THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

FOR OFFICIAL USE ONLY

Report No: PAD3416

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT OF SDR 237.7 MILLION

(US$331.5 MILLION EQUIVALENT)

AND A

PROPOSED GRANT

IN THE AMOUNT OF SDR 169.6 MILLION

(US$236.5 MILLION EQUIVALENT)

OF WHICH SDR 88.9 MILLION (US$124 MILLION EQUIVALENT) FROM THE WINDOW FOR HOST COMMUNITIES AND REFUGEES (COVID-19 SUB-WINDOW)

AND A

PROPOSED CLEAN TECHNOLOGY FUND CONTINGENT RECOVERY GRANT

IN THE AMOUNT OF US$25 MILLION

AND A

PROPOSED CLEAN TECHNOLOGY FUND GRANT

IN THE AMOUNT OF US$5 MILLION

AND A

GRANT

IN THE AMOUNT OF US$10 MILLION

FROM THE ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAM MULTI-DONOR TRUST FUND

TO THE

REPUBLIC OF UGANDA

FOR AN

ELECTRICITY ACCESS SCALE-UP PROJECT

March 10, 2022

Energy and Extractives Global Practice
Eastern and Southern Africa Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective February 28, 2022)

Currency Unit =	Ugandan Shilling (UGX)
US$1 =	UGX 3548
US$1 =	SDR 0.72

FISCAL YEAR
July 1 - June 30

Regional Vice President:	Hafez M. H. Ghanem
Country Director:	Keith E Hansen
Acting Regional Director:	Ashish Khanna
Practice Manager:	Erik Fernstrom
Task Team Leaders:	Raihan Elahi, Federico Querio

ABBREVIATIONS AND ACRONYMS

AFD	French Development Agency (*Agence Française subde Développement*)
BSC	Bulk Supply Contract
CCF	Clean Cooking Fund
CER	Certified Emission Reduction
CERC	Contingent Emergency Response Component
Ci-Dev	Carbon Initiative for Development
COVID-19	Coronavirus Disease 2019
CP	Condition Precedent
CRG	Contingent Recovery Grant
CRRF	Comprehensive Refugee Response Framework
CTF	Clean Technology Fund
DoERD	Directorate of Energy Resources Development
DSRA	Debt Service Reserve Account
E&S	Environment and Social
EASP	Electricity Access Scale-up Project
ECP	Electricity Connections Policy
e-GP	Electronic Government Procurement
EIRR	Economic Internal Rate of Return
EnDEV	Energizing Development
ESCP	Environment and Social Commitment Plan
ESHS	Environment, Social, Health and Safety
ESS	Environmental and Social Standard
ERA	Electricity Regulatory Authority
ERT	Energy for Rural Transformation
ESCP	Environment and Social Commitment Plan
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Framework
ESMP	Environment and Social Management Plan
ESMS	Environment and Social Management System
FIRR	Financial Internal Rate of Return
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GERP	Grid Expansion and Reinforcement Project
GHG	Greenhouse Gas
GIS	Geographical Information System
GoU	Government of Uganda
GRS	Grievance Redress Service
IA	Implementing Agency
IFR	Interim Financial Report
INDC	Intended Nationally Determined Contribution
IPF	Investment Project Financing
IVA	Independent Verification Agency
KfW	German Investment and Development Bank *(Kreditanstalt für Wiederaufbau)*

KPI	Key Performance Indicator
LPG	Liquified Petroleum Gas
LV	Low Voltage
M&E	Monitoring and Evaluation
MEMD	Ministry of Energy and Mineral Development
MFI	Microfinance Institution
MLSP	Material Logistics Service Provider
MoES	Ministry of Education and Sports
MoFPED	Ministry of Finance, Planning and Economic Development
MoH	Ministry of Health
MoWE	Ministry of Water and Environment
MTEF	Mid Term Expenditure Framework
MTF	Multi-Tier Framework
MV	Medium Voltage
NDC	Nationally Determined Contribution
NDP	National Development Plan
NEMA	National Environment Management Authority
NES	National Electrification Strategy
NFIS	National Financial Inclusion Strategy
O&M	Operation and Maintenance
OBA	Output-Based Aid
OPM	Office of the Prime Minister
PAD	Project Appraisal Document
PAP	Project-Affected Person
PAYGo	Pay-As-You-Go
PBC	Performance-based Condition
PCU	Project Coordination Unit
PDO	Project Development Objective
PDSC	Planning Design and Supervision Consultant
PFI	Participating Financial Institution
PIMS	Public Investment Management Analysis
PIU	Project Implementation Unit
POM	Project Operations Manual
PP	Procurement Plan
PPA	Power Purchasing Agreement
PPDA	Public Procurement and Disposal of Public Assets Authority
PPSD	Project Procurement Strategy for Development
PSC	Project Steering Committee
PULSE	Productive Use Leveraging Solar Energy
PV	Photovoltaic
RBF	Results-Based Financing
REA	Rural Electrification Agency
RESP	Rural Electrification Strategy and Plan
RHDs	Refugee Hosting Districts
RFP	Request for Proposal
ROGEP	Regional Off Grid Electrification Project

RPF	Resettlement Policy Framework
RSW	Refugee Sub-Window
SACCOs	Savings and Credit Cooperative Organizations
SCC	Service Connection Contractor
SDG	Sustainable Development Goal
SDI	Spatial Development Infrastructure
SEA/SH	Sexual Exploitation and Abuse and Sexual Harassment
SEF	Stakeholder Engagement Framework
SERP	Sustainable Energy Response Plan for Refugees and Host Communities
SHS	Solar Home System
SMEs	Small and Medium Enterprises
SP	Service Provider
SRMI	Solar Risk Mitigation Initiative
SRU	Solar Refrigeration Unit
ST	Service Territory
STEP	Systematic Tracking of Exchanges in Procurement
SWP	Solar Water Pump
TA	Technical Assistance
UBOS	Uganda Bureau of Statistics
UEB	Uganda Electricity Board
UECCC	Uganda Energy Credit Capitalisation Company
UEDCL	Uganda Electricity Distribution Company Limited
UEGCL	Uganda Electricity Generation Company Limited
UETCL	Uganda Electricity Transmission Company Limited
UgIFT	Uganda Intergovernmental Fiscal Transfers
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
USEA	Uganda Solar Energy Association
VMGF	Vulnerable and Marginalized Group Framework
WHR	Window for Host Communities and Refugees

TABLE OF CONTENTS

DATASHEET **1**
I. STRATEGIC CONTEXT **10**
A. Country Context 10
B. Sectoral and Institutional Context 14
C. Relevance to Higher Level Objectives 19
II. PROJECT DESCRIPTION **22**
A. Project Development Objective 22
B. Project Components 22
C. Project Beneficiaries 30
D. Results Chain 31
E. Rationale for Bank Involvement and Role of Partners 31
F. Lessons Learned and Reflected in the Project Design 32
III. IMPLEMENTATION ARRANGEMENTS **34**
A. Institutional and implementation Arrangements 34
B. Results Monitoring and Evaluation Arrangements 36
C. Sustainability 36
IV. PROJECT APPRAISAL SUMMARY **37**
A. Technical, Economic and Financial Analysis 37
B. Fiduciary 38
C. Legal Operational Policies 41
D. Environmental and Social 41
V. GRIEVANCE REDRESS SERVICES **44**
VI. KEY RISKS **44**
VII. RESULTS FRAMEWORK AND MONITORING **48**
ANNEX 1: Implementation Arrangements and Support Plan **76**
ANNEX 2: Clean Technology Fund **84**
ANNEX 3: Economic and Financial Analysis **96**
ANNEX 4: Gender Gap Analysis and Action Plan **101**
ANNEX 5: Procurement **105**
ANNEX 6: Financial Management **112**
ANNEX 7: Refugees and Host Communities in Uganda **118**
ANNEX 8: Financial Intermediary Financing Policy Review **125**
ANNEX 9: Clean Cooking Fund and Clean Cooking Interventions **127**

DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Uganda	Electricity Access Scale-up Project (EASP)	
Project ID	**Financing Instrument**	**Environmental and Social Risk Classification**
P166685	Investment Project Financing	Substantial

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[✓] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[✓] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[✓] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
31-Mar-2022	30-Jun-2027
Bank/IFC Collaboration	**Joint Level**
Yes	Complementary or Interdependent project requiring active coordination

Proposed Development Objective(s)

The Project Development Objective is to increase access to energy for households, commercial enterprises, industrial parks, and public institutions.

Components

Component Name	Cost (US$, millions)

Grid Expansion and Connectivity	357.50
Financial Intermediation for Energy Access Scale-up	107.00
Energy Access in Refugee Host Communities	125.50
Project Implementation, Support and Affordable Modern Energy Solutions	48.00
Contingent Emergency Response Component	0.00

Organizations

Borrower:	Republic of Uganda
Implementing Agency:	Ministry of Energy and Mineral Development (MEMD) Uganda Energy Credit Capitalisation Company (UECCC)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	638.00
Total Financing	638.00
of which IBRD/IDA	568.00
Financing Gap	0.00

DETAILS

Private Sector Investors/Shareholders

Equity	Amount	Debt	Amount
Government Contribution	578.00		
Government Resources	10.00		
IDA (Credit/Grant)	568.00		
Non-Government Contributions	60.00		
Private Sector Equity	20.00		
Trust Funds	40.00		

Total	**638.00**		**0.00**

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
Uganda	331.50	236.50	0.00	568.00
National PBA	331.50	112.50	0.00	444.00
Refugee	0.00	124.00	0.00	124.00
Total	**331.50**	**236.50**	**0.00**	**568.00**

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2022	2023	2024	2025	2026	2027	2028
Annual	0.00	35.00	100.00	150.00	146.00	120.00	17.00
Cumulative	0.00	35.00	135.00	285.00	431.00	551.00	568.00

INSTITUTIONAL DATA

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Climate Change, Infrastructure, PPP's & Guarantees

Climate Change and Disaster Screening

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

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	High
4. Technical Design of Project or Program	Moderate

5. Institutional Capacity for Implementation and Sustainability	High
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Low
9. Other	Substantial
10. Overall	Substantial

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

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

Schedule 2. Section I.A.2(c) of the Financing Agreement: The Recipient shall through MEMD, recruit or assign by no later than six months after the Effective Date: (i) a gender specialist, (ii) a clean cooking technology coordinator (iii) a legal specialist, (iv) procurement specialist (v) a GIS specialist, (vi) a national electrification specialist, (vii) a senior monitoring and evaluation specialist, (viii) a senior clean cooking officer, and (ix) a coordinator energy access in refugee host communities, and, all with terms of reference acceptable to the Association.

Sections and Description

Schedule 2. Section I.A.3(c) of the Financing Agreement: The Recipient through MEMD-PIU, shall by no later than six months after the Effective Date, recruit to the MEMD-PIU: (i) a procurement officer, (ii) a senior connections officer; (iii) two connections officers, (iv) a communication specialist, (v) an assistant administrative officer, (vi) a senior planning engineer, (vii) a GIS specialist, (viii) two senior construction engineers, (ix) an environmental

specialist, (x) a financial specialist, (xi) a senior way leaves officer, (xii) a database specialist, (xiii) a marketing specialist, (xiv) two wayleave officers, and (xv) a senior productive use specialist, all with terms of reference acceptable to the Association.

Sections and Description

Schedule 2. Section I.A.4(c) of the Financing Agreement: The Recipient shall cause UECCC to, by no later than six months after the Effective Date, assign or recruit to the UECCC-PIU: (i) a marketing specialist, (ii) a social safeguards specialist, and (iii) environmental health and safety specialist, (iv) a risk manager (v) a technical officer – results based financing and clean cooking, (vi) a refugee coordinator (vii) a credit analyst (viii) a senior procurement specialist and (ix) a grants officer, all with terms of reference acceptable to the Association.

Sections and Description

Schedule 2. Section I.A.5(a) of the Financing Agreement: The Recipient shall within thirty days after the Effective Date establish and maintain throughout Project implementation a Project Steering Committee to provide overall strategic guidance and monitoring of Project implementation progress.

Sections and Description

Schedule 2 Section IV. A of the Financing Agreement: In implementing Part 4 (a) of the Project, the Recipient shall:
(i) allot funds in its Medium-Term Expenditure Framework (MTEF) for the operation and maintenance costs to be paid by the MoH, MoE and MoW to the Electricity Service Providers.
(ii) ensure that funds in paragraph (A) of this section shall be made available in accordance with PBC 4 in the Table in Schedule 4 to this Agreement as follows: (a) $0 in FY1; (b) $500,000 in FY2; (c) $1,500,000 FY3 (d) $2,000,000 in FY4 and (d) $1,000,000 in FY5.

Conditions

Type	Financing source	Description
Effectiveness	Trust Funds, IBRD/IDA	The Association is satisfied that the Recipient has an adequate refugee protection framework.
Effectiveness	Trust Funds, IBRD/IDA	The Recipient has, through MEMD, established a -Project Coordination Unit (PCU) and assigned or recruited to the PCU: (i) a coordination manager, (ii) a Project accountant, (iii) an environment safeguard specialist, and (iv) a social safeguards specialist, all with terms of reference acceptable to the Association and in accordance with the provisions of the Procurement Regulations.
Effectiveness	Trust Funds, IBRD/IDA	The Recipient has, through MEMD, established a -Project Implementation Unit (MEMD-PIU) assigned or recruited to the PIU (i) a grid expansion manager (ii) a senior legal officer, (iii) project

		manager, (iv) connections manager; (v) a social safeguards specialist; (vi) procurement specialist; (vii) senior planning engineer and (viii) senior connections officer, all with experience and under terms of reference satisfactory to the Association and in accordance with the provisions of the Procurement Regulations.
Type Effectiveness	Financing source Trust Funds, IBRD/IDA	Description The Recipient has caused UECCC to establish a UECCC-Project Implementation Unit (UECCC-PIU) and assigned or recruited to the UECCC-PIU (i) a project manager, (ii) a program manager solar facility, (iii) a program manager – result-based financing and clean cooking, (iv) a program manager - public institutions solar electrification, (v) a program manager - productive uses, electric appliances and internal wiring, and (vi) senior finance specialist/accountant, all with terms of reference acceptable to the Association and in accordance with the provisions of the Procurement Regulations.
Type Effectiveness	Financing source Trust Funds, IBRD/IDA	Description The Project Operations Manual (“POM”), has been prepared and adopted by the Recipient through MEMD and UECCC in form and substance acceptable to the Association.
Type Effectiveness	Financing source Trust Funds, IBRD/IDA	Description The Subsidiary Agreement between the Recipient and UECCC in form and substance satisfactory to the Association has been executed in a manner satisfactory to the Association.
Type Effectiveness	Financing source Trust Funds, IBRD/IDA	Description The UECCC has developed and adopted an environmental and social management system in form and substance acceptable to the Association.
Type Effectiveness	Financing source Trust Funds, IBRD/IDA	Description The Recipient has conducted additional consultations with relevant stakeholders on the updated Stakeholder Engagement Framework in a manner satisfactory to the Association.
Type Effectiveness	Financing source Trust Funds, IBRD/IDA	Description The CTF Grant Agreement has been executed and delivered and all conditions precedent to its effectiveness or to the right of the Recipient to make withdrawals under it (other than the effectiveness of this Agreement) have been fulfilled.

Type	Financing source	Description
Effectiveness	Trust Funds, IBRD/IDA	The ESMAP Grant Agreement has been executed and delivered and all conditions precedent to its effectiveness or to the right of the Recipient to make withdrawals under it (other than the effectiveness of this Agreement) have been fulfilled.
Type	Financing source	Description
Disbursement	IBRD/IDA	No withdrawals shall be made under Categories (2)(a) and 2(d) of the Table in Section III.A of Schedule 2 to the Financing Agreement unless and until the Recipient has caused UECCC to prepare and furnish to the Association a loan pricing policy acceptable to the Association;
Type	Financing source	Description
Disbursement	IBRD/IDA	No withdrawals shall be made under Categories 6 and 7 of the Table in Section III.A of Schedule 2 to the Financing Agreement unless and until the Recipient has furnished evidence satisfactory to the Association that payments were made in accordance with the Verification Protocol and the applicable national laws.
Type	Financing source	Description
Disbursement	IBRD/IDA	Project implementation expenses shall be considered eligible for each semester of Project implementation under Categories 9 and 10 of the table in Section III. A of Schedule 2 to the Financing Agreement when conditions in the Implementation Optimization Plan in Section F of Schedule 2 to this Agreement are met, and then disbursement will be made as follows: i. Under Category (9) for the:(i) MEMD PIU and MEMD PCU, up to 10% of the amount in this Category. ii. Under Category (10), for the UECCC PIU, up to 10% of the amount in this Category.
Type	Financing source	Description
Disbursement	IBRD/IDA	No withdrawal shall be made under Category (8) for Emergency Expenditures, unless and until all of the following conditions have been met in respect of said expenditures: (i)(a) the Recipient has determined that an Eligible Crisis or Emergency has occurred, and has furnished to the Association a request to withdraw Financing amounts under Category 8; and (b) the Association has agreed with such determination, accepted said request and notified the Recipient thereof; and (ii) the Recipient has adopted the CERC Manual and Emergency Action Plan, in form and substance

		acceptable to the Association.

I. STRATEGIC CONTEXT

A. Country Context

1. **Uganda's population is fast-growing, predominantly young, and rural, with prevailing social and economic inequalities.** Driven by a high fertility rate of 5.59 births (2018), Uganda's population has doubled to 42.86 million over the last three decades and is expected to reach 80 million by 2040[1]. More than 48 percent of the population is under the age of 15 and nearly 50 percent of the population is between 15 and 65 years[2]. Overall, the population living in poverty is estimated at eight million (21 percent of the population)[3]. Socioeconomic inequalities and regional gaps in living conditions persist, with a higher prevalence of poverty in rural areas than in urban areas. The distribution of poverty affects certain sub-groups adversely, especially among women. For instance, the poverty rate for households headed by widows is much higher than those headed by widowers, at 18 percent and 11 percent, respectively, although female-headed and male-headed households are both equally likely to be poor[4]. As of 2018, 76 percent[5] of Ugandans live in rural areas and work in the agricultural sector, which accounts for 70 percent[6] of total employment and around a quarter of the country's gross domestic product (GDP)[7]. This renders a significant portion of the workforce vulnerable to climate change and weather shocks and demonstrates the need for economic diversification and alternative sources of employment in higher productivity industries.

2. **The Coronavirus Disease 2019 (COVID-19) pandemic is putting Uganda's growth trajectory at risk, exacerbating structural constraints and increasing pressure on the poor and vulnerable, including people living in Refugee Hosting Districts (RHDs).** Uganda's real GDP grew at 2.9 percent in FY20, less than half the 6.8 percent recorded in FY19[8], due in large part to the effects of the COVID-19 pandemic. As of December 2021, there have been almost 140,000 cases of COVID-19 in the country. The expected revenue loss from COVID-19 measures is estimated at 0.18 percent of GDP in FY20 while tax revenues, more broadly, are expected to fall to 11.6 percent of GDP for FY20 - 1 percentage point less than FY19. Economic activity stalled during the latter part of the fiscal year due to a domestic lockdown that lasted over four months, border closures, and the spillover effects of disruption in global demand and supply chains. This resulted in a sharp contraction in public investment and deceleration in private consumption. The pandemic has dampened consumer demand because of the falling purchasing power. For poor and vulnerable households in Uganda, the impact of COVID-19 is especially severe. Since the COVID-19 outbreak, 91 percent of households have

[1]2020. Uganda Economic Update, Strengthening Social Protection to Reduce Vulnerability and Promote Inclusive Growth, 2020. World Bank
[2] Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. 2015. The World Population Prospects: The 2015 Revision.
[3] 2020. Uganda Economic Update, Strengthening Social Protection to Reduce Vulnerability and Promote Inclusive Growth, 2020. World Bank.
[4] World Bank. 2016. The Uganda Poverty Assessment Report 2016. Washington, DC: World Bank.
http://pubdocs.worldbank.org/en/381951474255092375/pdf/Uganda-Poverty-Assessment-Report-2016.pdf
[5] World Bank Data.
[6] World Bank Data.
[7] World Bank. 2020. Uganda Economic Update, Strengthening Social Protection to Reduce Vulnerability and Promote Inclusive Growth, 2020. World Bank.
[8] World Bank. 2020. Uganda Economic Update, 16th Edition, December 2020: Investing in Uganda's Youth. December 2020

reported reduced income (or losses) from at least one of their sources of livelihood[9]. Preliminary estimates suggest that the pandemic could increase poverty incidence by 2.7 to 8.2 percentage points, resulting in an additional 1.07 to 3.15 million poor[10]. In urban areas, closure of non-essential institutions and the ban on public and private transport significantly affected the incomes of those engaged in the services, manufacturing, and construction sectors (around 35 percent of the work force). Early indications show that socioeconomically depressed districts, including those hosting refugees, are among those affected the most. As such, COVID-19 amplifies existing income inequalities and puts decades of gains related to health, gender, and economic prosperity at risk[11].

3. **The GoU acknowledges the role of energy to recover from the impact of COVID-19 and to transition to an inclusive industrialized and urbanized economic structure.** The GoU has initiated implementation of several fiscal interventions which include launching of a cooking tariff; launching of a Small Business Recovery Fund aimed at supporting small businesses that have suffered financial distress as a result of the COVID-19 pandemic; expediting the payment of domestic arrears to suppliers in the private sector; and Parish Development Model[12] aimed at delivering public and private interventions for wealth creation at the Parish level, which is the lowest economic planning unit. These interventions are aimed at consolidating economic recovery process and moving towards clean energy.

4. **Households in RHDs have been especially vulnerable to rising poverty rates, food insecurity, and mental health challenges.** For refugee women, reduced humanitarian assistance and fewer food rations coupled with the lockdowns and economic recession has further reduced their incomes and exacerbated their vulnerability. Refugees have been more adversely affected by COVID-19 shocks than their Ugandan counterparts and slower to recover with high levels of food insecurity, aid dependency on limited food rations. Refugees have also faced more pronounced mental health challenges and are ten times more likely to suffer from depression than Ugandans.[13] Refugees were more likely to stop working following COVID-19 lockdowns than nationals. Refugee businesses were also less likely to continue operating after COVID-19 shocks than those of Ugandan nationals. Compared to less than a quarter of Ugandan households, at least half of refugee households borrowed money to cope with the impacts of the COVID-19 emergency. Food insecurity remains much higher among refugees than Ugandans. Ration cuts coupled with COVID-19 impacts deteriorated food security among refugees substantially. It has gradually improved over the last 12 months following the initial lockdown but remains worse than in 2018.

5. **Uganda faces several challenges that could impede the country's progress toward middle-income status by 2025, a goal in its third National Development Plan (NDP III).** In addition to the impacts from COVID-19, various factors have affected the country's economy, including adverse weather conditions and meagre harvests, private sector credit constraints, conflict and unrest in neighboring countries, and underperformance in public sector project implementation[14].

