurement Framework 2016, Procurement Regulations for Borrowers. Procurement under National Procedures will be carried out in accordance with the Kingdom of Cambodia's Updated Standard Operating Procedures and Procurement Manual for All Externally Financed Projects/Programs ("Procurement Manual"), promulgated through the Sub-decree 74 dated May 22, 2012, which is issued pursuant to Article 3 of the Kingdom of Cambodia's Law on Public Procurement dated January 14, 2012 subject to the additional provisions that would be included in the Procurement Plan. Under the proposed project World Bank planning and tracking system, Systematic Tracking of Exchanges in Procurement (STEP), will be used to prepare, clear and update Procurement Plans and conduct all procurement transactions for the Project. Accordingly, all the procurement activities under the proposed project will be entered into, tracked and monitored online through the system. The procurement unit of MoYES will be responsible for overall procurement work for the project including processing large procurement packages for HEIs, while HEIs procurement teams are responsible for processing small procurement packages.

60. Procurement Capacity and Risk Assessment (PCRA) for MoEYS was conducted during various project preparation missions. It found that MoEYS has certain experience in conducting procurement in accordance with the SoP and Procurement Manual for All Externally Financed Projects/Programs and in implementing a number of DPs funded projects including projects financed by the World Bank, and ADB. MoEYS has well established organizational structure of the procurement unit and relatively adequate number of staff to implement the project. However, the procurement risk is assessed as substantial as it revealed a number of risks that could adversely influence the project implementation if not mitigated including following key risks: (a) the procurement unit of MoEYS still has limited number of experienced staff to support all projects financed by DPs and the government's own budget, (b) possible delays in procurement start up due to slow technical inputs from concerned departments, and (c) Governance risks

associated with conflict of interest, fraud and corruption, which may adversely affect the efficiency and effectiveness of the project implementation and . In order to mitigate the above identified risks and strengthen the procurement capacity of MoEYS, the following measures have been established and agreed with MoEYS to be implemented during project implementation: (i)Provide procurement training for PU' staff, including initial training during project preparation and in-depth procurement trainings during project implementation; (ii)Careful procurement planning and scheduling, procurement advanced as much as possible; Procurement monitoring using STEP; Closer coordination between Implementing Departments, HEIs and follow up to get technical inputs on time, (iii)Enhanced disclosure of procurement information, including publication of the annual procurement plan and a quarterly summary of the contract award information for all procurement packages on MoEYS' s website and in newspapers, Establish a procurement complaint handling mechanism consistent with the Government Procurement Rules & Regulations of MEF, and the World Bank. Require staff and bidders involved in procurement to declare their interest and sign a declaration form Ethics Statement and (vi) Carrying out regular implementation support missions and conduct annual procurement post review.

61. Procurement Strategy. Based on the project requirements, operational context, economic aspects, technical solutions and market analysis, a Project Procurement Strategy Document (PPSD) has been developed for the project by the MoEYS with the support from the Bank team. The PPSD identified the following types of activities:

a) The procurement of goods comprises of Lab equipment and material, furniture for laboratory, classrooms, new buildings and new student accommodation, office equipment, STEM research equipment, vehicles, laboratory development, furniture and equipment for Incubation center, computer Lab and learning material. The market approach for goods, except procurement of lab equipment and material, under the project is national because given the relatively small value and simple nature of goods, there will not be interest from foreign suppliers. The contracts with cost below US$600,000 to US$100,000 with national market approach for small contract (cost less than US$100,000) RFQ method is appropriate in order to increase the efficiency of the process and in such case the market approach will be limited. The market research as part of the PPSD showed that there are sufficient number of potential suppliers in the country that have the capacity to supply this type of goods. Therefore, it proposes to use RFB method for the contracts with cost of equivalent or above US$100,000 or RFQ method for the contracts with cost below US$100,000 with national market approach. Regarding the procurement of lab equipment and material with cost estimated US$0.3 to US$0.85 million, which is relatively large amount and competition level of the market is high; there will be interest from foreign suppliers and the limited number of local suppliers in the country; therefore, RFB with international market approach is appropriate and will be used.