[9] Uganda Bureau of Statistics and World Bank. (July 2020)). Uganda National COVID-19 Phone Survey Brief.
[10] World Bank. 2020. Digital Solutions in a Time of Crisis: Uganda Economic Update, 15th Edition, July 2020.
[11] World Bank. 2020. Digital Solutions in a Time of Crisis: Uganda Economic Update, 15th Edition, July 2020.
[12] The GoU Parish Development Model (https://molg.go.ug/?s=Parish+development+model)
[13] World Bank. 2021. Monitoring Social and Economic Impacts of COVID-19 on Refugees in Uganda: Results from the High-Frequency Phone - Third Round. World Bank, Washington, DC. © World Bank
[14] World Bank. 2020. Uganda Economic Update, Strengthening Social Protection to Reduce Vulnerability and Promote Inclusive Growth, 2020.

6. **The topical issues of gender inequalities and climate impacts also persist in Uganda.** The people, environment, and economy are highly dependent on natural resources, and the country is experiencing impacts of climate change. Along with poverty, land degradation, and rapid and unplanned urbanization and with the increase in the spread of vector-borne diseases, these climate risks affect the people and major productive sectors in the country, which lack sufficient institutional and community capacities to adapt to climate change impacts. Gender inequalities are pronounced, with Uganda ranking 131 out of 161 countries in the 2019 Gender Inequality Index[15]. Prevalence rates of gender-based violence (GBV) in Uganda are high compared to both global and regional averages[16] and these have increased further since the onset of the COVID-19 pandemic, with refugee communities particularly affected[17]. The Government of Uganda (GoU) recognizes GBV as a serious problem and approved a National Plan of Action for Sexual and Gender Based Violence and Violence Against Children in January 2019[18].

7. **Hosting the refugees from neighboring Horn of Africa has emerged as an important development conundrum.** Uganda is the largest refugee-hosting country in Africa and the third largest worldwide. By the end of January 2022, the country hosted 1.58 million refugees and asylum seekers. South Sudanese make up the largest nationality (962,360 people), followed by those from the Democratic Republic of the Congo (459,073) and Somalia (55,579)[19]. A further 105,880 refugees come from Burundi, Rwanda, Eritrea, Sudan, Ethiopia and 23 other countries. 94 percent of the refugees live in settlements across 12 Refugee Hosting Districts (RHDs) (out of 121 Districts) with a population of 4,437,500 people (excluding Kampala), while the remainder live among communities predominantly in urban areas. The West Nile sub-region, which hosts the majority of refugees, is among the poorest and most underdeveloped areas of the country. Lack of adequate employment opportunities, and health, education, and transport infrastructure, as well as increasing land degradation, places increased tension between refugees and local hosting communities. Inflows of refugees have put pressure on natural resources, infrastructure, and service delivery to people living in refugee hosting districts (RHDs).

8. **The World Bank, following consultation with the United Nations High Commissioner for Refugees (UNHCR) [20], has determined that Uganda's refugee protection framework remains adequate for accessing financing from the IDA19 Window for Host Communities and Refugees (WHR).** Uganda is recognized globally as having one of the refugee policies most aligned with the Global Compact on Refugees. Not only is Uganda a state party to international or regional instruments protecting refugees but also its laws, policies, and practices are largely consistent with international refugee law, guaranteeing non-refoulement and adequate protection for refugees and asylum seekers. Uganda has ratified the 1951 Refugee Convention and the 1967 Protocol Relating to the Status of Refugees, albeit with seven reservations to the former. The country has also

[15] http://hdr.undp.org/en/content/gender-inequality-index-gii.
[16] It is estimated that 51 percent of women in Uganda will experience violence in their lifetime. By comparison, the global average prevalence rates for violence against women (physical or sexual) ages 15–49 is estimated by the World Health Organization at 35.6 percent and the regional (Africa) average is 37.7 *percent.* http://www.noneinthree.org/uganda/policy-hub/. Accessed on January 20, 2020.
[17] GoU and World Bank, 2020, *Linking, Aligning and Convening, Gender-Based Violence and Violence Against Children Prevention and Response Services in Uganda's Refugee-Hosting Districts*.
[18] http://library.health.go.ug/publications/gender-based-violence/national-plan-action-sexual-and-gender-based-violence-and
[19] Office of the Prime Minister/UNHCR. 2022. Uganda Comprehensive Refugee Response Portal. https://data2.unhcr.org/en/country/uga.
[20] Based on the Uganda Refugee Protection Assessment Update 3 for the period July to December 2021– 25 February 2022.

ratified the 1969 Organization of African Unity Convention Governing the Specific Aspects of Refugee Problems in Africa as well as nine core international and regional human rights instruments relevant for refugee protection. These are domesticated into Uganda's legal system through the 2006 Refugee Act and its 2010 Refugee Regulations as well as other laws which accord protection to life and liberty of all persons, such as the Bill of Rights in the 1995 Constitution and the Penal Code Act. The Refugee Act guarantees refugees' fundamental rights, including the rights to work, enjoy freedom of movement, own property and access social services. The Refugee Regulations stipulate the integration of refugee matters in NDPs and that refugee concerns be considered in the initiation and formulation of sustainable development and environmental plans. Uganda's asylum policies and protection framework advance the integration of refugees and foster an enabling environment for them to live in safety, with dignity, and in harmony with host communities. Uganda is also implementing the Comprehensive Refugee Response Framework (CRRF) in accordance with the New York Declaration for Refugees and Migrants that is guiding and framing all refugee-related activities. These combine with the aim to ensure that the refugee response provides support to both refugees and host communities putting them on a path to self-reliance and by bridging humanitarian and development ways of working. Uganda has reiterated its ongoing commitments to refugee protection in the context of COVID-19 in Uganda's Strategy Note on Support to Refugees and RHDs. Since initial eligibility to WHR resources, Uganda has been implementing Refugee and Host Community Sector Response Plans for: education; health; water and environment; sustainable energy; and jobs and livelihoods, with a draft being developed for private sector engagement. The World Bank has supported the implementation of these Plans with the approval of US$626 million of WHR resources in IDA18 and IDA19.

9. **Uganda has remained committed to its refugee policy reforms despite the pressures of COVID-19 and this project will demonstrate substantial policy content in strengthening an integrated policy approach to refugees and host communities through supporting the implementation of the Sustainable Energy Response Plan for Refugees and Host Communities (SERP).** The World Bank is supporting Uganda's implementation of its policy reforms through a number of projects reducing pressure on social services, infrastructure, and natural resources across refugees and host communities. Uganda's Refugee Act (2006) and Refugee Regulations (2010) provide one of the strongest sets of policy measures globally to implement the Global Compact on Refugees. The GoU's progress since the 2017 Letter of Government Policy have been strong. The GoU has taken a number of concrete policy and operational steps since the Refugee Sub-Window (RSW) eligibility assessment in 2017. It has established functional CRRF coordination mechanisms, with a senior-level CRRF Steering Group consisting of the GoU and development and humanitarian partners (including the World Bank) meeting quarterly. Uganda has taken substantive policy steps to progress CRRF implementation through a CRRF National Plan of Action[21] and by strengthening access to integrated social services and infrastructure. Operational policy documents in the form of Refugee Sector Response Plans have been developed for education, health, water and environment, and job and livelihoods, and a draft private sector engagement strategy is being developed. The SERP was endorsed at the fifteenth CRRF Steering Group in December 2021. These response plans provide agreed priorities and activities for development partners to support the GoU in strengthening of services, employment opportunities and E&S to build the self-reliance of refugees and host communities. This project will be essential in supporting the implementation of two strategic objectives of the SERP: (i) development of sustainable and effective energy solutions that lead directly to increased access to clean, affordable, and reliable energy for refugee and host communities; and (ii) enhance capacity, mobilize resources and strengthen systems for effective coordination and management

[21] National Plan of Action 2021-2022 to Implement the Strategic Direction for the Global Compact on Refugees and the CRRF in Uganda.

of energy programs targeting refugees and host communities, in line with national and multi-sectoral policies, strategies and plans.

B. Sectoral and Institutional Context

Uganda's first generation of power sector reforms have resulted in positive outcomes in generation expansion and efficiency in electricity service delivery over the past two decades. The country has recently initiated a second generation of reforms that aims to consolidate most of the institutions within the power sector.

10. **In the late 1990s, Uganda restructured the government owned, operated and vertically integrated Uganda Electricity Board (UEB) into separate generation, transmission, and distribution companies, and the electricity sector has benefitted from this first generation of reforms.** The reforms established the Uganda Energy Regulatory Authority (ERA) and attracted private investment in electricity generation and distribution segments of the market. The Uganda Electricity Generation Company Limited (UEGCL) owned the existing power plants and entered into long term management and operation agreements with qualified private companies for selected power plants. The transmission company, Uganda Electricity Transmission Company Limited (UETCL), was established to operate as a national monopoly and act as a sole buyer and wholesaler of electricity. In 2005, the existing distribution network of Uganda Electricity Distribution Company Ltd (UEDCL), along with a footprint of 1km radius, was handed over to a private operator, Umeme Limited, under a 20-year concession contract which expires in 2025. Following formulation of a ten-year Rural Electrification Strategy and Plan (RESP) in 2013, Uganda was geographically divided into 14 service territories (STs) which were handed over to electricity Service Providers (SPs) to provide electricity service. The Rural Electrification Agency (REA) was established to oversee implementation of rural electrification activities, including supporting the SPs through funding and technical assistance to provide electricity services within these STs. Overall, the sector grew since the 1990 reforms and registered considerable achievements across the electricity value chain. Installed generation capacity has increased from 380MW in 2002 to 1,252MW[22], the transmission network has expanded from 1,165km in 2003 to 2,989km, distribution losses have reduced from 38 percent in 2005 to 16.9 percent and the number of electricity consumers has increased from 300,000 in 2005 to 1.57 million. However, the investments in generation have not been matched by corresponding investments in transmission and distribution. On one hand, the country is in an energy supply surplus situation, while on the other hand, only 42 percent of the population have access to electricity (i.e., 24 percent from the national grid and 18 percent from off-grid solar sources of Tier 1 and above level of service)[23].

11. **The GoU has initiated a second generation of power sector reforms to consolidate its unbundled sector back into a vertically integrated industry.** The GoU plans to merge the UEGCL, UETCL and UEDCL into one institution that is expected to perform the roles of electricity generation, transmission, and distribution. As part of these reforms, the GoU approved Statutory Instrument No 29 in May 2021 that mainstreamed the REA as a department within the Ministry of Energy and Mineral Development (MEMD). The responsibility of implementing the Government's rural electrification agenda currently lies with the MEMD through its Directorate of Energy Resources Development (DoERD). The role of Umeme and the other electricity Service Providers are being reviewed as part of this rationalization exercise initiated by the GoU. The GoU has

[22] The generation mix includes hydro, cogeneration/bagasse, solar and heavy fuel oil (HFO)
[23] MEMD National Electrification Report for ERT-3 Baseline Survey, 2018

informed Development Partners that they will ensure that Uganda's electricity sector rationalization process will be undertaken in a transparent and consultative manner, supported by comprehensive analytical findings and recommendations. Over the last three years, the World Bank has supported the GoU to undertake a diagnostic review of the distribution sector to determine the appropriate institutional and governance reforms necessary to facilitate achievement of national access targets. The study identified the challenges of the prevailing institutional structure of the electricity distribution sector, which is restricting faster access to electricity, and proposed institutional alternative arrangements for the GoU to consider. The World Bank will continue its engagement with the GoU on the energy sector rationalization and has offered to support MEMD to (i) formulate its second generation of institutional reforms; (ii) prepare an implementation roadmap including engaging a transaction advisor to implement the reforms; and (ii) develop a comprehensive strategy to ensure Uganda benefits from its energy sector investments.

12. Umeme serves about 90 percent of electricity consumers in Uganda. The largest potential of increase in electricity consumer number is expected from Umeme as well. Given its concession period will expire in 2025, which is within the implementation period of the proposed project, adequate and timely support is critical to ensure the project implementation is not affected and Uganda electricity sector is able to mitigate risks of electricity service disruption.

Uganda lags behind in energy access–more than half of Ugandans live without electricity, 95 percent live without clean cooking solutions, and 50 percent of health centers and 80 percent of schools lack electricity.

13. **About 58 percent of the population do not have electricity.** The main access deficit is exhibited in rural areas, where 76 percent of the population reside and less than 40 percent have access to electricity. As reported in the Poverty Maps of Uganda Technical Report (World Bank, November 2019), the districts with the highest access deficits below 10 percent also correspond to the poorest ones, as visualized in the maps in figure 1. At the national level, Uganda has one of the lowest electricity consumptions per capita in the world, estimated at an average of 100 kWh per year in 2020, which is far below its peers (for example, Kenya at 155 kWh per year and Ghana at 300 kWh per year). Such trends contribute to Uganda's 'adaptation deficit', which limits the opportunity of communities to be resilient to external shocks, including those caused by disease or climate change.

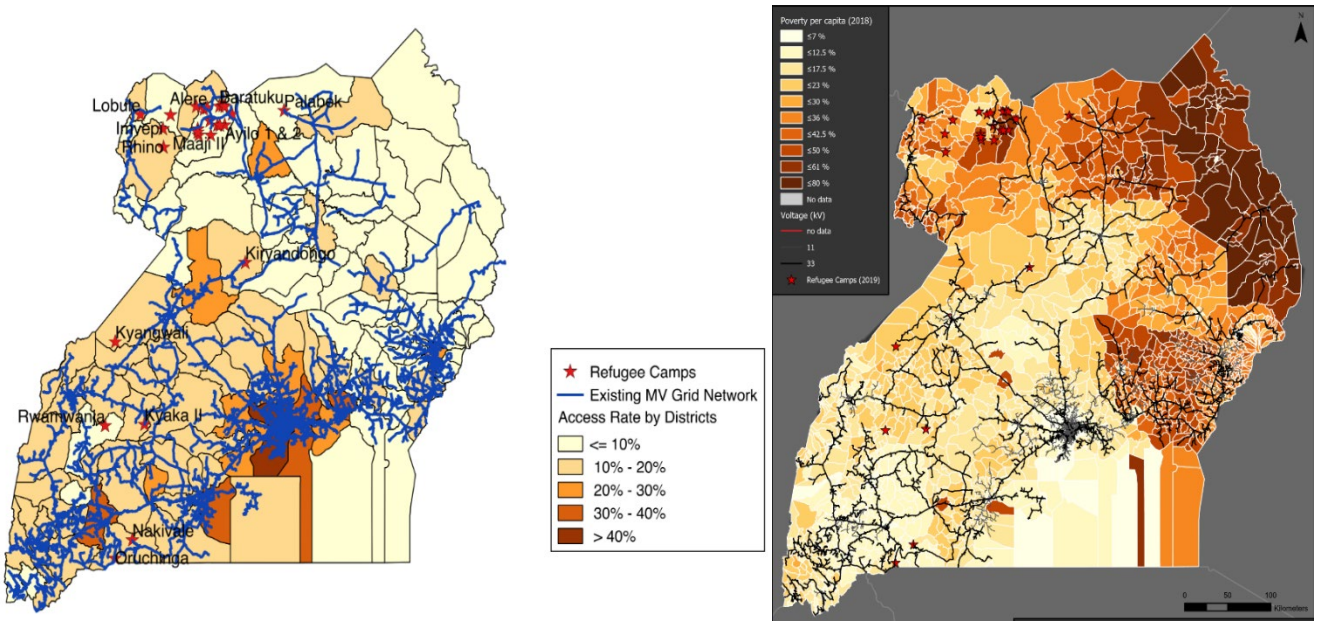
14. **The outcomes in clean cooking are even more dire with about 95 percent of Ugandans using solid biomass fuels for preparing their meals**. The Sustainable Development Goal (SDG) 7 tracking report[24] identified Uganda as one of the 20 largest deficit countries with regard to access to clean cooking. Uganda is also highlighted as one of the countries with declining access rates to clean cooking as the population growth is outstripping the additional access. In Uganda, only 2 percent of the population use some type of clean fuel and only about 15 percent of the population use an efficient biomass stove. Exposure to household air pollution from burning of biomass fuels for cooking is estimated to significantly affect the health of over 20 million Ugandans and cause over 13,000 deaths every year. In addition, reliance on wood fuels has imposed pressure on natural resources, especially forests.

15. **In the districts hosting refugee settlements, lack of access to electricity and clean cooking solutions remains a key challenge.** Insufficient enabling infrastructure for electricity services (i.e., MV/LV electricity

[24] https://trackingsdg7.esmap.org/

network or mini grids) hinders connectivity within refugees hosting districts, especially in the West Nile sub-region which hosts most of the refugees in Uganda. Figure 1 below illustrates the MV network shortages within districts hosting refugees. Refugee and host community households own on average less than 1 light source and 1.5 light sources per family, respectively, with heavy reliance on low-quality fuels such as kerosene and firewood. The absence of household lighting has also constrained the participation of children in education, affecting about 62 percent of the refugee population which are of school-going age. The availability and adoption of efficient stoves and fuels is scarce, with about 90 percent of refugee and host community households depending on wood fuels for cooking, adding health, environmental, and climate-related stresses on already marginalized and vulnerable populations. Emerging research suggests that patients exposed to air pollution have a higher risk of dying from respiratory viruses like COVID-19. In poorly ventilated dwellings, pollution from cooking smoke can be 100 times higher than levels deemed acceptable by the World Health Organization. In addition, the distributional impacts of the COVID-19 pandemic are disproportionally affecting refugees, further decreasing the affordability of modern energy technologies.

Figure 1: Existing Medium-Voltage (MV) Network, Electricity Access Deficits, Poverty Rates, and Refugee Settlements in Uganda



Source: SP customer information; Uganda Poverty Map (World Bank, 2019).

16. **Access to electricity services is about 50 percent for health centers and 20 percent for schools**, with access deficits most prominent among health centers at the sub-county (55 percent access) and parish levels (38 percent access) and in primary schools (16 percent access). This lack of electrical connectivity has become more critical due to COVID-19 and limits the implementation of the COVID-19 Preparedness and Response Plan of the Ministry of Health (MoH). Lack of electrical connectivity will affect implementation of the plan's surveillance and laboratory pillar by undermining the ability to undertake the necessary laboratory testing, limit the efficiency of risk communication and social mobilization pillar to communities that are not connected, and reduce the pillar on continuity of health services by diminishing what can be provided in an already overstretched and under-electrified health system. Strengthened electrical connectivity is necessary to

support the efficiency and effectiveness of COVID-19 prevention and response, including for refugees and host communities, who share the same education and health facilities, already under pressure to adequately serve population needs. In the education sector, lack of connectivity has also limited the access to mobile learning provided through radio, television, and digital platforms.

17. **The challenges to scale up access are multi-dimensional** and include, among others, (a) inadequate national-level integrated planning process which may lead to financial burden to the sector; (b) the affordability barriers and low consumption and quality of electricity services; (c) the slow uptake of clean cooking fuels and technologies; (d) the lack of low-cost network planning tools and cost-effective technologies for electrification; (e) the low access to equipment for productive uses and efficient appliances; and (f) a broad range of different and poorly coordinated humanitarian partner approaches within refugee settlements. The challenges are compounded by the fact that Uganda has one of the highest fertility rates in the world and its population is projected to grow by an average of 3.3 percent annually over the next decade.

18. **The GoU has launched several initiatives to scale up access.** The most prominent is the approval of the Electricity Connections Policy (ECP) in 2018. The ECP covers the period 2018-27 and subsidizes connection costs for customers in proximity of the existing network as the means for scaling up access to grid connectivity as well as improved consumption. More specifically, the ECP targets: (a) three million new connections by 2027 through fully subsidizing no pole and one-pole connections, addressing affordability of internal wiring through credit and low-cost technologies (for example, ready boards), increasing capacity of electricity SPs to meet connection targets, and promoting off-grid solutions through private sector participation; and (b) increasing electricity demand through facilitating connection of large-load customers and promoting productive uses of electricity. Another important policy initiative has been the adoption of a quality assurance framework for component-based solar home systems (SHSs) in 2019. The GoU has also undertaken two important studies–national off-grid strategy and diagnostic of distribution sector institutional reforms, which will influence the direction of grid and off-grid programs in the run-up to the 2030 SDG7 targets. The GoU has mainstreamed the role of planning and using a geographical information system (GIS) for establishing a spatial development infrastructure (SDI) for integrated power sector planning across generation, transmission, and distribution under the auspices of the MEMD. Uganda's off-grid market is one of the most dynamic in East Africa and according to the National Electrification Survey Report-2018 (UBOS 2020), 18 percent of the population currently relies on off-grid solar technologies providing Tier 1-level access and above. In terms of sales of off-grid solar products, Uganda has the third largest market in East Africa behind Kenya and Ethiopia. The Uganda Solar Energy Association (USEA) reports over 225 solar companies operating in the Ugandan market by end-December 2021, with most sales coming from a few international companies. While sales of off-grid solar products were about 400,000 in 2019, it fell drastically at a level of 280,000 in 2020 due to the impacts of the COVID-19 pandemic and government lockdowns. Sales in the first half of 2021 amounted to 110,000 off-grid solar products.

The proposed project will support Uganda's efforts to scale up access to electricity and clean cooking for households including for refugees and their host communities, commercial enterprises, including minerals and mining enterprises, industrial parks, and health and education facilities.

19. **Achieving universal access by 2030 requires a steady commitment from the GoU and development**

partners. According to the National Electrification Planning Study Report developed by the MEMD,[25] about US$5 billion will be required to serve ten million new customers. The geospatial least-cost analysis underpinning the NES identifies the optimal technology breakdown to achieve universal access as: 84 percent on-grid connectivity and 16 percent through off-grid solutions (both SHSs and mini-grids). The National Electrification Planning Study Report highlights the high potential for grid densification, estimated to serve 3.4 million customers. SHSs are projected to be the optimal technology choice for almost 6 million households (whereas mini-grids only 234,000), without considering the pre-electrification potential for customers waiting for grid connectivity. The proposed Electricity Access Scale-up Project (EASP) builds on these findings and leverages the potential for scale up of low-cost densification and off-grid connectivity.

20. **The proposed project builds on earlier engagements in the sector to directly support the expansion and strengthening of the electricity network and scale up of service connections in areas within the network reach, as well as increase access to off-grid electricity and clean cooking solutions in areas outside the network footprint and in refugee settlements and their host communities**. Experience in Uganda has shown positive implementation progress for operations where disbursements are linked to specific results indicators. For example, the implementation of the Output-Based Aid (OBA) approach for grid connections under the Energy for Rural Transformation (ERT) Phase II (ERT-2) project in Uganda, where subsidies were linked to verified connections, significantly increased connections in the country, especially within the Umeme footprint. These outcomes have informed the design of a suite of interventions in the proposed project and will create a platform to solicit resources for continuous scale up towards universal energy access.