b) The civil works activities include construction of critical large civil works mainly construction of several new buildings including one new university campus, 3 new buildings, 4 new dormitories for HEIs, with cost estimated ranging from 1 million to US$7 million and small construction/renovation works of laboratories, learning facilities, incubation centers, research buildings, offices, cleanroom infrastructure with cost estimated ranging from US$36,000 to about US$600,000. There will be interest from foreign bidders and local contractors who have the capacity to execute large value as demonstrated by the PPSD. Therefore, it proposes to use RFB method for the contracts with cost of equivalent or above US$2,000,000 with international

market approach, the contracts with cost below US$2,000,000 to US$200,000 with national market approach and for small contracts with cost less than US$200,000 RFQ method is appropriate to increase the efficiency of the process and in such case the market approach will be limited.

c) The consulting services under the project are mostly of relatively small scale which comprises of (i)two firm consulting assignments such as project financial audit, detail design of new buildings with cost estimate ranging from US$30,000 to US$200,000; and (ii) various assignments for individual consultant such as project such as Chief International technical advisor, technical advisors, procurement, financial management, site engineers, Technical Advisors for developing Master Plan for Human resource for STEM, Technical Advisors for developing M&E Tool, Mechanism and Reporting M&E system for Project and Sub Sector, Technical Advisors for Human resource Reform, Technical Advisor for Developing and conduct Tracer Study, National Technical Advisor for Developing and conduct Policy Analysis and Silk innovation specialist with cost estimate ranging from US$0.057 to US$0.86 million. The PPSD has shown that there are sufficient national consulting firms and individuals having the qualifications and experience to provide such type of consulting services. It hence suggests that CQS and competitive selection method should be used for firm assignment and individual assignment respectively with national market approach. International market approach should also be considered for the contracts that needs international experience and international consultants would be beneficial to the project implementation. In addition, based on the PPSD the QCBS method is encouraged to be used for relatively large contracts such as contracts with cost estimate of equivalent or above US$300,000.

62. Procurement Plan. Based on the PPSD, the initial procurement plan for the project was prepared by the MoEYS and agreed by the Bank at negotiation. For the civil works contracts, Request for Bids (RFB) is the method to be used. Regarding goods procurement, there are a number of small goods contracts under the project that will be procured using RFB method details of this are in the procurement plan. For efficiency, contracts with a cost estimate of less than US$200,000 and US$100,000 for works and goods respectively will be procured using RFQ. For consulting services, QCBS, QBS, FBS, LCS with the most appropriate market approach will be used. The Procurement Plan will be updated at least annually (in real time) by the MoEYS to (a) reflect project implementation; (b) accommodate changes that should be made; and (c) add new packages as needed for the project. All procurement plans, their updates or modifications shall be subject to Bank's prior review and no-objection. Details for the procurement arrangements are provided in the Project Operations Manual. The project Procurement Plan identifies the risk for each activity and prior review of these activities is set based on the performance and risk rating. Contracts not subject to prior review will be subject to post review. The Bank will carry out procurement post reviews on an annual basis with an initial sampling rate of 20 percent, which will be adjusted periodically during project implementation based on the performance of the project.

Environmental and Social (including safeguards)

63. In the past, MoEYS has successfully implemented a number of Bank-financed projects in the education sector, including the Education Sector Support Project (ESSP); Education Sector Support Scale Up Action Program (ESSSUAP), the ongoing Second Education Sector Support Project (SESSP), as well as the Higher Education Quality and Capacity Improvement Project (HEQCIP). MoEYS has designated two Safeguards Focal Persons/Officers to be responsible for safeguards of all education supported projects from project design to implementation. They are familiar with Bank's safeguards policies and project cycle, and tools with extensive on-the-job training (including project monitoring and reporting) on infrastructure related to construction of school facilities. The Bank will assist and guide the Borrower with the preparation of safeguard instruments.

64. For the purposes of this project, focal persons have been designated to ensure the smooth implementation of the equity engagement plan at the institutional level. They have worked to prepare the equity assessment and plan, and will take responsibility for the implementation of the measures specified in the plan.

Monitoring and Evaluation

65. The relevant departments of MoEYS and targeted HEIs will monitor the indicators of the project; this will be done within the monitoring and evaluation framework of HEIP. The proposed monitoring indicators are provided in section VII. The data related to output indicators will be provided semi-annually, while MoEYS will provide outcome-related data annually. The progress in meeting the monitoring indicators will be reviewed by IDA semi-annually and mid-term review (approximately 2 years after the effectiveness) will be carried out to assess implementation status. Where appropriate, all data collected will be disaggregated by gender and in some cases by location, in order to understand and respond to specific issues.

Role of Partners

66. The World Bank was the first development partner (DP) to provide sector-wide support to higher education through HEQCIP. Other DPs have focused support at the institutional level. For example, Japan International Cooperation Agency (JICA) supported ITC on education quality improvements by introducing new teaching and learning approaches together with construction and innovation of some laboratories. The Swedish International Development Agency (SIDA) has been assisting RUPP in the development of an Information Communication Technology (ICT) system to improve (a) teaching and learning, and (b) institutional governance. SIDA is now implementing the ICT Master Plan, which was jointly produced by SIDA and RUPP. The private sector has also played crucially important roles as it has been cooperating with and assisting HEIs in improving teaching and learning and research by sitting as board members, providing technical support for curriculum reforms to link higher education outcomes to job markets, providing venues for students to intern or carry out practicum, providing financial or in-kind supports to HEI research teams, and others. Building upon the current status at the target HEIs, HEIP will further enlarge the cooperation between HEIs and private sector, so that the quality and relevance of higher education and research will be in place to realize the goals of IDP and the country's mid-term and long-term visions.

67. After HEQCIP concluded, the higher education sub-sector suffered from a shortage of resources to carry out reforms to realize the goals of the IDP, in which this sub-sector plays a vital role. HEIP is deemed necessary to continue the good progress of the sub-sector and contribute to the achievement of ambitious IDP goals. The support from HEIP is aligned with that of other DPs who have been working at the institutional levels. While the current JICA project is working on enhancing the teaching and learning approaches in some HEIs, HEIP will complement JICA support by building good learning facilities, environments, and institutional capacity to enable the targeted HEIs to introduce the new approaches into the classroom to ultimately improve learning outcomes and relevance. Similarly, at RUPP, the project will utilize the good ICT system set up by SIDA support to build innovative institutional governance to improve the quality of teaching, learning, and research. In short, the project has mapped the work of other DPs to avoid overlapping support while jointly maximizing the impacts of resources channeled into targeted HEIs.

ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY : Cambodia
Higher Education Improvement Project

Strategy and Approach for Implementation Support

Implementation Support Plan

68. Implementation support will focus on the capacity risks related to sectoral and technical aspects of the project, as well as those related to fiduciary concerns. Intensive supervision missions, frequent review of the implementation plans, and diligent follow up with MoEYS on the project fiduciary activities. Regular dialogue and implementation support will facilitate early identification of problems and obstacles and will enable time provision of technical advice. Given the innovative nature and size of investment, dialogue and strong implementation support will be critical to the success of the project. The Implementation Support Plan (ISP) is founded on semi-annual intensive supervision missions and continuous sectoral and technical oversight, particularly during the first two years of project implementation. The ISP covers the following dimensions:

(a) Project Implementation Support Missions: Implementation support from the IDA will be provided through supervision missions conducted every six months. These missions will be conducted in collaboration with MoEYS and targeted HEIs. At least one of these missions each year will include field visits. MoEYS will prepare a detailed six-month implementation report to be shared with the IDA one month prior to the implementation support mission. IDA will provide technical assistance as requested by MoEYS to help prepare these reports. The occasion of supervision missions will provide IDA with extensive information regarding project implementation submitted prior to the mission, and will lead to the identification of key implementation issues and bottlenecks as well as the necessary corrective measures agreed between MoEYS and the Bank.

(b) Continuous Sectoral and Technical Oversight: Knowledgeable IDA staff and technical consultants will provide advice and exchange views to ensure:

(i) Component 1. Improving Teaching and Learning Capacity
(ii) Component 2. Improving Research in STEM and agriculture
(iii) Component 3. Strengthening Sectoral Governance and Project Management
(iv) Component 4. Contingent Emergency Response

This will include day-to-day implementation support to the five targeted public HEIs (including two provincial HEIs), MoEYS, and selected private HEIs to generate capacity in the implementing agency and associated beneficiary institutions.