21. **The proposed project supports the COVID-19 crises response and the mitigation of their impacts on the country's socioeconomic development.** The project will provide increased power to Uganda's health and education systems and mitigate livelihood disruptions. The proposed EASP will mitigate the negative impacts on poverty through improved access to affordable energy services to power productive uses and income generating activities, in support of the diversification of the economy and recovery from agriculture losses. The project also targets the most vulnerable, with tailored access provision to the 12 RHDs, which are among the poorest in the country. The deployment of solar water pumps (SWPs), and solar refrigeration units (SRUs)[26] under the proposed project could play a critical role in revitalizing rural economy and in COVID-19 vaccine deployment.

22. **The proposed project supports Uganda's updated Nationally Determined contributions, 2022[27], and the Long-Term Strategy for Climate Change 2022-2050** which includes a series of priority mitigation and adaptation measures intended to lead the country to a climate-resilient and low-carbon development path linked to green growth and broader sustainable development goals over the long-term. Given the low level of energy access and electricity consumption, these measures include priority actions such as building grid-based infrastructure for electricity sector development, promoting distributed and decentralized renewable energy sources, and increasing the efficiency in the use of biomass. The proposed project will reduce climate vulnerability and risks, and increase climate mitigation by directly supporting the development of the

[25] MEMD, November 2021.
[26] A new Energy Sector Management Assistance Program (ESMAP) supported Lighting Africa report on Productive Use Leveraging Solar Energy (PULSE) in Uganda, identified the use of SWPs and SRUs for enhancing agricultural productivity and adding value in priority commodity sectors such as maize, coffee, fruits, vegetables, livestock, poultry, dairy, and fish.
[27] Uganda's NDC sets out priority actions in adaptation and mitigation.

electricity sector through the expansion of renewable energy access (to households and commercial enterprises, including minerals and mining enterprises, as well as schools and health centers) in RHDs such as Kyegegwa, and Isingiro, which face the highest overall exposure to natural hazards and climate-induced changes[28]. Specifically, the proposed project will expand renewable energy access by financing the construction of MV/LV networks and associated service connections. The project will also promote renewable energy sources through off-grid solar solutions for households and public institutions, including education and health centers. Finally, the project will contribute to market development of clean cooking solutions by promoting efficient biomass stoves that will reduce the inefficient use of solid biomass fuels for cooking, thereby decreasing pressure on unsustainable harvesting of firewood from forests and agricultural lands while also decreasing the risk of forest fires.

23. **The GoU has made self-reliance central to Uganda's refugee response with a focus on development interventions targeting RHDs.** Central to this refugee model is creating economic opportunities in and around the areas hosting refugees to benefit both refugees and host communities. However, most refugee-hosting areas are in rural and remote locations, which increases the challenges for local economic development. Many refugees and hosts have limited access to productive employment, and income-generating opportunities and lack human capital. COVID-19 has significantly worsened these factors. Social impacts are circumscribed by the underlying poverty and vulnerabilities exacerbated by weak basic social services delivery, poor infrastructure including electricity and clean cooking solutions, and limited market opportunities in the refugee-hosting settlement areas that affects refugees and host communities alike.[29] The proposed project will expand the enabling infrastructure for electricity services (MV/LV electricity network or mini grids) that is critical to scale up connectivity within RHDs as outlined in the SERP. The project will strengthen electrical connectivity to support economic growth and open employment opportunities. This will be essential in supporting a V-shaped economic recovery to support employment growth within RHDs to deliver Uganda's commitments and vision of building refugee self-reliance in the age of COVID-19.

C. Relevance to Higher Level Objectives

24. **The proposed EASP contributes to the Vision 2040 and the NDP-III goal of increased household incomes and improved quality of life of Ugandans by increasing access to and consumption of clean energy.** By supporting implementation of the Sustainable Energy Development Program interventions on increasing access and utilization of electricity; and increasing adoption and use of clean energy, the project will ease electricity supply constraints and lay the foundation for the improvement of industrial, commercial and household electricity access for the development of income-generating and productive electricity use activities. The project will also contribute to improved energy access to refugee host districts where the influx of refugees is posing pressure on the scarce resources available to host communities. The project will support the GoU's Agro-Industrialization Program objective of increasing commercialization and competitiveness of agricultural production and agro-processing of priority agricultural products such as coffee, fish, dairy, beef, horticulture, tea, fruits and vegetables. The project facility for off grid solutions will support post handling and cold storage facilities for farmers and agro-processors in off grid areas.

[28] World Bank Report: Using Big Data to Inform the Response to Vulnerability in Uganda's Settlements and Host Communities
[29] https://www.worldbank.org/en/topic/fragilityconflictviolence/brief/ugandas-progressive-approach-refugee-management.

25. The project will also support the GoU's Private Sector Development Program objective of increasing competitiveness of the private sector to drive sustainable inclusive growth by supporting expansion of access to modern energy solutions through improved access to credit for households and commercial entrepreneurs. The project is responsive to the Uganda Green Growth Development Strategy 2017/18-2030/31, and is designed to promote technologies that reduce emissions and improve efficiency in energy consumption as well as raise institutional and public awareness on climate change mitigation. The project will also provide grant financing to remove the entry and affordability barriers and incentivize performance to promote energy solutions for productive uses, efficient appliances, clean cooking solutions and public institutions.

26. **The project is aligned with the priority areas identified in the World Bank Group's Country Partnership Framework Discussed by the Board of Executive Directors on April 21, 2016 (2016–21 - Report No. 101173-UG)[30],** which emphasizes support for sustained high rates of growth, socioeconomic transformation and inclusion, and reduction of poverty and vulnerability to shocks. Increased clean energy access in Uganda will directly support the thematic objectives identified under the strategic Focus Area C ('Boosting Inclusive Growth in Urban Areas'), which call for improving the business environment and access to urban services. The provision of electricity for productive uses will accelerate urbanization and improve living standards in urban areas, while stimulating employment and creating sustainable utilities in the power distribution sector. The project will also contribute to thematic objectives identified under strategic Focus Area B (Raising Incomes in Rural Areas), especially on reducing regional inequalities through interventions supporting income-generating activities. The delivery of energy services will contribute to poverty reduction, indirectly through its contribution to economic growth, and directly by enriching the lives of the beneficiaries of such services through increased household income and employment and higher profits for commercial firms[31]. The project will also support the cross-cutting issues of 'gender and climate change', by supporting low-emission SHS and clean cooking solutions in rural areas.

27. **The initiatives are aligned with the goal of the World Bank Group Strategy for Fragility, Conflict, and Violence, 2020–25**. Activities will address the unique needs of the refugees and their host communities particularly by (a) strengthening the focus on the socioeconomic dimension for both the refugees and their hosts; (b) focusing on key areas for medium-term success, especially jobs and education; and (c) closing gender gaps by empowering women and girls. The strategy recognizes that the private sector lies at the center of a sustainable development model in the context of fragility, and the project purposefully supports private sector development for commercially viable private sector service delivery in the fragile contexts of displacement. In addition, the project responds to the strategy's requirements to systematize partnerships with humanitarian, development, security, and peacebuilding actors at the country level by drawing on the World Bank Group's comparative advantage as a development actor, enhancing the impact of operations on the ground, and ensuring effective implementation arrangements with third parties as needed.

28. **The project substantively strengthens Uganda's implementation of the CRRF and refugee policy by implementing the SERP.** The SERP was developed with close support by the World Bank and will respond to COVID-19 pressures and provide the policy operational framework for ensuring access to energy for refugees

[30] The Performance and Learning Review (PLR) which summarizes the progress under the Country Partnership Framework for FY16-21 was discussed by the Board of Executive Directors on June 2, 2021 (Report No. 157534-UG). This PLR extended the CPF by one year to FY22.
[31] Bacon, R., and M. Kojima. 2016. "Energy, Economic Growth, and Poverty Reduction."

and host communities in a sustainable manner, complying with the cross-ministerial mandate to mainstream interventions for refugees and their host communities into sector planning as outlined in the NDP-III[32]. RHDs will then include refugees in their planning for the next five years. The project supports increased access to grid and off-grid technologies as well as increased consumption for productive activities through improved affordability of electricity services for refugees and their hosting communities, thereby enhancing their resilience. The project is closely coordinating with all of the World Bank's other forced displacement projects (with details in annex 7) to maximize improved livelihoods and clean cooking and respond to the increased socioeconomic pressure on these communities caused by COVID-19. These operations are also adapting to the impacts of COVID-19 to mitigate risks and strengthen implementation in areas like livelihoods (Development Response to Displacement Impacts Project) to mitigate the economic impacts affecting these communities. The proposed project will address key enabling factors to strengthen these projects' ability to implement mitigative measures, such as supporting water scheme electrification, and strengthen higher value-addition livelihood opportunities.

29. **The proposed project mobilizes finance for development by crowding in private investment to deploy a set of innovative technologies and disruptive business models.** The private sector has been taking the lead to integrate the innovation of solar photovoltaic (PV) technologies, mobile money, and new business models such as Pay-As-You-Go (PAYGo). Private sector entrepreneurs have been the main vehicle in Sub-Saharan Africa for the distribution of modern energy solutions. However, the scale up and scale-out of their operations is still prevented by the depth and breadth of domestic banking and financial markets. Consistent with the Mobilizing Finance for Development approach, the proposed project will support the de-risking of the market for modern energy solutions and increase the exposure of participating financial intermediaries to the products and the businesses in coordination with IFC. The Lighting Africa, a World Bank and IFC joint program, developed a path to profitability for the private solar industry to sustainably support electrification using solar technology. The project will continue to benefit from similar coordination and intervention from IFC to support private investments in Uganda.

30. **The project is part of a number of ongoing World Bank-supported initiatives.** First, the *Global Solar Risk Mitigation Initiative (SRMI)*, an integrated approach to tackle policy, technical, and financial issues associated with scaling up solar energy deployment, especially in some of the world's poorest countries. The SRMI was developed in support of the objective of the International Solar Alliance of mobilizing finance for solar investments and is led by the World Bank and French Development Agency (*Agence Française de Développement, AFD*). Second, the *Clean Cooking Fund (CCF),* launched during the 2019 United Nations Climate Summit leverages concessional finance for scaling-up private sector development and catalyzing technology and business innovation, and provides a platform for development partners' coordination of efforts in support of the clean cooking agenda. The project will deploy CCF through Energy Sector Management Assistance Program – Multi Donor Trust Fund (ESMAP-MDTF) grant to make available partial grants financing to private sector scale up of delivery, public institutions' adoption of clean cooking solutions, and technical assistance (TA) for the establishment of an enabling environment. Third, the *Carbon Initiative for Development (Ci-Dev)*, which makes payments against Certified Emission Reductions (CERs) from increased access to renewable energy sources under the project. The Ci-Dev is already working closely with MEMD under the Energy for Rural Transformation Phase III (ERT-3) (P133312) project, making payments against CERs from

[32] Consistent with the priorities outlined in World Bank. 2020. *Building Back Better: Pursuing a Greener, More Inclusive, and Resilient Recovery.*

new grid connections made across the country under the national electrification program. Under the ERT-3 project, the Ci-Dev supported the development of the Electronic Database and Information Management System, which is a GIS-based platform providing reliable information related to electrification progress in Uganda. The Ci-Dev will make payments against the CERs from connections made under the proposed project.

31. **The project is responsive to the World Bank Group Gender Strategy.** The project design includes targeted interventions to improve access to electricity for female-headed households (which constitute half of refugee households[33]) and female-led enterprises, improve access to finance among women, promote women entrepreneurship, build awareness relevant to women and girls around energy services, bolster women for careers in energy utilities, and empower women in refugee communities with universal transferrable skills.

II. PROJECT DESCRIPTION

A. Project Development Objective

32. The Project Development Objective (PDO) is to increase access to energy for households, commercial enterprises, industrial parks, and public institutions.

PDO Level Indicators

33. Progress toward achieving the PDO will be measured by the following project outcome indicators:

a. Connections provided under the project with grid, mini-grid, and off-grid (Number)
b. People provided with access to electricity under the project with grid and mini-grid (Number)
c. People provided with access to electricity under the project with off-grid (Number)
d. People provided with access to electricity with grid, mini-grid, off-grid in refugee hosting districts (Number)
e. People with access to clean cooking solutions under the project (Number)
f. Commercial and productive uses beneficiaries of grid, mini-grid, off-grid access (Number)
g. Public institutions provided with grid and off-grid access under the project (Number)
h. Public institutions provided with clean cooking solutions (Number)
i. Industrial parks electrified under the project (Number)
j. Renewable energy generation capacity (other than hydropower) constructed under the project (CRI, Megawatt)
k. Annual greenhouse gas emissions avoided (tCO_2) (Number).

B. Project Components

34. The proposed EASP is designed as a scale up intervention of proven mechanisms based on lessons learned over 20 years of World Bank support to electrification efforts in Uganda under the three-phase ERT

[33] World Bank. 2019 Informing the Refugee Policy Response in Uganda: Results from the Uganda Refugee and Host Communities 2018 Household Survey (English). Washington, DC: World Bank.

Program. The project's geographical focus is national, including specific targets for the 12 RHDs. The proposed project consists of five components.

Project Cost and Financing

35. Project cost breakdown along with respective financing sources is provided in Table 1.

Table 1: Project Cost and Financing Sources in US$, millions

Project Components	IDA Credit	IDA Grant	IDA-WHR Grant	CTF CRG	CTF Grant	ESMAP-MDTF Grant	Private Sector	GoU	Total
Component 1. Grid Expansion and Connectivity	331.5	26	--	--	--	--	--	--	**357.5**
Component 2. Financial Intermediation for Energy Access Scale-up	--	56	--	25	5	6	15	--	**107**
Component 3. Energy Access in Refugee Host Communities	--	13.5	107	--	--	--	5	--	**125.5**
Component 4. Project Implementation Support and Affordable Modern Energy Solutions	--	17	17	--	--	4	--	10	**48**
Component 5. Contingent Emergency Response	--	--	--	--	--	--	--	--	**0**
Total financing required	**331.5**	**112.5**	**124**	**25**	**5**	**10**	**20**	**10**	**638**

Component 1: Grid Expansion and Connectivity (US$357.5 million IDA equivalent, of which US$331.5 million IDA Credit, US$26 million IDA Grant)

36. This component will finance scaling up of last-mile national grid and mini-grid connectivity under the ECP, while supporting the necessary MV/LV network strengthening and extensions to transport electricity largely generated from renewable energy resources. Schools, health centers and other public institutions within close proximity to this network expansion will be connected to the grid. The component will benefit households and commercial enterprises, including minerals and mining enterprises, female-headed households and female-led enterprises, and industrial consumers along with public institutions.

Sub-component 1.1: Last-mile connections

This sub-component will finance no-pole and one-pole service connections in alignment with the ECP. Within the Umeme footprint, Umeme will finance the connections through their own resources and MEMD will compensate Umeme at the established regulated connection rates. This is consistent with the current practice, which has demonstrated results. For connections made outside the Umeme footprint, the SPs will

receive connection materials procured by MEMD and will be reimbursed at the regulated labor and transport cost against the number of connections made.

Sub-component 1.2: Network expansion and strengthening

37. This sub-component will finance network expansion and strengthening through construction of grid extensions, upgrades, and intensification. Grid extension will involve investments in MV and LV network, together with the necessary transformer installations, to enable connection of households and high-priority areas such as industrial parks, commercial consumers, and public institutions. For industrial parks, the project will finance construction of internal distribution networks and MV networks required for connection of the parks to the main transmission system. The industrial parks to be electrified under the project will include those that have either been connected by 132 kV or 220 kV transmission network or secured financing for the same.

Table 2. Indicative Investment Plan for Grid Expansion and Connectivity (Component 1 & 3.1)

No.	Item	Connections	Connection Rate (US$)	Amount (US$)
1	Total number of '0 pole' connections within UEDCL and rural electricity SPs	360,000	165	59,400,000
2	Total number of '1 pole' connections within UEDCL and rural electricity SPs	50,000	627	31,350,000
3	Total number of '0 pole' connections within Umeme area following results-based financing (RBF) approach	533,500	165	88,027,500
4	Total number of '1 pole' connections within Umeme area following RBF approach	130,000	627	81,510,000
	Total connections	**1,073,500**		**260,287,500**
5	Ready boards	300,000	85	25,500,000
6	Industrial parks electrification, distribution network extension, and network strengthening			140,212,500
7	Design and supervision, verification, preparation of resettlement action plans (RAPs), marketing, MLSP, training, recruitment firm, feasibility studies, and so on			25,000,000
	Total			**451,000,000**

Component 2*:* Financial Intermediation for Energy Access Scale-up (US$107 million, of which US$56 million IDA Grant equivalent, US$5 million Clean Technology Fund [CTF] Grant, US$25 million CTF Contingent Recovery Grant [CRG], US$6 million ESMAP-MDTF Grant, and US$15 million private sector)

38. This component will support the Uganda Energy Credit Capitalization Company (UECCC) to scale up and expand the scope of its existing line of credit facility with grants and guarantees against technical failure of innovative technologies. A Project Operations Manual (POM) will detail the eligibility of the entrepreneurs and the terms and conditions of the line of credit, grant support and the guarantee mechanism. To address evolving implementation challenges, the POM could be revised subject to World Bank approval.

Sub-component 2.1: Financial intermediation through participating financial institutions

39. The UECCC will extend line of credit and grants to participating financial institutions (PFIs) including commercial banks, micro finance institutions (MFIs), leasing companies, Tier 4 financial institutions, and funds. Private energy companies will borrow at favorable market terms to finance their working capital and liquidity

needs. The grant will be provided toward removing market entry barriers, information and communication campaign costs, affordability constraint of the consumers, high operating cost to serve customers in remote areas, and so on. The grants will support price setting at a level accessible to lower-income beneficiaries. Grant support will be linked to verifiable outputs to help private companies enter into the solar and clean cooking businesses and take the risk of serving consumers, which they otherwise would not consider. To mitigate the risk of exposure of the PFIs toward promoting innovative technologies, a first-loss guarantee toward technological failure risk will also be provided. The funding support would be provided based on the eligibility criteria of the POM and on a first-come, first-served basis. The processes for revoking grants in case of non-performance will also be detailed in the POM. The technologies to be supported under this sub-component include stand-alone solar systems, productive uses technologies such as SWPs and SRUs[34], efficient appliances units, clean cooking stoves (powered by liquified petroleum gas [LPG], electricity, ethanol, biogas, and briquettes), and internal wiring of consumer houses. While UECCC will channel its financing mainly through PFIs, it will also provide direct financing to several project beneficiaries to start up the market and provide demonstration impact to build market confidence of PFIs.

Sub-component 2.2: Electrification of public institutions by stand-alone solar technologies

40. This sub-component will support electrification of public institutions including public schools, public health centers, public water supply systems, and so on, through stand-alone solar technologies. The sub-component will benefit the Ministry of Education and Sports (MoES), Ministry of Health (MoH), and Ministry of Water and Environment (MoWE) to contract solar electricity service providers/contractors to electrify schools, health centers[35] and water supply schemes located in areas far from grid electricity networks. This component will address the routine operation and maintenance requirements to ensure installed solar systems perform throughout their expected lifecycle and benefit the public institutions from reliable electricity service. A nation-wide mapping of the energy demand and supply of public institutions is underway. This study will identify key performance indicators and contractual modalities critical for the successful implementation of these electrification schemes. The beneficiary ministries in coordination with MEMD will select the electricity service providers/contractors following a competitive bidding process and contracting structure that will be detailed in the POM. A provision of about US$16.5million is earmarked to electrify public institutions such as health centers, schools and water supply schemes. The beneficiary ministries (MoH, MoES, and MoWE) are expected to equally benefit from this funding allocation. Additional funding support through sub-component 4.1 will incentivize the beneficiary ministries to timely pay the electricity service providers/contractors for their respective operation and maintenance costs. Government will provide adequate budgetary allocations through its Medium-Term Expenditure Framework (MTEF) for the respective beneficiary ministries to ensure timely payment of operation and maintenance cost.

Component 3: Energy Access in Refugee Host Communities (US$125.5 million, of which US$ 13.5 million IDA Grant equivalent, US$107 million IDA WHR Grant equivalent, and US$5 million private sector)

41. This component will support provision of energy access in RHDs by facilitating increased access to renewable electricity through grid and off-grid technologies, efficient appliances including productive use, and clean cooking solutions, thereby enhancing the resilience of vulnerable communities affected by COVID-19 and delivering both mitigation and adaptation co-benefits. Financing support for internal wiring of premises

[34] SWP and SRUs technologies will support cold chains (for example, vaccines, and medium-scale milk chilling), retail shops, ice making, maize and coffee harvesting, and so on.
[35] The project will support electrification of Health Centers II, III and IV only.

will be provided to electrify commercial, industrial, and public institution consumers within the refugee host communities. The component will benefit from the implementation design of Components 1 and 2. Grant resources allocated to this component will finance the interventions of Components 1 and 2 within the selected RHDs namely, Adjumani, Isingiro, Kamwenge, Kikuube, Kiryandongo, Koboko, Kyegegwa, Lamwo, Obongi, Madi Okollo, Terrego and Yumbe. To align implementation of this component with that of Components 1 and 2, it has been divided into two sub-components.

Sub-component 3.1: Grid connectivity and expansion (US$93.5 million IDA equivalent, of which US$13.5 million IDA Grant, and US$80 million IDA WHR Grant)

42. This sub-component will finance expansion of the enabling infrastructure (i.e., MV/LV network or mini grids) that is critical to increase access to electricity within RHDs. It will also finance last-mile connection of household, commercial, industrial, and public institution consumers. The planning for electrification expansion will consider a least-cost approach involving MV/LV networks and mini-grids. The grant resources available from this component will ensure that refugees and host communities benefit from the project interventions even if they do not qualify for grid connection based on the least-cost access expansion approach.

Sub-component 3.2: Financial intermediation through participating financial institutions (US$32 million, of which US$27 million IDA WHR Grant equivalent, and US$5 million private sector)

43. This sub-component will support financial intermediation for increasing electricity access through stand-alone solar technologies, financing of internal wiring of premises, promotion of efficient appliances for productive uses, and clean cooking solutions in RHDs. On the demand side, the grants will bridge the gap in affordability of end users, while debt financing will be provided at market rates to avoid distortions. Private sector service delivery will be incentivized through the availability of partial grants supporting the additional costs associated with market assessments for the new segment of beneficiaries (currently perceived as highly risky), and establishment of operations in the areas. The terms of lending and criteria for private sector participation in the scheme will be detailed in the POM. Electrification of public schools, public health centers and public water supply systems for refugees and their host communities will follow the contractual structure for Sub-component 2.2 and benefit from grant funding under this sub-component to bridge the affordability gap and make the electrification initiative more attractive to private service providers/contractors. Particularly, the electrification of health centers will ensure resilience to shocks (such as COVID-19) and provision of adequate health services by currently overstretched facilities, serving both host communities and refugees.

Component 4: Project Implementation Support and Affordable Modern Energy Solutions (US$48 million, of which US$17 million IDA Grant equivalent, US$17 million IDA WHR Grant equivalent, US$4 million ESMAP-MDTF Grant, and US$10 million GoU)

44. This component will finance the establishment and operations of the Project Coordination Unit (PCU) at the MEMD, and the PIUs at MEMD and UECCC, through the recruitment of adequate staff and consulting firms, capacity building, implementation support activities and any other associated technical assistance required to achieve the project development objective. The component will raise institutional and public awareness on climate change mitigation and the importance of renewable energy technologies and efficient appliances. In addition, the component will provide grant financing to remove the entry and affordability barriers and incentivize performance to promote energy solutions for productive uses, efficient appliances,

clean cooking solutions and public institutions. It will strengthen coordination across the MEMD, UECCC, OPM on refugee issues and with the ministries of health, education, and water. The private sector, as they benefit from debt and grant funding, will contribute about 10 to 20 percent of equity per transaction.

45. This component will support GoU's current initiative to rationalize the Uganda power sector institutional structure. The MEMD has requested the World Bank's support to appoint a Transaction Advisor to implement the second generation of power sector reforms. Eligible costs related to implementation of this reform initiative would be covered from this component.

Sub-component 4.1: Project implementation support (US$34.5 million, of which US$13 million IDA Grant equivalent, US$11.5 million IDA WHR Grant equivalent, and US$10 million GoU)

46. This sub-component will support the government to carry out activities necessary to implement the project, including implementing the Implementation Optimization Plan and financing of the operating costs. Particularly, the sub-component will promote effective implementation of the project through ensuring that the project is implemented in accordance with the Project Implementation Optimization Plan included in the Annual Work Plan which, will include: ***for MEMD PCU:*** (i) appointment of additional 9 key staff specialists within six months from effectiveness, (ii) all 13 key positions are retained during the project period, (iii) reporting responsibilities to the World Bank are fulfilled on time and with adequate quality, (iv) PSC to hold quarterly review of the project progress reports; ***for MEMD PIU:*** (i) appointment of additional 18 key staff specialists within six months from effectiveness, (ii) all 26 key positions retained throughout the project period, (iii) reporting responsibilities to the World Bank are fulfilled on time and with adequate quality; ***for UECCC PIU:*** (i) appointment of additional 9 key staff specialists within six months from effectiveness, (ii) all 15 key positions are retained throughout the project period, and (iii) reporting responsibilities to the World Bank are fulfilled on time and with adequate quality.

47. This sub-component will also support achievement of results through fulfilment of the Performance-Based Conditions (PBCs). The PBC framework will provide an incentive for timely execution of tasks, activities and assessments, regulatory reform required for successful implementation of the entire project, as well as the establishment of an enabling environment for access scale up, including mitigation of payment risk to electricity service providers of public institutions. The sub-component will support the GoU's efforts to strengthen the monitoring of implementation progress by the PSC, and monitoring and evaluation (M&E) capacity of the energy market at the national level, to promptly identify and address challenges to the scale up of modern energy solutions. In addition, the sub-component will support the MEMD to develop capacity and establish instruments and tools for adequate environment, social, health and safety (ESHS) management to facilitate electricity access scale-up, ensure the establishment of a healthy and safe environment for connectivity scale up and adequate management of project affected people (PAPs). The sub-component will also ensure clear coordination functions across government between the MEMD, UECCC, and OPM on project activities within RHDs. The timeline, targets, and funding available for the PBCs are provided in table 2. A set of eligible expenditures under this sub-component will be identified and an agreed verification protocol will be carried out before making payments under the PBCs. In this regard, the validation and verification of the PBC achievement will be carried out by verification agent acceptable to the IDA. The verification protocol to verify the PBCs will be detailed in the POM.

48. The list of PBCs is as follows:

a) PBC 1 - MEMD optimizes investments for electricity access scale up

b) PBC 2 – MEMD develops capacity and establishes instruments and tools for adequate ESHS management to facilitate electricity access scale-up
c) PBC 3 - UECCC conducts adequate monitoring of the energy market financing
d) PBC 4 – Operations and maintenance costs paid to Electricity Service Providers for public institutions made in full and on time.

Table 3: Timeline of PBCs

PBC	PBC Financing and Baseline		Indicative timeline for PBC achievement					Funding allocated to IAs		
	Financing allocated to PBC (US$ million)	PBC baseline	Y1	Y2	Y3	Y4	Y5	MEMD-PCU	MEMD-PIU	UECCC
PBC1: MEMD optimizes investments for electricity access scale-up		Lack of optimized grid rollout and GRM management capacity needs strengthening		Proposal for optimized grid design and connection materials analyzed, involving ERA, and decision is made						
Allocated Amount, US$, million	**0.5**			0.5				**0.5**		
PBC2: MEMD develops capacity and establishes instruments and tools for adequate ESHS management, to facilitate electricity access scale-up		Limited capacity for environmental, social, health and safety management	**(A)** Environmental & social instruments and tools in place; **(B)** Health, safety, GBV training and workers capacity building launched and maintained; **(C)** GRM implemented satisfactorily; **(D)** Compensations to PAPs made in a timely manner.							
Allocated Amount, US$, million	**2**		0.4	0.4	0.4	0.4	0.4		**2**	
PBC3: UECCC conducts adequate monitoring of the energy market financing		Lack of adequate understanding of nation-wide energy market challenges	(A) conducts consultations on nationwide energy market challenges with private sector companies and market stakeholders; and (B) prepares a report of findings with recommendations that are satisfactory to the Association							
Allocated Amount, US$, million	**1**		0.2	0.2	0.2	0.2	0.2			**1**
PBC4: Operation and maintenance costs paid to Electricity Service Providers for public institutions made in full and on time.*		Payments to service providers are not in full nor on time	Operations and maintenance costs paid to Electricity Service Providers for Public Institutions made in full and on time							
Allocated Amount, US$, million	**5**		0.0	0.5	1.5	2.0	1.0			**5.0**
Total, US$, million	**8.5**							**0.5**	**2**	**6.0**

*The respective institutions will maintain dedicated budget lines with adequate funds for payments throughout the contract period.

49. This sub-component will reimburse 100 percent of the payment made by the GoU against the cost of electricity to public institutions, including those in RHDs, for the first 4 years of the project. On the 5th year this sub-component will reimburse only 50 percent of the payments made by the GoU. This payment will be made only after the GoU has made the payment in full and on time. This will incentivize the GoU to make adequate budgetary provisions to pay recurrent operation and maintenance costs for electrified public institutions. To ensure replicability of this business model, the POM will detail out UECCC's role of offering blended finance to support this scheme under sub-component 2.2. The GoU, through its MTEF, will make adequate funding provisions for recurring operations and maintenance cost to ensure reliable electricity supply. Respective institutions ring-fenced accounts will ensure availability of adequate funds for timely payment.

Sub-component 4.2: Enabling environment (US$13.5 million, of which US$4 million IDA Grant equivalent, US$5.5 million IDA WHR Grant equivalent, and US$4 million ESMAP-MDTF Grant)

50. This sub-component will finance technical assistance to strengthen the enabling environment to achieve the project results at national level including RHDs and to build implementation effectiveness of the PCU and PIUs. Activities to be supported include the following, among others: (a) benchmarking the status of grid and off-grid energy connectivity across the country, including RHDs, for example, by updating the Electrification Survey Report-2018 (UBOS, 2020). This activity will help establish a baseline of the energy access situation across refugees and their host communities (b) providing technical assistance to market players, for example, by conducting market intelligence assessments to increase understanding and uptake of solutions for clean cooking, including clean fuels, and income-generating activities, building capacity of PFIs in support of lending for energy access, offering technical support to improve business efficiency of private entrepreneurs, and assessing options for expanding the market for increased access to quality energy products and services in RHDs. Besides addressing the market intelligence gaps to assess the energy situation within RHDs, these activities will strengthen the capacity of stakeholders to effectively deliver energy solutions for refugees and their host communities, (c) protecting consumers from low-quality products, for example, by developing a quality assurance framework for solar-powered productive use equipment, (d) increasing consumer awareness and education, for example, by conducting consumer awareness and education campaigns about the benefits of modern energy technologies, including in RHDs, (e) enhancing national electricity planning capacity, for example, by establishing a national geospatial power planning platform for least-cost electricity service delivery, and (f) support the GoU to formulate its second generation of power sector reforms by preparing an implementation roadmap including engaging a transaction advisor to implement the reforms. All these activities would include RHDs and refugee settlements, and will contribute to incentivizing the energy efficiency investment, expanding the renewable energy market, and promoting high efficiency and clean energy technologies, along with supporting the GoU to achieve its NDP-III targets, Vision 2040 and objectives of the SERP.

51. This sub-component will also support feasibility studies for e-mobility for Uganda to facilitate transition to climate resilient and low emission technologies. This is necessary for development of the relevant infrastructure such as charging stations network for electric buses and motorcycles in the cities, electrification of the railway system in line with the Climate Change Act, 2020, United Nations Framework Convention of Climate Change, and the Paris Agreement. The e-mobility studies and activities supported under the project will be jointly undertaken by the MEMD and Ministry of Works and Transport, and will enable development of plans and strategies for building sustainable transport mechanisms, fuel efficient vehicles and climate-smart mobility measures.

52. This sub-component will establish the key capacity and conduct key assessments to inform implementation of the priority areas identified for closing the gender gaps, including for refugees and their host communities, that is: (a) enhancing equitable energy service delivery, (b) enhancing availability of data and knowledge around female and male consumers and beneficiaries, and (c) enhancing skills development and employment and entrepreneurship opportunities for women supporting COVID-19 affected socioeconomic recovery. The activities will establish an enabling environment for improved targeting of females at household and commercial enterprise levels and establish a more comprehensive data driven framework for M&E of results. In addition, the sub-component will also support the identification of public institutions to be electrified with remotely monitorable stand-alone solar technologies, set key performance

indicators (KPIs) to assess performance of the public institutions' electricity consumption, and structure a suitable contractual framework.

Component 5: Contingent Emergency Response Component (US$0 million IDA Credit)

53. The Contingent Emergency Response Component (CERC) is included in the project in accordance with paragraphs 12 and 13 of the Investment Project Financing (IPF) Operational Policy (OP) 10.00, pertaining to Situations of Urgent Need of Assistance and Capacity Constraints. This will allow for rapid reallocation of credit or grant uncommitted funds in the event of an eligible emergency as defined in OP 8.00. An annex to the POM (CERC Annex) will be prepared within three months of credit/grant effectiveness. The project's Environmental and Social Management Framework (ESMF) includes the CERC environmental and social (E&S) assessment and initial requirements. For the CERC to be activated, and financing to be provided, the GoU will need (a) to submit a request letter for CERC activation, and the evidence required to determine eligibility of the emergency, as defined in the CERC Annex; (b) an Emergency Action Plan, including the emergency expenditures to be financed; and (c) to meet the E&S requirements as agreed in the Emergency Action Plan and Environmental and Social Commitment Plan (ESCP). WHR funds reallocated to the CERC will only be used to benefit refugees and host communities.

C. Project Beneficiaries

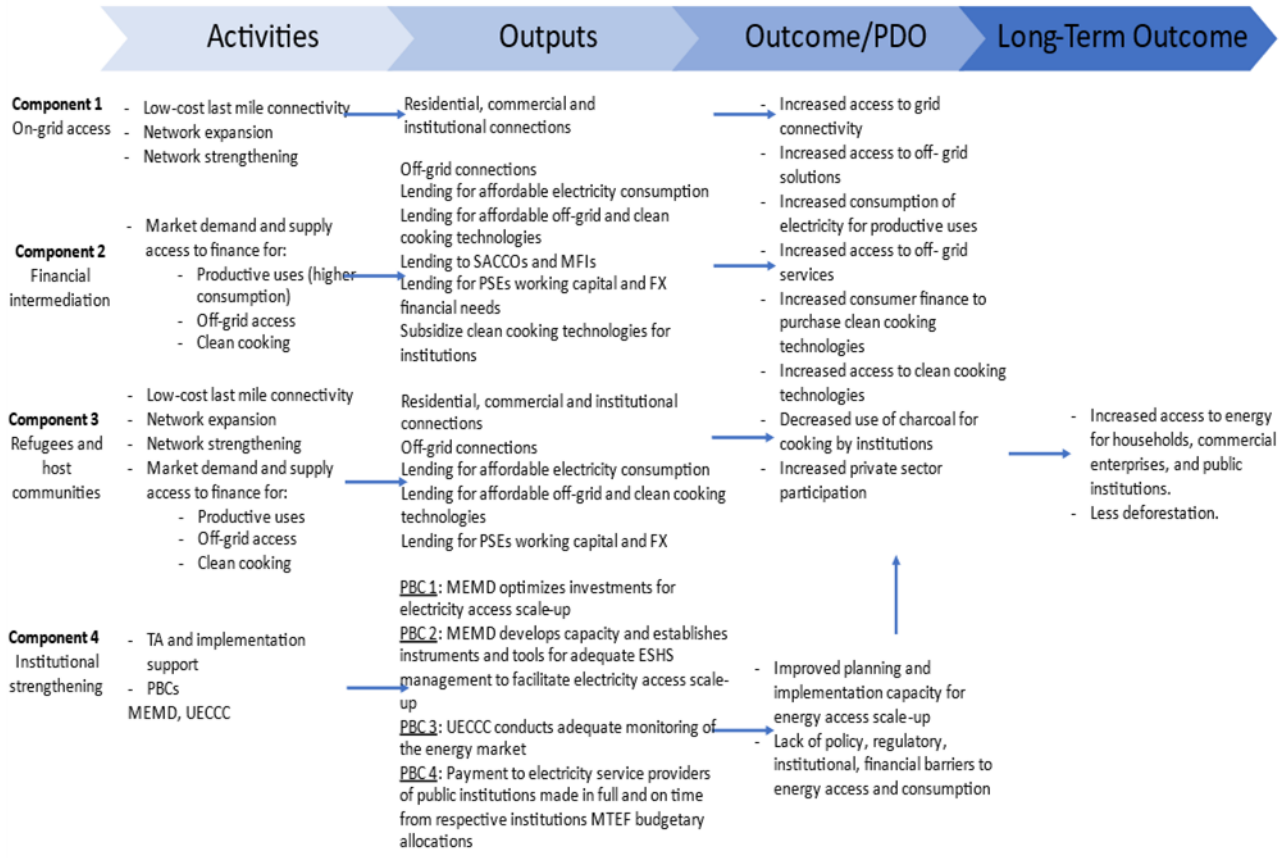
54. The project will directly benefit households, commercial enterprises, including minerals and mining enterprises, public institutions, and industrial parks with access to energy and clean cooking solutions. Refugees and their host communities will benefit from the dedicated grant fund from WHR. 5,050,000 project beneficiaries will be provided with access to electricity under the project through grid, mini-grid and off-grid options of which 2,525,000 will be female. A total of about 600,000 people in refugee hosting districts will benefit, of which about 300,000 will be refugees. The increased connectivity and access to energy will facilitate the development of productive uses of electricity to generate income and jobs for the community, including women beneficiaries, which in turn will help in the alleviation of poverty and promotion of shared prosperity. Provision of electricity access is also expected to increase the productivity of industrial and commercial consumers. The beneficiary ministries and implementing agencies will benefit from institutional and capacity strengthening, and from improved data, planning and monitoring tools that will enhance electricity sector planning as a whole.

55. All efforts will be made to increase access to electricity in RHDs, where the cost of electrification is much higher compared to other areas in the country with an existing electricity network (that is, with potential consumers located at zero or one-pole distance from the grid) and better risk perception from the private sector to operate in these areas. Nationwide least-cost expansion plan does not select the RHDs for electrification given the high cost of electrification in these areas. The dedicated grant fund from the WHR has made electrification in these RHDs possible under this proposed project. The project will adhere to optimum plans to increase the infrastructure that is required to significantly scale-up access to electricity in RHDs through the construction of about 3,550 km of MV and LV electricity network or mini-grids. Construction of this backbone electricity network will bring the required infrastructure closer to the people living in these districts and will allow electricity connection to refugees and their host communities. Private sector will be provided with additional grants to remove entry barriers, set up operations and to gain market intelligence to help in promoting standalone solar systems in these RHDs.

D. Results Chain

56. The theory of change underpinning the proposed project is captured in figure 2.

Figure 2: Theory of Change and Results Framework



E. Rationale for Bank Involvement and Role of Partners

57. **Rationale for World Bank's engagement**. The World Bank has been a major strategic partner in Uganda's electricity sector development across the value chain. Since the 1980s, the World Bank has supported Uganda's power sector reforms including the restructuring of the UEB, implementation of policy measures to improve financial viability of the sector, and contribution to major power investments, such as the Bujagali hydropower plant and the expansion of key transmission networks. The Electricity Sector Development Project (P119737) has increased the reliability of and access to electricity in the Southwest region of Uganda through the construction of the Kawanda-Masaka transmission line; the Grid Expansion and Reinforcement Project (GERP, P133305) is supporting the construction of the Lira-Gulu-Nebbi-Arua transmission line. With its focus on rural transformation and increased access to electricity in rural areas, the ERT program that started in 2001 has been a major element of this partnership. The first phase of ERT (ERT-1) helped put in place an environment and related capacities conducive to sustainable service delivery of rural

renewable energy, including the creation of electricity sector entities (for example, the ERA). The second phase of ERT (ERT-2) supported the expansion of distribution network infrastructure into rural areas. The ongoing ERT-3 is continuing with these approaches. Under the ERT-3 project, a credit facility was established to catalyze the expansion of the off-grid solar market in Uganda, which is considered among the most dynamic in the world for solar companies selling quality-certified SHS on cash, pay plan, or PAYGo basis. The project has facilitated strengthening of the national quality assurance framework for solar products in the country through establishment of the relevant quality assurance frameworks. In addition, since 2016, the World Bank through the Uganda Clean Cooking Supply Chain Expansion Project (P153679) supported the promotion of efficient biomass stoves following the RBF approach for market development. The proposed project will therefore build on this foundation to support the GoU's ambitious program for grid connectivity and electricity consumption through productive uses under the ECP. In the off-grid space, the proposed project will provide access to finance solutions to private sector companies through financial intermediaries. The World Bank's engagement will also contribute to the graduation of refugees from humanitarian to development aid, thus facilitating sustainable rural development, national equity, and stability through targeted support for refugees and their host communities.

58. **Role of partners**. Several development partners are active in the energy access space in Uganda and have been important partners of the GoU and the World Bank. The most active partners are the AFD; African Development Bank; Germany's *Kreditanstalt für Wiederaufbau* (KfW); Nordic Development Bank; Islamic Development Bank; Japan International Cooperation Agency; European Union; the United Kingdom's Department for International Development; the Government of Norway; UNHCR; United Nations Development Programme; United Nations Capital Development Fund; Energizing Development (EnDev); *Deutsche Gesellschaft für Internationale Zusammenarbeit*; United States Agency for International Development; and the Governments of the United Kingdom, Sweden, France, and the Netherlands with an overall financing envelope of about US$3.2 billion, including for refugees and host communities. In addition, the proposed project benefits from the collaboration with the CTF and the ESMAP-MDTF.

F. Lessons Learned and Reflected in the Project Design

59. **Dedicated PIUs are key to successful implementation of the project.** The initial delays that were experienced for the activities managed by the former REA under the ERT-3 project were mainly attributed to inadequate implementation arrangements and management capacity, where REA did not have an ERT-3 project team fully dedicated to the implementation of project activities. For the proposed project, the MEMD and the UECCC will each establish a dedicated PIU, which will be further supported by existing staff on an ad-hoc basis. The MEMD will also establish a PSC headed by its Permanent Secretary and a PCU with qualified and adequate staff to ensure timely coordination and adequate consultation among the project stakeholders. The project will fund Implementation Optimization Plan to ensure project milestones are achieved as planned.

60. **PBCs will incentivize achievement of results.** Experience in Uganda has shown positive implementation progress for operations where disbursements are linked to specific results indicators. For example, the implementation of the OBA approach for grid connections in Uganda, where subsidies were linked to verified connections, significantly increased connections in the country. Under the proposed project, the choice of IPF with PBCs as the financing instrument will incentivize the implementing entities to increase implementation speed and focus on the key institutional strengthening measures required to facilitate achievement of results.

61. **To mitigate risks of implementation delays, preparatory studies and procurement are front-loaded.** Delays in the selection of consultants and procurement of goods and services have adversely affected implementation of the on-going activities supported under the ERT-3 project. To expedite implementation readiness for the proposed project, some of the key preparatory activities have already been launched under the ongoing World Bank-funded ERT-3 project. The geo-referencing of customers across SPs will be launched to ensure the establishment of an adequate baseline, planning, and monitoring for the proposed project and improve overall coordination of activities under Component 1 between the PIU and the SPs. With funding from the Lighting Africa Program, a market assessment study: Productive Use Leveraging Solar Electricity (PULSE) in Uganda, has been conducted to inform the design of Component 2. Another study is ongoing under the ERT-3 to assess electricity needs for public institutions and design an electrification approach that will address the existing sustainability risks. Selection process of the Planning, Design and Supervision Consultant (PDSC) has been launched.

62. **Contingent emergency response**. Considering the short response window faced by governments in an emergency situation, similar to the current crisis related to COVID-19, a project component has been included to allow for flexibility and quick response to the Government's request in the event of an emergency during the life of the project, and to enable a rapid project restructuring, including the reallocation of funds.

63. **Affordability barriers will be alleviated through a public financing mechanism**. Accelerating connections requires overcoming demand-side affordability constraints. Similar to many countries in Sub-Saharan Africa, connection charges and house internal wiring costs are key impediments for rural households to access electricity. Successful cases of rural electrification have relied on governments funding upfront connection costs, with part of the connection costs being recouped through the retail tariff and/or public finance, and with new customers paying discounted or in some cases no connection fees at all. Under the ECP, the connection cost is subsidized, but internal wiring still constitutes a major barrier to electricity access and consumption, including for productive uses. Under the proposed project, the credit line at the UECCC will therefore be expanded to provide demand-side access to finance at attractive terms for internal wiring, efficient appliances, off-grid solar systems for productive uses, clean cooking solutions with differentiated lending products, and more lenient lending conditions for the bottom of the pyramid. Supply-side credit will be provided to expand private sector entrepreneurship and support job creation.

64. **A new business model for electrifying public institutions is required for the sustainability of electricity access.** Electricity access to public institutions has been supported under the ERT-1, ERT-2, and ERT-3 projects. Implementation has shown that despite the availability of capital investment to install solar systems at public institutions such as schools, health centers, and water pumps, actual electricity delivery is sometimes non-existent or substandard due to inadequate maintenance practices. A consultant has been engaged by the MEMD to design an appropriate electrification model and energy service payment modality that will ensure that sustainability risks associated with institutional solar energy packages are addressed. Consultations will be conducted with the GoU to identify possible alternatives to the 'ownership model' for sustainable service delivery. The proposed performance-based 'service model' would allow private sector SPs to enter into a long-term service contract with public institutions to ensure reliable electricity service where they will remain responsible for maintenance and customer care. The GoU will only have to ensure payment of operation and maintenance costs in a timely manner.