(c) Financial Management Oversight: This aspect will ensure adherence to the project implementation manual and provide training on proper FM. Capacity building will be continued to address the fiduciary risk issues. Training for Procurement, FM staff will be provided on an

ongoing basis to help ensure necessary controls are in place and that sound procurement and FM practices are being implemented. In addition, International and/or National Individual Technical Consultants for these areas will be engaged by the project. The implementing agency and the project team will provide additional implementation support in the early stage of implementation period so as to avoid implementation delays of those activities. In addition, the fiduciary training provided to MoEYS and targeted HEIs will anticipate these issues and possible solutions to them before they arise.

(d) External Audit. The project's annual financial statements are subject to an external audit arrangement which is acceptable to the Bank. The audit will be carried out with greater emphasis on internal controls, according to a ToR acceptable to IDA. An annual audit report will be required to be submitted to IDA within six months after the end of calendar year. Auditors' reports would be shared with MoEYS, MEF and IDA, and would be posted on the Project website, with specific review and agreement on corrective actions undertaken during the Project supervision missions each year.

(e) Procurement aspect: Provide training to all agencies conducting procurement on procurement procedures acceptable to IDA.

(f) Local Technical and Fiduciary Support. A local education specialist in the Country Office will serve as Chief Technical Advisor (CTA) to provide technical support for the annual planning and implementation of the Projects, and liaise with other education partners in the field. In consultations with the Task Team Leader (TTL), this specialist would also work with local IDA FM and Procurement staff to ensure project receives timely fiduciary support.

(g) Donor Coordination: The team will continue to promote effective donor coordination through active dialogue with other donors as an ongoing agenda for the monthly ESWG. The project will keep donors updated about the project through joint missions, frequent consultation, and meetings.

69. IDA team will assist the MoEYS to access international TA resources by providing contact information about such resources, but it is not envisaged at the current stage that IDA will directly finance these activities as implementation support.

70. Composition of IDA Implementation Support Team. The IDA's team consists of a senior education specialist/TTL, local specialist, operations officer, social development specialist, environmental specialist, engineer/architect, FM specialist and procurement specialist. MoEYS would also be encouraged to nominate several members from its staff to participate in the supervision missions.

Implementation Support Plan and Resource Requirements

Time	Focus	Skills Needed	Staff Weeks	Estimated Annual budget (US$)
First 24 months	Project Management; Details of Implementation Arrangement; Setting up of higher education sector monitoring system.	Expertise on higher education monitoring system; Operational expertise;	12	36,000
	Procedures and normative framework for planning and finance and implementation of higher education (teaching, learning and research program) activities.	Higher education specialist	12	36,000
	Construction technical support	Architect/engineer (Consultant)	8	40,000
	Fiduciary oversight	Education specialist	4	12,000
	Monitoring and evaluation training and supervision: M&E framework for the project developed	M&E specialist (Consultant)	4	16,000
	FM training and supervision: FM section of Project Operational Manual	FM specialist	5	10,000
	Procurement training and supervision: Procurement section of Project Operational Manual and preparation of bid documents	Procurement specialist; Engineering consultant	5	8,000
	Environmental Safeguards training and supervision; EMP, ECoP, checklist, and IPPF implementation	Environmental and social safeguards specialists	4	12,000
36-60 months	Project Implementation Support; Mid-Term Review of the project.	Expertise on higher education and faculty upgrading policies and reform; operational expertise; M&E expertise	8	24,000

Time	Focus	Skills Needed	Staff Weeks	Estimated Annual budget (US$)
	Procedures and normative framework for planning and finance and implementation of higher education (campus construction/renovation, teaching, learning and research program) activities.	Architect/engineer, higher education specialist	8	24,000
	Construction technical support	Architect/engineer (Consultant)	6	30,000
	Fiduciary oversight	Education specialist	4	12,000
	Monitoring and evaluation training and supervision: M&E framework for the project developed	M&E specialist (Consultant)	4	16,000
	Procurement: Periodic reviews as required by World Bank policy	Procurement specialist	4	8,000
	FM: Annual Financial Statement review and auditing report review	FM specialist	4	8,000
	Environmental Safeguards training and supervision; EMP, ECoP, checklist, and IPPF implementation	Environmental and social safeguards specialists	4	12,000

Skills Mix Required

Skills Needed	Number of Staff Weeks (per year)	Number of Trips (per year)
Senior Education Specialist/Task Team Leader	12	2
Education Specialist	16	2
Architect	8	2
M&E specialist	4	2
FM Specialist	5	2
Procurement Specialist	5	2
Social Development Specialist	2	2
Environmental Specialist	2	2