65. **Clean cooking interventions require concurrent support for distribution, awareness, and affordability, as well as capacity and business development support for clean cooking businesses.** The World Bank-funded Clean Cooking Supply Chain Expansion Project was initially designed to incentivize local

distribution companies to distribute improved cookstoves. However, lessons learned from the project show that lack of awareness and affordability negatively impact the uptake of clean cooking technologies. Previous experience has also revealed the importance of providing TA support (for example, salesforce training and investment readiness) to clean cooking businesses to address operational capacity and support pipeline development. The proposed EASP will address these challenges namely distribution, awareness, and affordability, and will develop local capacity, especially that of women entrepreneurs, for promotion, distribution and sale of clean cooking products.

66. **There have been a range of lessons learned from the increasing World Bank forced displacement portfolio in Uganda including expanding evidence-based decision making, the importance of coordination, and risk management on refugee protection issues.** Strengthened data across refugees and host communities through World Bank analytics have provided better understanding of development barriers, challenges to productive employment, access to social service issues and safeguarding risks (particularly protection risks like GBV). The experience with the range of development and humanitarian actors involved in the CRRF in Uganda has also highlighted the importance of coordinated and aligned approaches. The World Bank's role in providing CRRF solutions to major infrastructure bottlenecks when undertaken in coordination with these actors through formal mechanisms like the CRRF Steering Group is clear, as is the importance of working closely with partners like UNHCR in maintaining the protection framework necessary for this work to be effective. The proposed project will closely collaborate with other ongoing efforts, such as the Development Response to Displacement Impacts Project in the Horn of Africa (P164101) and Uganda Investing in Forests and Protected Areas for Climate-Smart Development Project (P170466)[36] (see annex 7 for more details).

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and implementation Arrangements

67. Project implementation will be carried out by the MEMD and UECCC. The two implementing agencies will collaborate closely with the Ministry of Finance, Planning and Economic Development (MoFPED), OPM, MoES, MoH, MoWE, Ministry of Local Government, Ministry of Agriculture, Ministry of Works and Transport, electricity distribution SPs, and other relevant sector stakeholders to implement the various project activities.

68. The MEMD has established a PSC to provide strategic guidance and overall oversight during project implementation and ensure effective coordination among all the stakeholders. The PSC is chaired by the Permanent Secretary, MEMD and includes representatives from the UECCC, OPM, Ministry of Justice and Constitutional Affairs, Solicitor General, Ministry of Local Government and MoFPED. Representatives from other relevant institutions may be invited to attend the PSC meetings as needed. The PSC will review project progress at least once every quarter. The specific composition and functions of the PSC will be detailed in the POM. The MEMD will work through the SERP Secretariat to ensure better alignment with key priorities as outlined in the SERP and coordination with the main humanitarian and development partners active in the

[36] http://documents.worldbank.org/curated/en/620681548863607633/pdf/Rapid-Assessment-of-Natural-Resources-Degradation-in-Areas-Impacted-by-the-South-Sudan-Refugee-Influx-in-Northern-Uganda.pdf and http://documents.worldbank.org/curated/en/644771582784325566/Assessment-of-Forest-Resource-Degradation-and-Intervention-Options-in-Refugee-Hosting-Areas-of-Western-and-Southwestern-Uganda

country (e.g., UNHCR, EnDev, Norwegian Government). The MEMD will also liaise with the OPM focal point who will be appointed to facilitate project activities within RHDs.

69. A PCU has been established at the MEMD to undertake day to day coordination and monitoring of implementation of all project components and activities cutting across all components. The PCU will be adequately staffed to supervise, monitor, and report on the activities of the whole project. It will be responsible for coordinating with the World Bank and reporting on a quarterly and annual basis on project progress, as well as on implementation challenges. The PCU will ensure that lack of adequate progress is promptly and adequately addressed and brought to the attention of the relevant decision makers and executive powers. It will also ensure coordination with the MoH, MoES, MoWE, Ministry of Agriculture and the OPM as needed. Detailed roles and responsibilities of the PCU will be included in the POM.

70. The PCU is under the Directorate of Energy Resources Development (DoERD) at the MEMD. It is headed by the EASP Coordination Manager and is supported by staff with requisite qualifications and experience in engineering and related technical areas, procurement, finance, E&S, refugee management, health and safety, and M&E aspects. The EASP Coordination Manager reports directly to the Director, DoERD. The PCU will be represented at the PSC meetings through the Director, DoERD, who will provide regular updates on project implementation progress and challenges. Figure 1.1 in annex 1 presents the overall organogram for implementation of the proposed project, with specific focus on the structure and composition of the MEMD PCU. The implementing agencies will finalize a POM, satisfactory to the World Bank, detailing the project implementation arrangements before effectiveness of the project.

71. Component 1 will be implemented by the PIU at MEMD. MEMD has already assigned some initial staff to the PIU for project implementation. The organogram of the MEMD PIU is presented in annex 1. A Planning, Design and Supervision Consultant (PDSC) will be appointed to undertake the planning, design, and supervision of the network installations across the country, and to provide the necessary procurement support. To obtain economies of scale and ensure that appropriate standards are maintained, the MEMD will award bulk supply contracts (BSCs) to various suppliers to continuously feed the supply chain throughout the duration of the project. A Material Logistics Service Provider (MLSP) will manage the delivery, storage, local distribution, and management of materials for network strengthening and expansion and service connections. For Sub-component 1.1, service connections will be carried out following two approaches: (a) within the Umeme footprint, Umeme will carry out the connections and will be reimbursed at the regulated connection rates; and (b) outside the Umeme footprint, the MEMD PIU and the SPs will implement the connections. For Sub-component 1.2, MEMD PIU will carry out separate procurement of goods and works to construct MV/LV network to benefit local manufacturers through the application of domestic preferences under the World Bank Procurement Regulations.

72. Component 2 will be implemented by the PIU at the UECCC, which will be strengthened with staff in areas relevant for the preparation and implementation of the project and its expanded scope, both in terms of targeted beneficiaries (including refugees), financial intermediaries, and eligible private sector companies. The organogram of the UECCC PIU for the project is presented in annex 1. Component 3 will be implemented by the PIUs at MEMD and UECCC in close collaboration and coordination with the OPM, which oversees refugee management across the country through a decentralized structure. Close collaboration has been pursued during project preparation and will be fostered during implementation through the SERP Secretariat and OPM focal point, with the main humanitarian and development partners active in the country and in the energy sector, most notably UNHCR, EnDev, and the Norwegian Government. Component 4 will be implemented by the PCU and the PIUs at MEMD and UECCC. The MEMD has, through implementation of

World Bank-funded projects, developed adequate capacity to carry out institutional strengthening activities and impact monitoring, in close coordination with the MoFPED and the ERA. Component 5 will be implemented by the designated agencies subject to the triggering of the Contingent Emergency Response and initiatives targeted.

B. Results Monitoring and Evaluation Arrangements

73. Section VII presents the project's Results Framework, which will form the basis of the results M&E arrangements. The Results Framework defines specific outcomes and results to be monitored, the outcome indicators (PDO Indicators) for the project as a whole, and output indicators (intermediate result indicators) for each project component. The PBC matrix is also provided for Component 4. Annual target values for the result indicators have been agreed with the IAs.

74. The PCU will be ultimately responsible for coordinating, monitoring, collecting and collating information on all project activities from the IAs, and for submitting progress reports to the World Bank on a semi-annual basis for PDO and intermediate indicators. In addition to regular monitoring and reporting on the agreed indicators, activities to be monitored include timely, efficient, and transparent supervision of procurement and contract management; monitoring of construction and commissioning of works; and effective implementation of E&S safeguard instruments. The PIUs will assess use of the World Bank supported Geo-Enabling initiative for Monitoring and Supervision to ensure strong PIU information management systems and field monitoring processes.

75. The PCU will be responsible for coordination with institutional stakeholders (OPM, MoES, MoWE and MoH) to ensure alignment of objectives, achievement of the targets under the project, maximization of development impacts, and facilitation of the resolution of issues that may arise during implementation.

76. The PCU, PIUs and the World Bank will conduct a joint mid-term review of the project two years after project effectiveness to assess the performance of the project in achieving its development objective and ensure that lessons learned thus far are considered in implementation over the remaining period. Any adjustments will be discussed, agreed, and implemented as necessary. The MEMD will, on behalf of GoU, conduct its own evaluation of the project at the end of implementation. At project completion, the MEMD will evaluate the impact of activities on end-beneficiaries, distribution operational and commercial performance, productive uses of electricity and market for off-grid technologies and clean cooking solutions.

C. Sustainability

77. **The project is designed with a focus on sustainability and constitutes a scale up of successful implementation mechanisms existing in the country which are underpinned by the Government's strong desire to increase energy access**. The design of the proposed project is informed by lessons learned over 20 years of World Bank support to electrification efforts in Uganda. The financial sustainability of electrification efforts is supported by a focus on increased consumption through powering of productive uses of electricity (grid and off-grid). The proposed project will address affordability issues hindering house wiring and access to efficient appliances and off-grid technologies powering economic activities. The interventions aim at reducing the number of unconnected customers and increasing the revenue stream for the overall financial sustainability of the energy sector, as well as that of private sector off-grid service delivery.

78. **Equitable access to electricity services is also pursued**. The proposed project will support the GoU in ensuring that access to electricity services is provided across income brackets and ensuring that the bottom

of the pyramid is not left behind – this will also create a political momentum to the access agenda. With a targeted focus on refugees and host communities, the proposed project will support rural socioeconomic development and target areas that have been chronically poor to support social stability and graduation from humanitarian to development aid.

79. **Management of environmental impact of off-grid solar will be enforced**. As governments become aware of electrification opportunities through solar technologies and adopt quality standard frameworks to ensure consumers are protected from poor quality products, enforcement of suitable practices on dealing with solar products at their end of life, will be critical. Solar companies will be required to provide guidance to end users on how to discard solar components, batteries, and so on considering their impact on the environment if not properly recycled. The Environmental and Social Management System (ESMS) will contain procedures for E&S screening of subproject applications, monitoring, and reporting.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

80. **The proposed EASP will target more than one million grid connections.** The project activities, including service connections, intensification and extension of networks will be implemented according to internationally accepted technical standards. The project will provide consultancy support to assist the PIU at MEMD in the preparation of the relevant technical designs and tender documents and in the supervision and monitoring of the procurement of goods and works and construction activities.

81. **The project will support addition of about 150,000 off-grid connections,** comprising of stand-alone solar systems ranging from a small solar lantern that can be used as a reading lamp to a large stand-alone solar system that can be used for electrifying a house, public institutions and for productive uses such as irrigation, water pumping, milling, refrigeration, and livelihood improvements. The physical size of the systems varies depending on their capacity. Most residential use solar systems are plug and play, while larger systems require installation of the solar panel either on the roof of the building being electrified or at the yard of the consumer.

Economic and Financial Analysis

82. The project is economically viable with an economic internal rate of return (EIRR) of 53 percent and economic net present value (NPV) of US$1,182 million based on an economic discount rate of 6 percent. The project remains economically viable when an economic discount rate of 11 percent is applied to assess benefits based on Uganda Public Investment Management Analysis (PIMS) guidance, registering an economic NPV of US$661 million. The estimated financial internal rate of return (FIRR) is 33 percent and financial NPV is US$423 million (Table 4). The project is robust to credible changes in parameters, such as increases in the system costs as well as changes in the price of diesel. The framework for evaluating the project's economic returns is a standard cost-benefit analysis. The benefits under the grid component (Component 1 and Sub-component 3.1), and the off-grid component (Component 2 and Sub-component 3.2), include the avoided cost of electricity consumption and the economic benefit from greenhouse gas (GHG) emission reduction. The costs include the project economic costs and O&M costs, connection costs incurred by the households including refugees and host communities (in this case zero under the ECP), the generation cost of the additional electricity served to newly grid-connected households, and the replacement costs of the batteries of the SHS. Estimates for the NPV and EIRR are detailed in annex 3.

83. The expected net GHG impact of the project from increased access to renewable energy has been calculated at approximately 10 million tCO_2e during the lifetime of the project.

84. **COVID-19 impact**. It is expected that both costs and revenues estimated under the project may be affected by the pandemic. The cost of an electricity connection is currently estimated at around US$400/per connection[37]. The project can withstand an increase in connection costs. The project's NPV turns negative if connection costs increase to US$714, or by more than 75 percent. In addition, reduced household income and increased unemployment will likely affect affordability and in turn the rate of internal house-wiring, inspection fees and the purchase of electricity; as well as off-grid solar products and clean cooking technologies.

Table 4. FIRR and NPV for the Proposed Project

	Internal Rate of Return (%)	NPV (US$ millions)
Economic Analysis		
Overall project	53	1,182
Component 1 (Grid Connections)	56	1,050
Component 2 (SHS)	42	132
Financial Analysis		
Overall project	33	423
Component 1 (Grid Connections)	36	379
Component 2 (SHS)	27	43

B. Fiduciary

Financial Management

85. The IAs – MEMD and UECCC, are well versed and experienced in World Bank financed operations. Over the last several years, the MEMD (through the former REA) and UECCC have implemented several projects with funding support from the World Bank, African Development Bank, KfW, GoU and other partners towards increasing electricity access in Uganda. The GoU is currently implementing two World Bank funded projects, namely the ERT-3 and GERP. Financial Management arrangements in these entities are generally in place to implement this new project given the current implementation support reports for existing projects. The Permanent Secretary or Designate at the MEMD and the Managing Director for the UECCC will be the accounting officers for the project, assuming the overall responsibility for accounting for the project funds. The overall FM risk rating is Substantial.

86. The PCU at the MEMD will be responsible for day-to-day accounting, reporting, and coordinating of the component activities being implemented by the MEMD, while the PIUs will follow existing modalities for current projects, and these entities are adequately staffed with qualified and experienced accounting staff. The MEMD has migrated to the Integrated Financial Management Information System as a government-wide computerized accounting system. The UECCC uses the Sun Systems computerized accounting software. The MEMD has existing Treasury Accounting Instructions issued under the Public Financial Management Act that describes the accounting system and major transaction cycles of the project, funds flow processes, the

[37] MEMD's National Electrification Planning Study Report, November 2021

accounting records, supporting documents and specific accounts in the financial statements involved. The UECCC has Financial Management manuals that describe its accounting system.

87. Both implementing agencies have qualified and experienced internal auditors. There has been general compliance with submission of audit reports in accordance with existing Financing or Project Agreements under current and previous projects. There are no outstanding interim financial reports (IFRs) and audit reports from the proposed entities, and they have good submission records.

88. **Disbursements and financial management (FM)**. Part of the disbursements for Component 4 are linked to the PBCs and achievement of Implementation Optimization Plan which will be prepared as part of Annual Work Plan and assessed semi-annually. The borrower therefore will provide documentation to confirm that the performance targets have been met. The validation and verification of the PBC achievement will be carried out by a verification agent acceptable to the IDA.

89. **Financial reports on project expenditures will be prepared**, along with updated cash flow forecasts and contract management information on a semiannual basis and will be submitted to the World Bank for review and acceptance. Loan advances will be converted into disbursements when expenditures reported are reviewed and accepted as eligible, and when the World Bank has validated and certified that the PBCs have been met.

90. A full FM assessment is detailed in annex 6 with the current status of systems including staffing arrangements with respective mitigating measures.

Procurement

91. Procurement for project activities, including those which will follow the PBCs, will be carried out in accordance with the World Bank Procurement Regulations for IPF Borrowers, for Goods, Works, Non-Consulting and Consulting Services, dated July 2016, revised November 2017 and August 2018 under the 'New Procurement Framework (NPF)' and hereafter referred to as 'Procurement Regulations'. The project will also be subject to the World Bank's Anti-Corruption Guidelines, dated July 1, 2016, and the country-specific implementation provisions stipulated in the Legal Agreement including beneficiary disclosure requirements.

92. Mandatory enhanced measures are developed under existing procurement framework to support projects that require procurement of solar panels. The additional enhanced procurement measures include: (i) Forced Labor Performance Declaration (past performance), (ii) Forced Labor Declaration (commitment to addressing forced labor in the future, including cascading those requirements to their own sub-contractors and suppliers), and (iii) Strengthened contract clause on Forced Labor. Applicable solar projects have been mandated for prior review by Procurement for at least 24 months.

93. **National procurement procedures** will be used according to the World Bank's approved Procurement Plan (PP) for the first 18 months. All procurement will be implemented through Systematic Tracking of Exchanges in Procurement (STEP) and updated as required. In line with World Bank Group Procurement Regulations, the Uganda Electronic Government Procurement (e-GP) local solution will be used for procurement after the system is assessed and confirmed to be adequate in terms of its accessibility, security and integrity, confidentiality, and audit trail features among others.

94. **Procurement capacity assessments of the IAs**. Assessment of the respective IAs was conducted as part of project preparation and it was noted that project management will make use of existing procurement management arrangements. The proposed IAs have experience implementing World Bank funded projects

and the project will leverage the gain in procurement capacity training of procurement staff through the implementation of the previous and the ongoing World Bank-funded projects, namely the ERT-3 and GERP. The PCU and PIU at MEMD will each be headed by a Senior Procurement Officer and supported by project-based procurement staff hired under each donor-funded project. It was established that though the MEMD has experience in implementing World Bank-financed projects, the PCU staff have no direct experience with the World Bank's Procurement Regulations. The project will have to retain some or all of the existing project-based procurement staff in addition to other technical staff that may be required under the project. The local contract committees mandated under the Procurement and Disposal of Public Assets (PPDA) have staff proficient in PPDA guidelines and will require training on the World Bank Procurement Regulations. The assessment also noted challenges with contract management where no specific unit or department was assigned with staff for contract management which resulted in delays and numerous addenda to contracts. Under the project, each agency will be advised to establish a contract management unit with staff.

95. **Project Procurement Strategy for Development (PPSD) and PP**. A PPSD was developed to improve implementation of the project and help achieve results. The borrower prepared the PP for the initial 18 months, setting forth the selection methods to be followed by the implementing entities during project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the World Bank. The PP will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The IAs carried out a market sounding conference on February 17, 2020. Public and private stakeholders were invited to obtain feedback on the suitability and sustainability of the proposed project procurement strategy among other things. The PPSD has been prepared duly considering the operation context, procurement capacity of IAs, and market analysis. This analysis formed the basis for the enlisted procurement risks and proposed measures of mitigation. The PPSD identified procurement methods for key activities, such as connections, network expansion, strengthening and specific consulting and non-consulting services. As informed by the PPSD, the rehabilitation and construction of the distribution infrastructure will be procured through bulk material procurement contracts through Framework Agreements and local labor-based construction companies, which will be competitively selected based on the applicable procurement threshold, which would also benefit from domestic preferences.

96. Over 75 percent of the procurement volume shall be implemented by the PIU at MEMD under Component 1. These activities include the PDSC for the planning, design, and supervision of the network installations across the country, an MLSP, a non-consulting service, for management, delivery, storage, local distribution, and verification of materials for network strengthening and expansion and service connections. Component 2 shall be implemented by the UECCC and no major procurement is envisaged under sub-component 2.1 as it will follow financial intermediation approach where the project beneficiaries will have to follow commercial procurement practices. Under sub-component 2.2, while UECCC will provide financial intermediation to the private service provider to electrify public institutions, the service provider will be selected following a selection process to ensure the service provider meets key performance indicators and supply electricity at affordable level. The PIUs at MEMD and UECCC will jointly implement Component 3 with close coordination with the OPM. The PCU at MEMD will be supported by experienced procurement staff. The PIUs at MEMD and UECCC will also implement procurement under Component 4, a part of which shall be delivered through the PBCs. MEMD has established the PCU and PIU with existing staff and will soon start the recruitment process to appoint project funded dedicated staff within the PCU and PIUs. Performance of the

PCU and PIU will be sustained through the Implementation Optimization Plan prepared as part of the Annual Work Plan.

97. Based on the lessons learned from implementation of current projects, the main procurement risks associated with the PIU at MEMD include (a) delayed procurement and contract implementation due to inadequate number of technical staff to handle increased volume of procurement and contract administration; (b) weaknesses in procurement planning resulting in inappropriate packaging of contracts, high prices and delayed implementation of the project; and (c) weak procurement oversight and contract management resulting in delayed implementation and potential loss of value.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

D. Environmental and Social

98. The project will be subject to the World Bank Environmental and Social Framework and it's set of ten Environmental and Social Standards (ESSs). The MEMD has finalized the preparation of the E&S instruments which will guide the management of risks and impacts associated with the project. These instruments are the: (a) ESMF including a Social Assessment, (b) Resettlement Policy Framework (RPF), (c) Vulnerable and Marginalized Group Framework (VMGF), (d) Stakeholder Engagement Framework (SEF), and (e) ESCP. All these instruments were disclosed in the MEMD website on February 28, 2022 and the ESCP disclosed on March 10, 2022. The ESMF was disclosed on the World Bank website on March 1, 2022.

99. The project will also apply the requirements of the World Bank Group Environmental Health and Safety Guidelines mainly due to the construction of distribution networks and off-grid facilities. Construction contractors will be required, as a condition of their contracts under the project, to implement and comply with the Environmental and Social Management Plans (ESMPs). The CERC has been included in the ESMF. When the CERC is triggered, the activity(ies) will be screened for likely environmental and social risks and an ESMP prepared for activities that have material adverse risks or impacts. Mandatory enhanced measures are developed under the ESF to address forced labor issues to support projects that require procurement of solar panels.

100. The institutional capacity of the two IAs was assessed with the goal of identifying opportunities for strengthening capacity to address the identified gaps in E&S risks management of the project. The gaps identified were in the areas of staffing, equipment, targeted trainings, E&S management system (in line with ESS9), and monitoring and management of E&S risks and impacts. Despite the accumulated experiences of the IAs in delivering similar operations, the environmental and social risk rating is 'Substantial' due to the potentially complex implementation arrangement for the various sub-components and the wide geographical scope of the project that spreads across the country. Because of the nature of the anticipated civil works (pole erection and stringing for on-grid access), land acquisition and involuntary displacement are expected to be minimal and addressed through the RPF. Risks associated with influx of labor such as risks of sexual

exploitation and abuse and sexual harassment (SEA/SH) and GBV are expected. Due to the high level of gender inequalities, high prevalence of GBV and vulnerabilities of refugees the project team will get additional support from the GBV Specialist recently recruited under the existing GERP (P133305) and hosted by the MEMD to specifically address any cases of GBV and violence against children. It is also worth noting that the GBV assessment tool yielded a risk rating of 'Low'. Relevant instruments addressing the issue (ESMF/Environmental and Social Management Plan) will propose corresponding mitigation measures, as guided by the GBV Guidance Note. Stakeholder engagement and effective grievance redress will be crucial to ensure smooth project implementation. Additionally, the MEMD will strengthen the capacity of its Health, Safety, Social and Environment Unit under this project. While it is still unclear at this stage whether members of vulnerable and marginalized groups will be directly affected by planned activities, the project will make deliberate efforts to ensure that they benefit from the various and relevant interventions.

101. The project has positive environmental and climate change interventions in sub-components promoting institutional solar use, efficient cookstoves, and clean fuel technologies (improved cookstove models, LPG, biogas, briquettes, ethanol cooking fuel, and so on). In general, the likely negative environmental, health, and safety effects of the program activities are expected to be localized and temporary in nature, limited to minimal vegetation clearances to enable pitting of poles for grid intensification schemes, occupational and community health and safety concerns during the stringing process (in the case of Component 1 activities), and guidelines for disposal of solar components including batteries after end of life that will be generated for off-grid technologies. The distribution lines will be routed to avoid traversing ecologically sensitive and protected areas like wildlife reserves, national parks, forests and wetlands. The E&S instruments developed under the project will provide mitigation measures for addressing these risks and impacts. Uganda has national laws and institutions for E&S management. There are, however, weaknesses in the national environmental system performance related to institutional link, staffing level, and budget allocation, as well as human resource skills. The project will therefore include E&S staff in the PIUs and capacity building activities on applicable ESSs will be supported by the World Bank.

102. To address the environmental risks and impacts arising from project Components 2 and 3, an ESMS will be developed for the UECCC as financial intermediaries providing direct retail lending, and credit guarantees (to stand-alone solar equipment distributors, companies providing electricity to public institutions, and companies selling cookstoves and clean fuel technologies); and also, wholesale on-lending to participating financial institutions (PFIs). The ESMS will cover solar technologies, modern energy technologies to be promoted through the project (for example, productive uses technologies and clean cooking technologies for household, commercial, industrial and institutional consumers) and internal wiring of facilities. The UECCC will develop and maintain, in the form of an Environmental and Social Management System (ESMS), effective environmental and social systems, procedures and capacity for assessing, managing and monitoring risks and impacts of sub-projects derived from both wholesale and direct lending practices. For wholesale lending activities, the UECCC will continue using the same form of ESMS established under the Energy for Rural Transformation Phase III Project (ERT-3) (P133312) while transitioning to the newly developed and expanded ESMS. The UECCC will ensure that PFIs put in place an ESMS that addresses specific needs for E&S risk management and commensurate to the E&S risks for activities financed under the project. However, implementation of direct lending activities will only be allowed after the UECCC has established an expanded ESMS satisfactory to the World Bank. The development of an ESMS for UECCC is an effectiveness condition for the project.

103. **Gender impact.** Lack of access to electricity service and poor cooking environments disproportionately affect women. Increasing access to renewable energy and clean cooking can contribute to narrowing of gaps between females and males. Specifically, women's health outcomes will improve by reducing reliance on polluting and inefficient solid fuels and by going to maternal health clinics that are well-lit. Girls' education will improve too as they will be relieved from the responsibility of collecting fuel for cooking and can study for longer periods at home with lighting. Availability of public lighting will increase general safety perception and could reduce women's risk towards GBV. An ability to use TV, radio, and mobile phone will enable access to news and information and can contribute to increasing women's awareness on issues such as HIV/AIDSs. This can also improve their self-esteem and confidence. Women are an integral part of the energy value chain, play a crucial role in the widespread adoption and use of modern energy services, including household cooking solutions and off-grid products, and are a critical component for the sector's ability to reach scale. Women must be engaged in the process of designing, marketing, distribution, adoption, and scaling of energy services through consultations, awareness, and training, so that they are fully integrated into the ecosystem and can facilitate adoption of energy services.

104. Off-grid technologies can also support income-earning activities by extending the working day or setting up small commercial enterprises that depend on energy access. Labor-saving mechanized community services such as electric water pumps and grain grinding can yield time savings and allow women to set up their own small enterprises. Therefore, beyond the benefits that will emanate from the electrification and clean cooking scale up under the project, specific gender interventions will be undertaken to address prevailing gender gaps in Uganda. Key areas of intervention have been identified in the design of the project and in support of gender equality across interventions and components. Primary focus areas include: (a) enhancing equitable energy service delivery; (b) enhancing availability of data and knowledge around female and male consumers and beneficiaries; (c) enhancing skills development, employment and entrepreneurship opportunities for women; and (d) GBV prevention and response.

105. Three main gender gaps have been addressed in the project design. First, given the access deficit observed, the project team will ensure that under Component 1, 26 percent of household connections (on-grid) would target female-headed households to reflect the national household composition (female-headed household access currently stands at 24 percent), which translates into 235,000 connections for female-headed households out of the 940,000 connections under the proposed project. In addition, under Component 2, 28,750 off-grid connections will be provided to female-headed households (26 percent) out of the 115,000 off-grid connections, up from the current rate of 16 percent access from off-grid sources. Female-led enterprises will also be connected in proportion to their share in all commercial enterprises, corresponding to 38 percent of all enterprises. Second, the proposed project targets to increase the share of women with access to finance for productive use of electricity from the current average share of female-only asset ownership of 24 percent to 30 percent, corresponding to about 1,200 loans for female recipients under the project. Third, focus will be placed on ensuring that female-led commercial enterprises also have access to finance for modern energy technologies for use in their enterprises to enhance their livelihoods, competitiveness, health, COVID-19 affected recovery, and so on. An increase in access to finance of commercial enterprises is expected from the current level of 24 percent to 35 percent. In addition to measuring total female population benefiting from electricity access under this project, the Results Framework also measures the number of female-led commercial enterprises benefitting from grid, mini-grid and off grid electricity technologies and expand their business opportunities.

106. **Citizen engagement:** The project will be implemented through a market-based approach and accordingly will facilitate both the supply side and the demand side of the equation. As the project deals with innovative technologies and disruptive business models, its success will depend on awareness creation campaigns and capacity building of the ultimate project beneficiaries, the citizens. The project supports interventions to inform and train the end beneficiaries and citizens on the use and maintenance of grid and off-grid energy services and clean cooking products to reduce misuse and ensure appropriate care of these products. Adequate awareness campaigns and information dissemination will be conducted to inform citizens about their diverse benefits, safe use and grievance redressal. The productive use aspect of these products is largely unknown to most of the potential beneficiaries, and the project will ensure adequate citizen engagement to achieve the intended benefits. Initial stakeholder consultations were undertaken during the preparation of the ESMF, SEF, VMGF, and the RPF. The consultation processes will be an ongoing activity throughout the project cycle to ensure that stakeholders are fully engaged, especially the vulnerable and disadvantaged groups. The PBC 3 will support the stakeholder consultation and ensuring citizen engagements. The project will establish a grievance redress mechanism (GRM). In addition, to prevent and respond to GBV during project implementation, measures will be taken to sensitize and train the PIUs, IAs, and contractors against GBV.

107. **Grievance Redress Mechanism (GRM).** The RPF and the ESMF define guidelines for establishing a project level grievance redress mechanism to manage any complaints that may arise during project implementation. Grievance management will aim at providing a two-way channel for the project to receive and respond to grievances from the PAPs, stakeholders, or other interested parties.

V. GRIEVANCE REDRESS SERVICES

108. Communities and individuals who believe that they are adversely affected by a World Bank 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*. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VI. KEY RISKS

109. **The overall residual risk rating for the proposed project is Substantial**. There are several substantial risks to the project: (i) political and governance mainly due to changes in leadership in the energy sector and centralization of the decision-making process; (ii) adverse effects of the COVID-19 pandemic on the macroeconomic and fiscal situation of the GoU; (iii) fiduciary concerns, including procurement and contract management concerns; (iv) environmental and social concerns stemming from delayed compensation of PAPs; and, (v) disruptions in supply chains for grid, off-grid and clean cooking technologies and related equipment due to the COVID-19 pandemic. In addition to these, two high risks are likely to affect project implementation namely, sector strategy and policy and institutional capacity for implementation and

sustainability. The critical drivers for these two risks are the significant changes that are expected in the institutional structure of the electricity sector given the ongoing reforms, and possible changes in the roles and responsibilities of distribution utilities, given the expiry of Umeme's concession in 2025.

110. **Political and governance - Substantial**. The National elections that were held in January 2021 resulted in some changes in political leadership, including Members of Parliament, and leaders at the district level. The leadership within the energy sector has also changed, with the appointment of a new Minister, a new Minister of State for Energy and a new Permanent Secretary. On the governance front, while some key governance and accountability institutions have been strengthened, such as the Auditor General's Office and Inspector General of Government, centralization of the decision-making process has resulted in delays in implementation and reforms. Major policy initiatives and changes could have benefitted from sufficient consultation, adequate resource mobilization and associated capacity. Political clout has yielded results although questions remain on the sustainability of such interventions. For example, the creation of an anti-corruption unit in State House in 2018 sent some positive signals and has improved the response rate to allegations of misappropriation of government resources and abuse of office. This was complemented by the creation of the anti-corruption division in the High Court, which has improved the prosecution of high-level corruption cases. The World Bank and other donors also support measures to improve governance in Uganda, such as (a) Uganda Intergovernmental Fiscal Transfers (UgIFT), whose major objective is to strengthen government service delivery at the local government and facility level, (b) numerous World Bank initiatives to strengthen country procurement systems, and (c) a new project to support the further digitalization of government services and systems. As a mitigation measure in the proposed project, the roll-out of electrification works will be underpinned by a geospatial platform and technical analysis. In addition, strengthening fiduciary and social accountability measures are mainstreamed into the project design. Enhanced transparency through beneficiary engagement activities[38] will also ensure use of project funds for the intended purpose. Despite these mitigation measures, the residual risk remains substantial.

111. **Macroeconomic - Substantial**. The recent COVID-19 pandemic is expected to significantly disrupt economic activity, increase fiscal burden, and raise the macroeconomic risk. Economic activities are expected to be seriously affected through three channels, specifically: services sector due to the shock to tourism; imports and related supply chains for industry; and liquidity for the financial sector. The situation continues to be fluid making precise estimates of impacts a challenge. A contraction of the GDP to 5.5 percent and 5.7 percent is projected in FY22 and FY23 respectively. The large shock to GDP growth is expected to substantively reduce revenue while expenditure increases as government programs are implemented to deal with the pandemic, including needed economic support to households, businesses and possibly financial institutions. The proposed Uganda COVID-19 Economic Crisis and Recovery Development Policy Financing (DPF, P173906), amounting to US$300 million, will support the GoU in managing the impact of the COVID-19 pandemic. The DPF is structured around two pillars: (a) crisis response and protecting the most vulnerable; and (b) supporting faster economic recovery and debt transparency. The financing provided through this operation is urgently needed to help close a large financing gap and prevent a more protracted crisis. It will also help with debt sustainability through limiting costly domestic borrowing to finance the rapidly deteriorating fiscal position and thereby preventing the gross financing need from ballooning. The residual risk remains substantial.

[38] The proposed project will draw lessons from Northern Uganda Social Action Fund and Uganda Support to Municipal Infrastructure Development Program

112. **Sector strategies and policy - High**. During the lifetime of the project, the sector will experience significant changes in the roles and responsibilities of SPs and in the structure of the distribution segment. The concession to Umeme is scheduled to expire in 2025. The GoU has started a rationalization exercise to merge the currently unbundled electricity sector into a vertically integrated industry. As part of this rationalization exercise, the GoU has mainstreamed REA as a department within MEMD through approving the Statutory Instrument No 29 of 2021 on May 10, 2021 with effective date of October 19, 2020 (backdated). This structure will be valid for only two years and will be restructured as per the rationalization exercise findings. This transition to new institutional arrangements could affect the implementation of the proposed project. The residual risk remains high.

113. **Institutional capacity for implementation and sustainability - High**. Key sector institutions, including the MEMD will have major implications on the proposed project. To mitigate this, the MEMD has established a PCU and a PIU and assigned initial staff. The PCU and PIU will have to be fully staffed with dedicated specialists to implement the project. The PIU will be headed by the EASP Project Manager and will be supported by staff with requisite qualifications and experience in engineering and related technical areas, procurement, finance, E&S, health and safety, and M&E aspects. The PIU will contract additional support for the implementation of project activities (for example, the PDSC and the MLSP). With support from the ERT-3 project, the MEMD has established a Connections Unit that will be adequately staffed and fully dedicated to the implementation of projects/programs contributing to the ECP. The MEMD is establishing a new M&E Unit to support ongoing portfolio implementation. The MEMD is currently engaging with the Ministry of Public Service regarding the absorption of the former REA as a department under the Ministry. While the Statutory Instrument No 29 of 2021 ensures that all former REA staff will be absorbed by MEMD, the difference in staff compensation and benefits between former REA, which was closer to market rate, and MEMD, which is as per civil service terms, increases the risk of sustaining the former REA capacity within MEMD. The residual risk remains high.

114. **Fiduciary - Substantial**. The overall fiduciary rating is substantial due to inadequate fiduciary capacity, particularly on procurement, which may undermine the implementation of the project. To mitigate this, a detailed fiduciary systems assessment of the procurement and financial management capacity of the implementing agencies was carried out during project preparation, and appropriate mitigation measures were identified. It is expected that the proposed project will, among others, support enhancements to public procurement systems, including improvements in contract management and other areas within the agencies. Despite these mitigation measures, the residual risk remains substantial.

115. **Environmental and Social - Substantial**. Environmental, health and safety risks are associated with vegetation clearances, occupational and community health and safety concerns during the stringing process, and end-of-life batteries generated from off-grid technologies. Social impacts associated with project activities will generally emanate from the construction of both electric distribution networks and stand-alone solar energy facilities, including risks associated with non-compensation for affected crops and trees, influx of labor into targeted areas, lack of adequate consultation of affected persons and access to functioning grievance redress mechanisms, and social exclusion The likely E&S risks will be mitigated through avoidance of some of the impacts by proper design of subprojects. For example, the distribution lines will be routed to avoid traversing ecologically sensitive and protected areas like wildlife reserve, national parks, forests and wetlands. Generally, E&S instruments developed under the project will provide mitigation measures for addressing likely risks and impacts. Often, compensating project affected people gets delayed due to either legal complications or lack of funding. The Government is committed to ensure timely budgetary support for RAP compensation.

Even upon execution of the recommended mitigation measures, the environmental and social risks will remain substantial during the project implementation phase.

116. **Other: COVID-19 - Substantial**. The outbreak has already disrupted: (a) grid rollout construction works, due to the lockdown; and (b) supply chains for off-grid and clean cooking technologies and related equipment. The rollout of Components 1, 2, and 3 for grid and off-grid connectivity scale up is therefore vulnerable to such developments. In addition, while the proposed project provides support to address affordability challenges through partial subsidies, the socioeconomic impact of the COVID-19 pandemic may severely affect the customer contributions. Component 4 activities may also be disrupted (for example, establishment of the PIUs, market assessments) in case of lockdowns and the broader impact of the pandemic on institutional processes, private sector business measures, field market assessments and capacity building activities. The residual risk remains substantial.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Uganda

Electricity Access Scale-up Project (EASP)

Project Development Objectives(s)

The Project Development Objective is to increase access to energy for households, commercial enterprises, industrial parks, and public institutions.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Increase energy access for households, commercial, industrial customers, and public institutions.								
Connections provided under the project with grid, mini-grid, and off-grid (Number)		0.00	60,000.00	185,000.00	500,000.00	862,000.00	1,223,500.00	1,223,500.00
People provided with access to electricity under the project with grid and mini-grid (Number)		0.00	250,000.00	775,000.00	2,000,000.00	3,550,000.00	5,050,000.00	5,050,000.00
People provided with access to electricity under the project with grid and mini-grid of which female (Number)		0.00	125,000.00	387,500.00	1,000,000.00	1,775,000.00	2,525,000.00	2,525,000.00
People provided with access to electricity under		0.00	33,000.00	94,000.00	280,000.00	507,600.00	667,400.00	667,400.00

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
the project with off-grid (Number)								
People provided with access to electricity under the project with off-grid of which female (Number)		0.00	16,500.00	47,000.00	141,000.00	253,800.00	333,700.00	333,700.00
People provided with access to electricity with grid, mini-grid, off-grid in refugee-hosting districts (Number)		0.00	23,500.00	94,000.00	188,000.00	342,000.00	534,000.00	534,000.00
People provided with access to electricity with grid, mini-grid, off-grid under the project, of which refugees (Number)		0.00	11,750.00	47,000.00	94,000.00	171,000.00	267,000.00	267,000.00
People with access to clean cooking solutions under the project (Number)		0.00	96,000.00	254,000.00	540,000.00	1,080,000.00	1,660,000.00	1,660,000.00
Commercial and productive uses beneficiaries of grid, mini-grid, off-grid access (Number)		0.00	2,150.00	6,200.00	15,000.00	34,000.00	50,500.00	50,500.00
Public institutions provided with grid and off-grid access under the project. (Number)		0.00	35.00	90.00	175.00	430.00	700.00	700.00

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Public institutions provided with clean cooking solutions (Number)		0.00	10.00	40.00	100.00	300.00	600.00	600.00
Industrial parks electrified under the project (Number)		0.00	0.00	0.00	1.00	3.00	5.00	5.00
Annual greenhouse gases emissions avoided (tCO2) (Number)		0.00	10,000.00	25,000.00	50,000.00	75,000.00	107,000.00	107,000.00
Generation capacity of energy constructed or rehabilitated (CRI, Megawatt)		0.00	4.00	9.00	17.00	26.00	38.00	38.00
Renewable energy generation capacity (other than hydropower) constructed under the project (CRI, Megawatt)		0.00	4.00	9.00	17.00	26.00	38.00	38.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Grid Expansion and Connectivity								
Number household connections provided with grid and mini-grid under the		0.00	50,000.00	150,000.00	400,000.00	700,000.00	940,000.00	940,000.00

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
project (Number)								
Number of household connections provided with grid and mini-grid under the project of which female headed (Number)		0.00	12,000.00	37,000.00	100,000.00	175,000.00	235,000.00	235,000.00
Commercial enterprises electrified under the project, grid and mini-grid (Number)		0.00	1,500.00	4,000.00	10,000.00	22,500.00	30,000.00	30,000.00
Commercial enterprises electrified under the project, grid and mini-grid of which female led (Number)		0.00	570.00	1,520.00	3,800.00	8,550.00	11,400.00	11,400.00
Financial Intermediation for Energy Access Scale-up								
Volume of financing to beneficiaries for access to energy (Amount(USD))		0.00	2,000,000.00	7,000,000.00	15,000,000.00	40,000,000.00	60,000,000.00	60,000,000.00
Number of off-grid household connections provided under the project (Number)		0.00	5,000.00	15,000.00	50,000.00	90,000.00	115,000.00	115,000.00
Number of off-grid household connections provided under the project to female headed households (Number)		0.00	1,250.00	3,750.00	12,500.00	22,500.00	28,750.00	28,750.00
Number of clean cooking		0.00	20,000.00	50,000.00	100,000.00	200,000.00	300,000.00	300,000.00

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
solutions provided (Number)								
Public institutions provided with off-grid access (Number)	PBC 4	0.00	25.00	75.00	150.00	350.00	500.00	500.00
Productive uses technologies financed (Number)		0.00	40.00	400.00	800.00	2,400.00	4,000.00	4,000.00
Productive uses technologies financed of which female recipients (Number)		0.00	12.00	120.00	240.00	720.00	1,200.00	1,200.00
Commercial enterprises benefited from modern energy solutions (Number)		0.00	400.00	800.00	1,650.00	3,000.00	5,000.00	5,000.00
Commercial enterprises benefited from modern energy solutions of which female-led (Number)		0.00	150.00	300.00	580.00	1,000.00	1,750.00	1,750.00
Energy savings from the project (MWh/year)		0.00	260.00	650.00	1,200.00	18,000.00	2,628.00	2,628.00
Energy Access in Refugee Host Communities								
Number of grid and mini-grid connections provided the project in refugee-hosting districts (Number)		0.00	3,000.00	15,000.00	30,000.00	55,000.00	100,000.00	100,000.00
Number of grid and mini-grid connections provided under the		0.00	1,500.00	7,500.00	15,000.00	27,500.00	50,000.00	50,000.00

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
project, of which refugees (Number)								
MV/LV network constructed under the project in refugee-hosting districts (Kilometers)		0.00	0.00	0.00	750.00	1,850.00	3,550.00	3,550.00
Commercial enterprises and institutions electrified under the project with grid and mini-grid connections in refugee-hosting districts (Number)		0.00	15.00	360.00	800.00	2,000.00	3,500.00	3,500.00
Commercial enterprises and institutions electrified under the project with grid and mini-grid connections, of which refugees (Number)		0.00	8.00	180.00	400.00	1,000.00	1,750.00	1,750.00
Number of off-grid connections provided under the project in refugee-hosting districts (Number)		0.00	2,000.00	5,000.00	10,000.00	18,000.00	27,000.00	27,000.00
Number of off-grid connections provided under the project, of which refugees (Number)		0.00	1,000.00	2,500.00	5,000.00	9,000.00	13,500.00	13,500.00
Commercial enterprises electrified under the project with off-grid solutions in refugee-hosting districts		0.00	100.00	400.00	1,000.00	1,800.00	3,000.00	3,000.00

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
(Number)								
Commercial enterprises electrified under the project, of which refugees (Number)		0.00	50.00	200.00	500.00	900.00	1,500.00	1,500.00
Productive uses technologies distributed under the project in refugee-hosting districts (Number)		0.00	100.00	250.00	1,000.00	2,500.00	5,000.00	5,000.00
Productive uses technologies distributed to refugees customers (Number)		0.00	50.00	125.00	500.00	1,250.00	2,500.00	2,500.00
Number of clean cooking solutions provided under the project in refugee-hosting districts (Number)		0.00	500.00	4,000.00	15,000.00	30,000.00	53,000.00	53,000.00
Number of clean cooking solutions provided under the project in refugee-hosting districts, of which refugees (Number)		0.00	250.00	2,000.00	7,500.00	15,000.00	26,000.00	26,000.00
Public institutions provided with off-grid access in refugee-hosting districts (Number)		0.00	10.00	15.00	25.00	80.00	200.00	200.00
Number of public institutions provided with clean cooking solutions in		0.00	5.00	8.00	20.00	30.00	50.00	50.00

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
refugee-hosting districts (Number)								
Project Implementation Support and Affordable Modern Energy Solutions								
Establishment and adequate functioning of PCU at MEMD (Text)		Adequately functioning PCU not in place, monitoring and reporting capacity needs strengthening	(A) Additional 9 key staff specialists are recruited within 6 months from effectiveness. In total, 13 key staff specialists are recruited by the end of Year 1 and retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality; (C) PSC to hold quarterly review of the project progress reports	(A) 13 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality; (C) PSC to hold quarterly review of the project progress reports	(A) 13 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality; (C) PSC to hold quarterly review of the project progress reports	(A) 13 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality; (C) PSC to hold quarterly review of the project progress reports	(A) 13 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality; (C) PSC to hold quarterly review of the project progress reports	Adequately functioning PCU with retained key staff, adequate monitoring and reporting capacity in place
Establishment and adequate functioning of PIU at MEMD (Text)		Adequately functioning PIU not in place, reporting capacity needs strengthening	(A) Additional 18 key staff specialists are recruited within 6 months from effectiveness. In total, 26 key staff specialists are recruited by the end of Year 1 and retained throughout	(A) 26 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	(A) 26 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	(A) 26 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	(A) 26 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	Adequately functioning PIU with retained staff

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
			Year 1-5; B; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality					
Establishment and adequate functioning of PIU at UECCC (Text)		Adequately functioning PIU not in place, reporting capacity needs strengthening	(A) Additional 9 key staff specialists are recruited within 6 months from effectiveness. In total, 15 key staff specialists are recruited by the end of Year 1 and retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	(A) 15 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	(A) 15 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	(A) 15 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	(A) 15 key staff specialists are retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality	Adequately functioning PIU with retained staff with adequate reporting capacity
MEMD optimizes investments for electricity access scale-up (Text)	PBC 1	Lack of optimized grid rollout		Proposal for optimized grid design and connection materials analyzed with the Electricity Regulatory Authority, and decision on study findings				A decision is made on the adoption of optimized grid rollout materials and grid design.
Establishment by MEMD of an Enabling Environment	PBC 2	Limited capacity for environmental, social,	(A) Environmental & social instruments	(A) Environmental & social instruments	(A) Environmental & social instruments	(A) Environmental & social instruments	(A) Environmental & social instruments	A. Codes of conduct prohibiting SEA/SH

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
for Energy Access scale-up (Text)		health and safety management	and tools in place; (B) Health, safety, GBV training and workers capacity building launched and maintained; (C) GRM implemented satisfactorily; (D) Compensations to PAPs made on time	and tools in place; (B) Health, safety, GBV training and workers capacity building launched and maintained; (C) GRM implemented satisfactorily; (D) Compensations to PAPs made on time	and tools in place; (B) Health, safety, GBV training and workers capacity building launched and maintained; (C) GRM implemented satisfactorily; (D) Compensations to PAPs made on time	and tools in place; (B) Health, safety, GBV training and workers capacity building launched and maintained; (C) GRM implemented satisfactorily; (D) Compensations to PAPs made on time	and tools in place; (B) Health, safety, GBV training and workers capacity building launched and maintained; (C) GRM implemented satisfactorily; (D) Compensations to PAPs made on time	signed by project workers; B. Health, safety, GBV training and workers capacity building launched; C. GRM implemented satisfactorily; D.GBV service mapping conducted; E. Compensations to PAPs made on time.
UECCC conducts adequate monitoring of the energy market financing (Text)	PBC 3	Lack of adequate understanding of nation-wide energy market challenges	1. Conducts consultations with private sector companies; 2. Conducts consultations with market stakeholders; 3. Prepares reporting of findings with recommendations	1. Conducts consultations with private sector companies; 2. Conducts consultations with market stakeholders; 3. Prepares reporting of findings with recommendations	1. Conducts consultations with private sector companies; 2. Conducts consultations with market stakeholders; 3. Prepares reporting of findings with recommendations	1. Conducts consultations with private sector companies; 2. Conducts consultations with market stakeholders; 3. Prepares reporting of findings with recommendations		Adequate monitoring and challenge response in support of the energy market

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Connections provided under the project with grid, mini-grid, and off-grid	The indicator will track the number of household	Quarterly	Project implementati	Service providers customer database,	MEMD, UECCC

	connections provided under the project with grid, mini-grid, and off-grid solutions.		on progress reports.	MEMD database, IVA reports, approved loan and grants applications.	
People provided with access to electricity under the project with grid and mini-grid	The indicator will track the number of people benefiting from grid and mini-grid electricity access under the project, disaggregated by gender. Average household size of 4.7 people, UBOS National Household Survey 2016-2017.	Quarterly	Project implementation progress reports. Household size based on UBOS National Household Survey.	Service Providers customer database, MEMD database, IVA reports	MEMD
People provided with access to electricity under the project with grid and mini-grid of which female	The indicator will track the number of females benefiting from grid and mini-grid electricity access under the project. Share of female is 51%, UBOS Women and Men in Uganda, Facts and Figures 2016.	Quarterly	Project implementation progress reports. UBOS Women and Men in Uganda, Facts and Figures, 2016.	Service Providers customer database, MEMD database, IVA reports	MEMD
People provided with access to electricity under the project with off-grid	The indicator will track the number of people benefiting from access to off-grid	Quarterly	Project implementation progress	Approved loan and grants applications.	UECCC, MEMD

	electricity access under the project, disaggregated by gender. Average household size of 4.7 people, UBOS National Household Survey 2016-2017.		reports. Average household size based on UBOS National Household Survey.		
People provided with access to electricity under the project with off-grid of which female	The indicator will track the number of females benefiting from off-grid electricity access under the project. Share of female is 51%, UBOS Women and Men in Uganda, Facts and Figures 2016.	Quarterly	Project implementation progress reports. UBOS Women and Men in Uganda, Facts and Figures, 2016	Approved loan and grants applications	UECCC, MEMD
People provided with access to electricity with grid, mini-grid, off-grid in refugee-hosting districts	The indicator will track the number of host communities and refugees beneficiaries of access to grid, mini-grid, and off-grid technologies under the project in District hosting refugees. Average household size of 4.7 people, UBOS National Household Survey 2016-	Quarterly	Project implementation progress reports. Average household size based on UBOS National Household Survey.	Service Providers customer database, MEMD database, IVA reports, approved loan applications and installation reports.	UECCC, MEMD

	2017.				
People provided with access to electricity with grid, mini-grid, off-grid under the project, of which refugees	The indicator will track the number of refugees beneficiary of access to grid, mini-grid, and off-grid solutions under the project.	Quarterly	Project implementation progress reports	Service providers customers database, approved loan applications and installation reports.	UECCC, MEMD
People with access to clean cooking solutions under the project	The indicator will track the number of people benefitting from access to clean cooking solutions under the project, disaggregated by gender. Average household size of 4.7 people, UBOS National Household Survey 2016-2017.	Quarterly	Project implementation progress reports. Average household size based on UBOS National Household Survey.	Approved loan and grants applications and installation reports.	UECCC, MEMD
Commercial and productive uses beneficiaries of grid, mini-grid, off-grid access	The indicator will track beneficiaries of grid, mini-grid, off-grid electricity access for commercial and productive uses purposes.	Quarterly	Project implementation progress report.	Service providers customers database, MEMD database, approved loan applications and installation reports. Productive uses technologies include: internal wiring, efficient appliances, SRU, SPU, milling units etc.	UECCC, MEMD

Public institutions provided with grid and off-grid access under the project.	The indicator will track the number of public institutions benefiting from access to grid and off-grid electricity under the project.	Quarterly	Project implementation progress report	Service providers customers database, MEMD database, approved loan applications and installation reports.	UECCC, MEMD
Public institutions provided with clean cooking solutions	The indicator will track the number of public and private institutions benefiting from access to clean cooking solutions under the project.	Quarterly	Project implementation progress report.	Approved loan applications and installation reports.	UECCC, MEMD
Industrial parks electrified under the project	The indicator will tack the number of industrial parks benefiting from LV connectivity and limited MV establishment under the	Quarterly	Project implementation progress reports	Service Providers customer database, MEMD database	MEMD
Annual greenhouse gases emissions avoided (tCO2)	The indicator will track the number of emissions avoided under the project by technology.	Quarterly	Project implementation progress report.	Service providers customers database, MEMD database, approved loan applications, installation reports, private sector customer consumption database.	UECCC, MEMD
Generation capacity of energy constructed or rehabilitated		Quarterly	Project implementati	Approved loan applications	UECCC, MEMD

			on report		
Renewable energy generation capacity (other than hydropower) constructed under the project		Quarterly	Project implementation progress reports	Approved loan applications	UECCC, MEMD

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Number household connections provided with grid and mini-grid under the project	The indicator will track the number of on-grid connections provided under the project, gender disaggregated.	Quarterly	Project implementation progress report	Service Providers customer database, MEMD database, IVA reports	MEMD
Number of household connections provided with grid and mini-grid under the project of which female headed	The indicator will track the number of female-headed households benefiting from grid and mini-grid electricity access under the project. Current share of female-headed households is 26%. National Electrification Survey Report, 2018, Ministry of Energy and Mineral Development, January 2020.	Quarterly	Project implementation progress report. National Electrification Survey Report, 2018, Ministry of Energy and Mineral Development, January	Service Providers customer database, MEMD database, IVA reports, with adequate instruments for collecting information about female headed households	MEMD

			2020.		
Commercial enterprises electrified under the project, grid and mini-grid	Commercial loads benefiting from access to grid and mini-grid connectivity under the project.	Quarterly	Project implementation progress reports.	Service Providers customer database, MEMD database, IVA reports	MEMD
Commercial enterprises electrified under the project, grid and mini-grid of which female led	The indicator will track progress in providing access to commercial loads that are female led. The project target intends to close the gender gap and achieve 44 percent of access of female led commercial loads from the baseline of 28%.	Quarterly	Project implementation progress reports.	Service Providers customer database, MEMD database, IVA reports	MEMD
Volume of financing to beneficiaries for access to energy	The indicator will monitor the disbursements of debt financing at attractive terms through PFIs and direct lending.	Quarterly	Project implementation progress reports.	Approved loan applications.	UECCC, MEMD
Number of off-grid household connections provided under the project	The indicator will track the number of off-grid household connections provided under the project.	Quarterly	Project implementation progress reports.	Approved loan and grants applications and installation reports	UECCC, MEMD
Number of off-grid household connections provided under the project to female headed households	The indicator will track the number of female-headed households benefiting from off-grid electricity access under the project. Current	Quarterly	Project implementation progress reports. National	Approved loan and grants applications and installation reports, with adequate methodology for	UECCC, MEMD.

	share of female-headed households is 26%. National Electrification Survey Report, 2018, Ministry of Energy and Mineral Development, January 2020.		Electrification Survey Report, 2018, Ministry of Energy and Mineral Development, January 2020.	collecting information about female headed households	
Number of clean cooking solutions provided	The indicator will track the number of clean cooking technologies provided under the project to residential and commercial beneficiaries.	Quarterly	Project implementation status reports.	Approved loan and grants applications and installation reports.	MEMD
Public institutions provided with off-grid access	The indicator will track the number of public institutions benefiting from access to off-grid solutions.	Quarterly	Project implementation progress report.	Approved loan applications and installation reports.	UECCC, MEMD
Productive uses technologies financed	The indicator will track the number of loans provided to residential, commercial, institutional beneficiaries for internal wiring, efficient and cooling appliances, off-grid solar power supply.	Quarterly	Project implementation progress reports.	Approved loan applications.	UECCC, MEMD
Productive uses technologies financed of which female recipients	The indicator will track the number of loans provided to female recipients for	Quarterly	Project implementation progress	Approved loan applications.	UECCC,, MEMD

	internal wiring, efficient and cooling appliances, off-grid solar power supply. The indicator will target the closing of the gender gap from the baseline of 24% to 30%.		reports.		
Commercial enterprises benefited from modern energy solutions	Commercial loads benefiting from access to finance under the project for internal wiring, efficient and cooling appliances, off-grid solar systems.	Quarterly	Project implementation progress report	Approved loan applications.	UECCC, MEMD
Commercial enterprises benefited from modern energy solutions of which female-led	The indicator will track progress in female-led commercial enterprises access to finance for the purchase of modern energy solutions (off-grid, efficient and cooling appliances, clean cooking solutions, productive uses)	Quarterly	Project implementation progress reports	Approved loan applications and installation reports.	UECCC, MEMD
Energy savings from the project	The indicator will track energy savings stemming from the project linked to the transition to modern sources of energy	Quarterly	Project implementation progress reports	Approved loan and grant applications	UECCC, MEMD
Number of grid and mini-grid connections provided the project in refugee-hosting districts	The indicator will track beneficiaries of grid and mini-grid connections in districts hosting refugees	Quarterly.	Project implementation status report.	Service Providers customer database, MEMD database, IVA reports, approved loan	UECCC, MEMD

	access under the project, disaggregated by refugees and host communities beneficiaries.			applications and installation reports.	
Number of grid and mini-grid connections provided under the project, of which refugees	The indicator will track beneficiaries of grid, mini-grid, and off-grid electricity in districts hosting refugees access under the project, disaggregated by refugees and host communities beneficiaries	Quarterly	Project implementation progress reports.	.Service Providers customer database, MEMD database, IVA reports, approved loan applications and installation reports.	UECCC, MEMD
MV/LV network constructed under the project in refugee-hosting districts	The indicator will track the kilometers of Medium and Low voltage network constructed under the project in Districts hosting refugees	Quarterly	Project implementation progress report	MEMD construction reports	MEMD
Commercial enterprises and institutions electrified under the project with grid and mini-grid connections in refugee-hosting districts	The indicator will track the number of commercial enterprises and institutions electrified under the project with grid and mini-grid connections, disaggregated by refugees and host communities beneficiaries.	Quarterly	Implementation progress report.	Service Providers customer database, MEMD database	MEMD
Commercial enterprises and institutions electrified under the project with grid and mini-grid connections, of which refugees	The indicator will track the number of refugee-led commercial enterprises and institutions electrified under the project with grid and	Quarterly	Implementation progress report	Service Providers customer database, MEMD database	MEMD

	mini-grid connections.				
Number of off-grid connections provided under the project in refugee-hosting districts	The indicator will track the number of off-grid connections provided in Districts hosting refugees, disaggregated by refugees and host communities.	Quarterly	Project implementation progress report.	Approved loan and grants applications and installation reports	UECCC, MEMD
Number of off-grid connections provided under the project, of which refugees	The indicator will track the number of refugees benefiting from an off-grid connection under the project.	Quarterly	Project implementation progress reports.	Approved loan and grants applications and installation reports	UECCC, MEMD
Commercial enterprises electrified under the project with off-grid solutions in refugee-hosting districts	The indicator will track the number of commercial enterprises electrified under the project in District hosting refugees, disaggregated by refugees and host communities.	Quarterly	Project implementation progress report	Approved loan applications and installation reports	UECCC, MEMD
Commercial enterprises electrified under the project, of which refugees	The indicator will track the number of refugee -led commercial enterprises electrified with off-grid technologies under the project.	Quarterly	Project Implementation progress report.	Approved loan applications and installation reports	UECCC, MEMD
Productive uses technologies distributed under the project in refugee-hosting districts	The indicator will track the number of internal wiring, efficient and cooling appliances, off-grid solar power supply technology	Quarterly	Project implementation progress reports.	Approved loan application and installation reports.	UECCC, MEMD

	solutions distributed in refugee Districts, disaggregated by refugees and host communities.				
Productive uses technologies distributed to refugees customers	The indicator will track the number of beneficiaries in districts hosting refugees access to internal wiring, efficient and cooling appliances, off-grid solutions, disaggregated by refugees and host communities.	Quarterly	Project implementation progress report.	Approved loan applications and installment reports.	UECCC, MEMD.
Number of clean cooking solutions provided under the project in refugee-hosting districts	The indicator will track the number of clean cooking solutions provided in districts hosting refugees access, disaggregated by refugees and host communities.	Quarterly	Project implementation progress reports	Approved loan and grants applications and installation reports.	UECCC, MEMD.
Number of clean cooking solutions provided under the project in refugee-hosting districts, of which refugees	The indicator will track the number of beneficiaries in districts hosting refugees access to clean cooking solutions in public institutions, disaggregated by refugees and host communities.	Quarterly	Project implementation progress report.	Approved loan and grants applications and and installation reports	UECCC, MEMD.
Public institutions provided with off-grid access in refugee-hosting districts	The indicator will track the number of public institutions electrified with	Quarterly	Project implementation progress	Installation report.	UECCC, MEMD

	off-grid technologies under the project in District hosting refugees.		report.		
Number of public institutions provided with clean cooking solutions in refugee-hosting districts	The indicator will track the number of public institutions provided with clean cooking solutions in District hosting refugees.	Quarterly	Project implementation progress report	Loan applications, Installation reports.	UECCC, MEMD
Establishment and adequate functioning of PCU at MEMD	The indicator will track that the PCU is adequately staffed and functioning for the implementation of the project, including for adequate monitoring and reporting	Quarterly.	Project implementation progress reports	(A) Key staff specialists are recruited and retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality; (C) PSC to hold quarterly review of the project progress reports	MEMD
Establishment and adequate functioning of PIU at MEMD	The indicator will track that the PIU is adequately staffed and functioning for the implementation of the project.	Quarterly	Project implementation progress reports	(A) Key staff specialists are recruited and retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate	MEMD

				quality	
Establishment and adequate functioning of PIU at UECCC	The indicator will track that the PIU is adequately staffed and functioning for the implementation of the project.	Quarterly	Project implementation progress reports	(A) Key staff specialists are recruited and retained throughout Year 1-5; (B) Reporting responsibilities to the WB are fulfilled on time and with adequate quality;	UECCC
MEMD optimizes investments for electricity access scale-up	The indicator will track the preparation of an assessment (involving ERA) for optimized grid rollout materials and design solutions, the discussion of the findings amongst the counterpart and the achievement of a decision on the recommendations.	Annual	Project implementation progress reports, MEMD formal communications to the WB.	The adoption of a decision will be tracked through formal communications of MEMD to the WB about the decision made on the proposal.	MEMD, ERA
Establishment by MEMD of an Enabling Environment for Energy Access scale-up	The indicator will track health, safety, and GBV/SEA/SH prevention capacity building activities for the adequate implementation of grid connections under the project.	Quarterly	Project implementation progress reports	Record of training activities, including: location and duration of trainings, number of participants, number of participants that have successfully completed the training, training curricula, GRM	MEMD

				reporting, PAPs compensation reporting	
UECCC conducts adequate monitoring of the energy market financing	The indicator will track the adequate monitoring and understanding of UECCC of the energy market financing conditions in Uganda. UECCC will conduct consultations with relevant stakeholders at least on an annual basis to acquire adequate outlook on the energy market financing conditions and promptly identify solutions for the identified challenges.	Annual	Project implementation progress reports	Minutes of consultations; summary reports of outputs of the consultations with identified challenges and recommended solutions/measures.	UECCC

Performance-Based Conditions Matrix

PBC 1	MEMD optimizes investments for electricity access scale-up			
Type of PBC	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Intermediate Outcome	Yes	Yes/No	500,000.00	0.11
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	No			

Year 1	No	0.00	NA
Year 2	Yes	500,000.00	NA
Year 3	No	0.00	NA
Year 4	No	0.00	NA
Year 5	No	0.00	NA

PBC 2	MEMD develops capacity and establishes instruments and tools for adequate ESHS management, to facilitate electricity access scale-up			
Type of PBC	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Outcome	No	Yes/No	2,000,000.00	0.43
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	No			
Year 1	Yes		400,000.00	NA
Year 2	Yes		400,000.00	NA
Year 3	Yes		400,000.00	NA
Year 4	Yes		400,000.00	NA
Year 5	Yes		400,000.00	NA

PBC 3	UECCC conducts adequate monitoring of the energy market financing			
Type of PBC	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Outcome	No	Yes/No	1,000,000.00	0.22
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	No			
Year 1	Yes		200,000.00	NA
Year 2	Yes		200,000.00	NA
Year 3	Yes		200,000.00	NA
Year 4	Yes		200,000.00	NA
Year 5	Yes		200,000.00	NA

PBC 4	Operation and Maintenance Costs paid to Electricity Service Providers for public institutions made in full and on time.			
Type of PBC	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Output	No	Number	5,000,000.00	1.08
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	0.00			
Year 1	0.00		0.00	100 percent of payments on time and in full.
Year 2	500,000.00		500,000.00	100 percent of payments on time

			and in full.
Year 3	1,500,000.00	1,500,000.00	100 percent of payments on time and in full.
Year 4	2,000,000.00	2,000,000.00	100 percent of payments on time and in full.
Year 5	2,000,000.00	1,000,000.00	50 percent of payments on time and in full.

Verification Protocol Table: Performance-Based Conditions	
PBC 1	MEMD optimizes investments for electricity access scale-up
Description	The PBC will provide incentives for the adoption of low cost standards for grid rollout to optimize and increase access scale-up.Disbursements will be made based on the results achieved under the linked indicator.
Data source/ Agency	MEMD
Verification Entity	TBD
Procedure	Quarterly implementation progress report, formal communication from MEMD to the WB.
PBC 2	MEMD develops capacity and establishes instruments and tools for adequate ESHS management, to facilitate electricity access scale-up
Description	The PBC will provide incentives for the establishment of adequate capacity of construction workers with resect to health, safety, GBV protection.
Data source/ Agency	MEMD

Verification Entity	TBD
Procedure	Annual project implementation reports, audited. Linked results indicators will be monitored on an annual basis.
PBC 3	UECCC conducts adequate monitoring of the energy market financing
Description	The PBC will provide incentives for the adequate monitoring and understanding of the energy market in Uganda through sector consultations and reporting. Disbursements will be made based on the results achieved under the linked indicator.
Data source/ Agency	UECCC
Verification Entity	TBD
Procedure	Annual project implementation reports, audited. Annual market reporting Linked results indicators will be monitored on an annual basis.
PBC 4	Operation and Maintenance Costs paid to Electricity Service Providers for public institutions made in full and on time.
Description	The PBC will monitor that payments of public institutions to private sector energy access service providers are provided on time and in full using the budgetary allocation provided through Mid Term Expenditure Framework. The PBC will be disbursed upon public institution meeting their contractual payment obligations to the private electricity service providers..
Data source/ Agency	UECCC, MEMD
Verification Entity	TBD
Procedure	Annual progress implementation reports, audited. Accounting will take into account both the down payment contribution and the payment for service provided. Linked results indicator will be monitored on a quarterly basis.

ANNEX 1: Implementation Arrangements and Support Plan

1. Project implementation will be carried out by the MEMD and UECCC through dedicated and adequately staffed Project Implementation Units (PIUs). The two implementing entities will collaborate closely with the MoFPED, OPM, MoES, MoH, MoWE, Ministry of Local Government, Ministry of Agriculture, Ministry of Works and Transport, electricity distribution SPs, and other relevant sector stakeholders to implement the various project activities.

2. The MEMD has established a PSC to provide strategic guidance and overall oversight during project implementation and ensure effective coordination among all the stakeholders. The PSC is chaired by the Permanent Secretary MEMD and includes representatives from UECCC, OPM, Ministry of Justice and Constitutional Affairs, Solicitor General (SG), Ministry of Local Government and MoFPED. Representatives from other relevant institutions may be invited to attend PSC meetings as needed. The PSC will provide strategic direction and will review project progress at least once every quarter. The specific composition and functions of the PSC will be included in the POM.

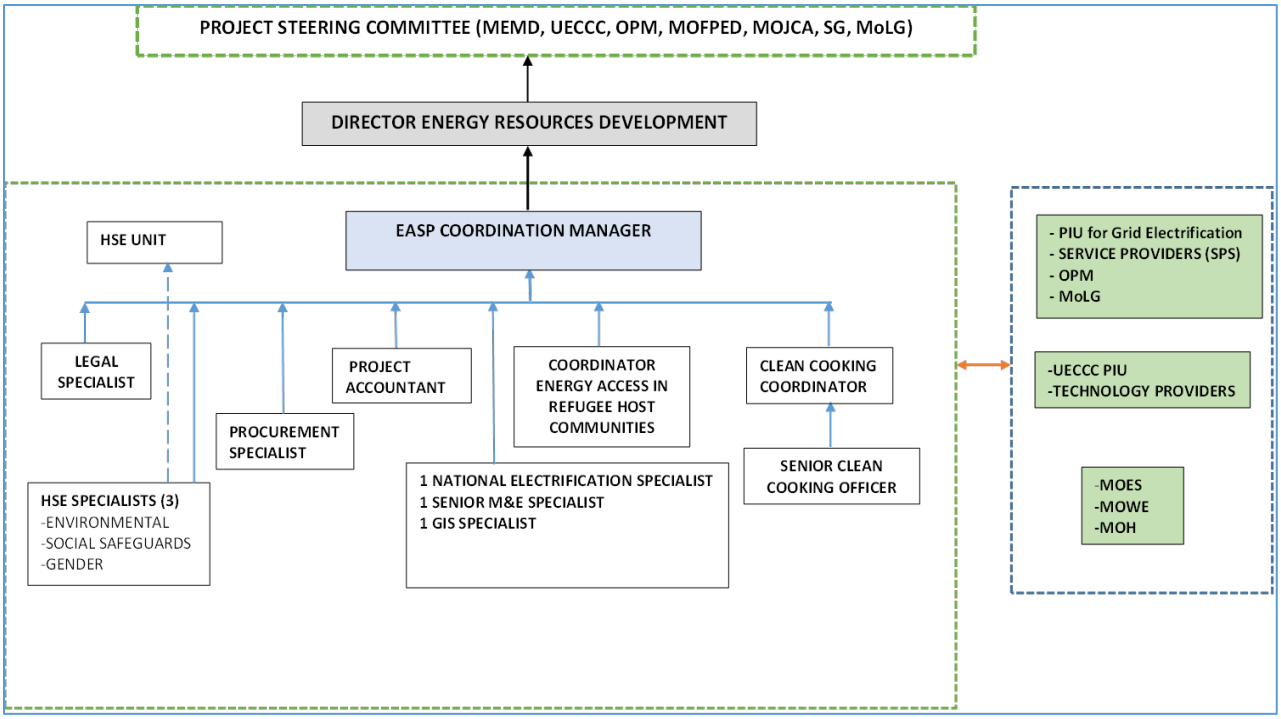
3. A PCU and a PIU have been established at the MEMD by assigning some existing staff to undertake project preparatory activities. While the PIU will carry out on the ground implementation, the PCU will supervise, monitor, and report on the activities of the whole project. The PCU will be responsible for coordinating with the World Bank and reporting on a quarterly and annual basis on project progress, as well as on implementation challenges. The PCU will ensure that lack of adequate progress is promptly and adequately addressed and brought to the attention of the relevant decision makers and executive powers. It will also ensure coordination with the MoH, MoES, MoWE, Ministry of Agriculture and the OPM as needed. Detailed roles and responsibilities of the two PIUs and the PCU will be included in the POM.

4. The MEMD will recruit or assign the following four staff to the PCU prior to effectiveness: (a) Project Coordination Manager, (b) Project Accountant, (c) Environment Specialist, and, (d) Social development Specialist. The Coordination Manager will be supported by staff with requisite qualifications and experience in engineering and related technical areas, procurement, finance, E&S, health and safety, and M&E aspects. The EASP Coordination Manager reports directly to the Director – Energy Resources Development. The PCU will be represented at the PSC meetings through the Director – Energy Resources Development, who will provide regular updates on project implementation progress and challenges. Figure 1.1 presents the overall organogram for implementation of the proposed project, with specific focus on the structure and composition of the MEMD PCU. The following additional nine staff will be recruited or assigned to the PCU no later than six months after the effective date, leading to a total of thirteen staff; (a) Legal Specialist; (b) Procurement Specialist; (c) Coordinator energy access in refugee host communities; (d) National Electrification Specialist; (e) Senior Monitoring & Evaluation Specialist; (f) GIS Specialist; (g) Gender Specialist; (h) Clean Cooking Technology Coordinator; (i) Senior Clean Cooking Officer. The implementing agencies will finalize a POM, satisfactory to the World Bank, detailing the project implementation arrangements before effectiveness.

5. **Component 1**. An MEMD PIU headed by the EASP Project Manager, supported by a total of twenty six staff covering all functions relevant to project implementation, including technical (for example, planning, connections implementation, and construction supervision), fiduciary, E&S, M&E, and legal services will implement Component 1. Prior to effectiveness, MEMD will recruit or assign the following eight staff to the PIU; (a) Project Manager; (b) Senior Connections Manager; (c) Grid Expansion Manager; (d) Social development Specialist; (e) Procurement Specialist; (f) Senior Planning Engineer; (g) Senior Connections Officer; and, (h) Senior Legal Officer. The remaining eighteen staff will be recruited or assigned within six

months of project effectiveness. The MEMD has initiated the procurement process to appoint a consulting firm to support the planning, design, procurement, and supervision of network installations across the country. To obtain economies of scale and ensure that appropriate technical standards are maintained while increasing electricity connections, MEMD will award bulk supply contracts (BSCs) to various suppliers to continuously feed the supply chain throughout the duration of the project, for all SPs except Umeme. An MLSP will manage the delivery, storage, local distribution, and management of materials for network strengthening, expansion, and service connections. Umeme will be responsible for financing and connecting all new consumers within its footprint under the ECP and compensated at the regulated cost of connections according to the results-based approach. Consumers outside Umeme footprint will be connected under the ECP by respective SPs either through local service connection contractors (SCCs) or by own staff. The SPs will receive connection materials from the MLSP and will be compensated at regulated connection of labor and transport. For network expansion, strengthening and connecting industrial parks, the PIU will carry out separate procurement of goods and works contracts with domestic preference provisions to benefit the Ugandan manufacturing industry and to support local job creation.

Figure 1.1. Overall organogram for EASP implementation, with specific focus on the MEMD-PCU



6. To improve the coordination, efficiency, and effectiveness of electrification efforts, the proposed project will adopt a centralized approach to electrification planning, network design, and procurement. This arrangement will foster a nationwide approach to electrification. The centralized approach will ensure equity in connections rollout, improved quality of services through the adoption of the same network design and material standards, timely procurement, and adequate tracking and monitoring of activities for prompt accountability to stakeholders and tackling of implementation challenges.

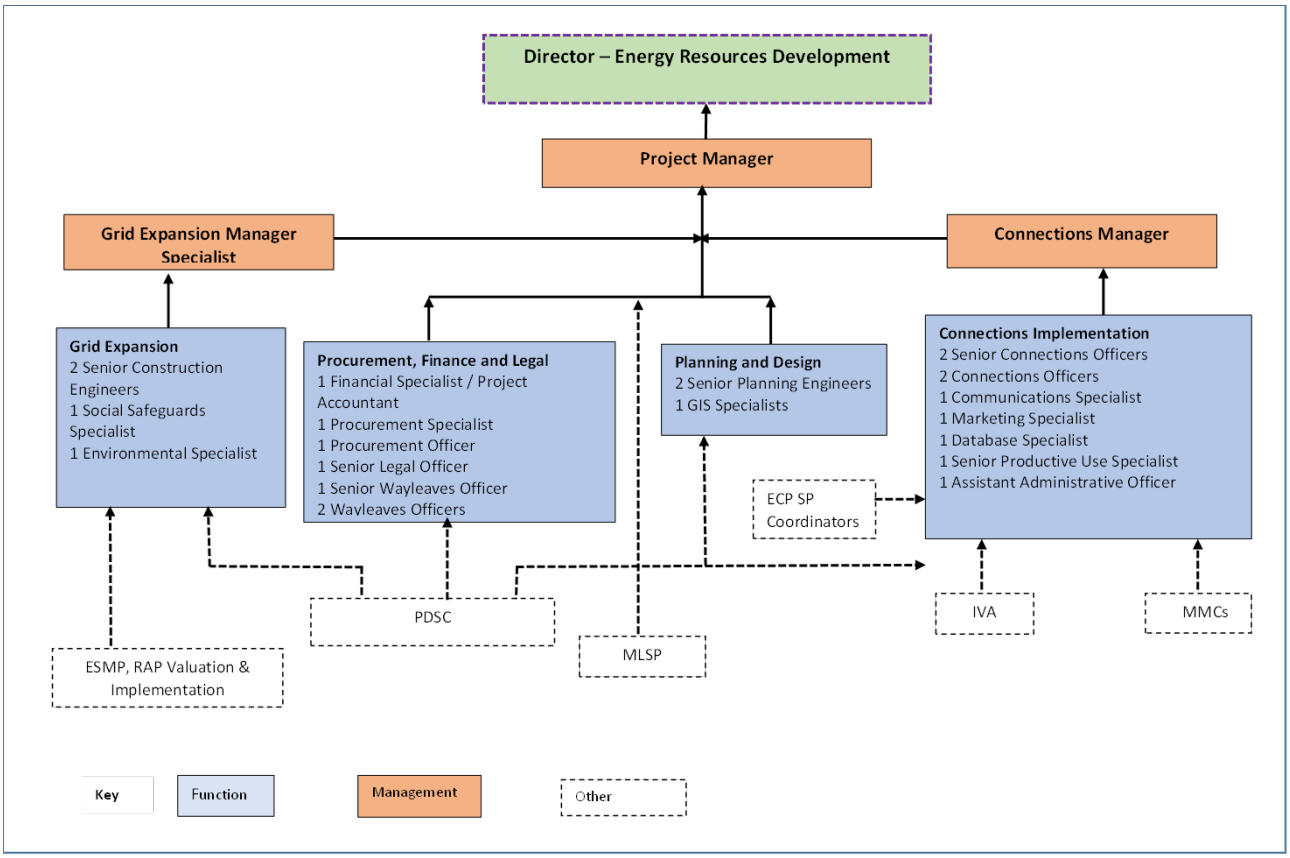
7. The central planning and procurement approach will entail the following:

- **National Level** roll out of access with planning, design, procurement, construction, and FM for multiple SPs (other than Umeme).
- **One PDSC** will be the backbone for optimal network expansion and tracking of progress keeping institutions accountable in their roles and responsibilities.
- **There will be centralized procurement of materials at scale**[39] for connection and line construction materials in line with national level requirements. This approach will ensure economies of scale. The procured materials will follow a just-in-time delivery schedule to meet the Line Installation Contractors (LIC) material needs, reducing the need for storing larger quantities of materials for longer periods. To ensure acceptability of materials among SPs (other than Umeme), the MEMD and SPs have harmonized technical specifications for materials. Moreover, the MEMD will engage SPs during the procurement processes for materials at various stages, including specification rationalization, bid evaluation and negotiations, and factory acceptance tests.
- **One MLSP.** The large-scale workflow will require superior expertise in terms of logistical management skill to deliver and account for construction materials effectively.
- **Service Connection Contractors (SCC)**. The SCC may be employed by the SPs and materials dispatched by the MLSP for connecting new customers on the prepared networks.

8. The MEMD has launched several preparatory activities to support the implementation of the project and overall planning capabilities of the sector, including the gap assessment for the establishment of a sector wide vertically integrated and cross-sectoral planning platform for access scale up. The activity will build on the platform already established by the sector GIS working group to locate generation, transmission, and distribution assets and ensure coordination of investments across the power sector as a whole. In addition, the platform will be expanded to other sectors, such as education, health, and agriculture, to foster a cross-sectoral approach to electrification and prioritization of service delivery through the establishment of an SDI.

[39] The PIU at MEMD will promote the adoption of standardized specifications for materials under the project, aiming at (a) nation-wide adoption of appropriate standards, (b) harmonization of materials for network integration and service quality, and (c) simplified bulk procurement and benefits from economies of scale.

Figure 1.2. MEMD-PIU Organogram for EASP Implementation

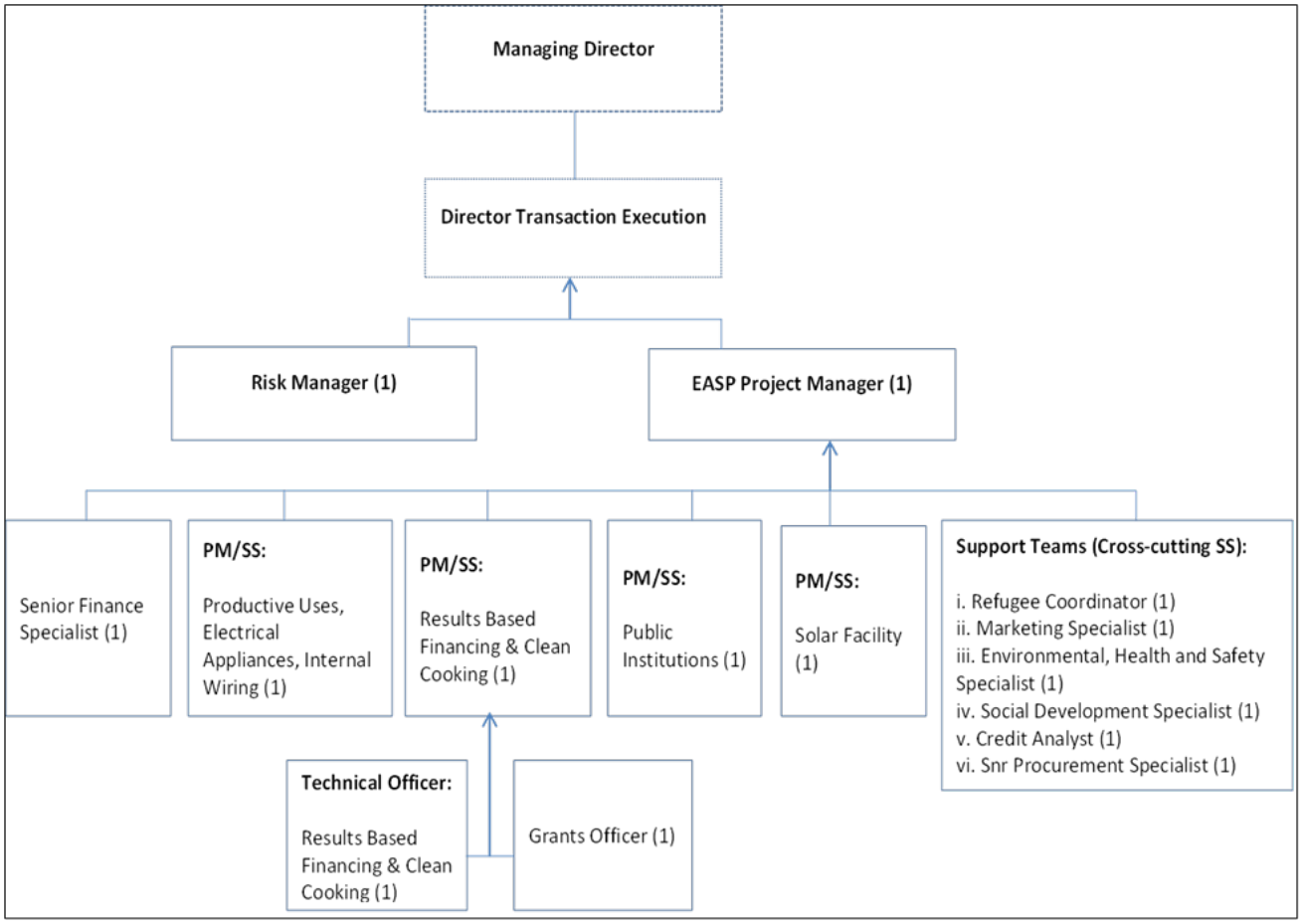


Note: MLSP = Material Logistics Service Provider; MMCs = Media and Marketing Companies; IVA = Independent Verification Agent; PDSC = Planning, Design, and Supervision Consultant; SP = Service Provider

9. **Component 2**. The UECCC, before declaring the proposed project effective, will establish a PIU headed by the Director - Transaction Execution, supported by the EASP Project Manager for the day-to-day management and supervision of project implementation. The PIU will comprise staff responsible for the implementation of the four programs under the project, including the solar working capital/guarantee facility; electrification of public institutions; results-based financing for cookstoves and off-grid solar; and promotion of productive use equipment, efficient appliances, and internal wiring. The UECCC will appoint program managers to manage the implementation in collaboration with fully- or partially dedicated staff and cross-cutting support teams, who will provide support across the different programs for transaction execution, technical, E&S, fiduciary, marketing, M&E, and refugee coordination. The four program managers will report directly to the Project Manager, EASP. The structure of the PIU is shown in Figure 1.3. For successful implementation of the project, the UECCC will establish the PIU and recruit or assign the following six key staff to the PIU before effectiveness: (a) Project Manager, (b) Program Manager - Solar Facility, (c) Program Manager – Result-Based Financing and Clean Cooking, (d) Program Manager - Public Institutions Solar Electrification, (e) Program Manager - Productive Uses, Electric Appliances and Internal Wiring, and, (f) Senior Finance Specialist/Accountant. UECCC will recruit or assign the remaining nine staff within six months of

effectiveness. These include: (a) Risk Manager, (b) Technical Officer – Results Based Financing and Clean Cooking, (c) Refugee Coordinator, (d) Credit Analyst, (e) Senior Procurement Specialist, (f) Grants Officer, (g) Marketing Specialist, (h) Environmental, Health and Safety Specialist, and (i) Social development Specialist.

Figure 1.3. UECCC-PIU Organogram for EASP Implementation



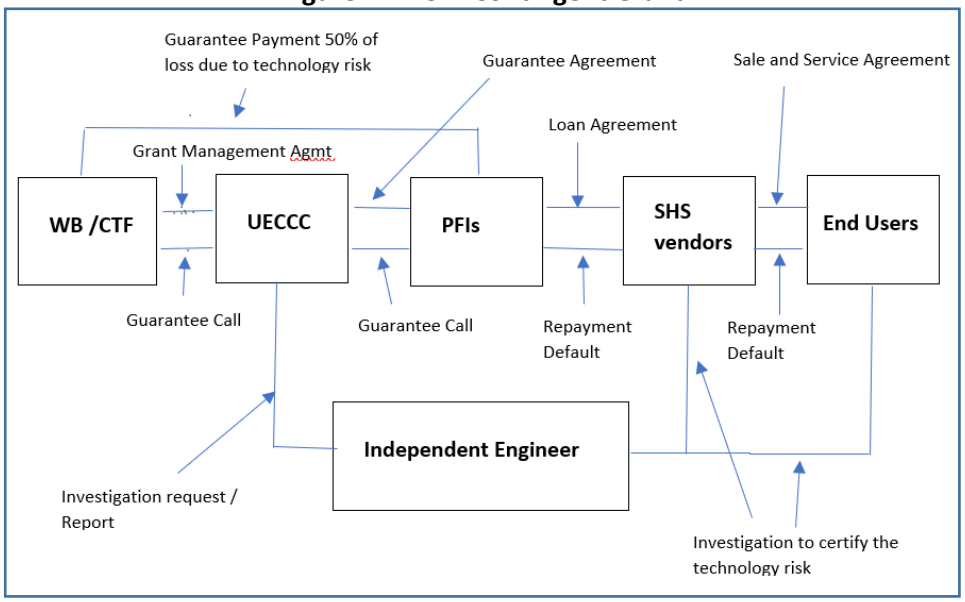
Note: PM = Project Manager; SS = Sector Specialist.

10. **CTF contingent grant structure.** Figure 1.4 shows how the CTF contingent grant instrument will cover the exposure to technology risks for PFIs lending to private sector entrepreneurs. The operational process will be fully documented in the POM. The World Bank, CTF, and UECCC will conclude a three-way grant management agreement under which the UECCC manages the process of allocating risk cover, verifying claims, and making payments to PFIs to cover the agreed proportion of losses. PFIs that require this risk cover must conclude a guarantee agreement with the UECCC. If a technology-related risk materializes and causes a payment default under an eligible loan, the PFI must first declare the loan as non-performing. This permits the PFI to make a guarantee call to the UECCC. The UECCC then employs an independent engineer to verify that the claim is indeed caused by a technology failure. The independent engineer carries out the due diligence directly with the SHS vendor and end users.

11. The PFI is the beneficiary of the guarantee and is therefore not involved in the verification process to ensure that the due diligence is objective and independent. The SHS vendor and PFI must have diligently explored options to cure the default including for example claiming under manufacturer warranties before making a guarantee call. In cases where a combination of commercial and technological risks are encountered, that is, multiple causes of default, then the claim will still be judged to be valid if technological risks are a material contributor to the loss. Technological risks include failure of equipment to perform according to minimum product specifications, or to achieve the quality standards required for Lighting Global certification. They also include failure of the SHS vendor's business model due to technological issues including issues that affect business systems such as PAYGo platforms, mobile money payment platforms, and customer relationship management systems.

12. Before any payouts from the facility, PFIs will need to provide documentation to prove the financial losses incurred to meet the eligibility criteria as stipulated in the downstream CRG agreement between the UECCC and the PFIs. The POM will specify that an independent third-party verification agent will review the claims made by the PFIs to benefit from the CRG. The PFIs will be responsible for submitting all evidence to determine whether the loan default was due to underperformance of technology. The UECCC will be responsible for managing the Contingent Grant Facility and ensuring that the claims of the PFIs are reviewed by an independent third-party verification agent. The UECCC will be required to provide evidence to the World Bank showing that claims of the PFIs are eligible for payouts. The underperformance of technology, along with the procedure for managing the facility, will be defined in the POM.

Figure 1.4. CTF Contingent Grant



13. Table 1.1 provides additional details on the expected design of the contingent grant facility under Component 2, including targeting, eligibility, and required matching criteria.

Table 1.1. Implementation Guidelines for Contingent Grant Facility

Topics	Guidelines
Objective	• Demonstrate viability of business model • Facilitate access to follow-on investment
Eligibility criteria	• Companies promoting renewable energy, and energy-efficient technologies
Selection filters	• Scaling up • Additionality (requires guarantee support to happen)
Eligible use of funds	• Certified products and installers (where applicable)
Size of collateral support	• Up to 50 percent of loan principal
Matching ratio	• Company equity required by the PFI
How to promote a sustainable impact	• Combined with TA support and enabling environment • Facilitate access to follow-on investment
M&E indicators	• Revenue growth • Unit sales • Affordability of product offerings • Access to follow-on financing/bankability • Household impacts (for example, access to energy) • Jobs created • Increased market competition
Multiple awards possible?	• Yes, but clear additionality or lack of follow-on financing options

14. UECCC will blend its debt financing with grant support to ensure affordable access to solar systems powering households, productive uses, public institutions, and clean cooking solutions. The UECCC PIU will appraise eligible beneficiaries (residential and commercial) and private sector companies based on the criteria and verification processes defined in the POM and approved by the World Bank. The selection of public institutions eligible for clean cooking grant financing will be conducted by the PCU in collaboration with beneficiary ministries to ensure their engagement. The POM will specify how UECCC PIU and the PCU will coordinate to: (a) specify eligibility criteria of institutions to receive support, (b) support Uganda National Bureau of Standards on technical standards of clean cooking solutions, and (c) promote awareness raising activities.

15. The PCU will coordinate with beneficiary ministries to competitively select private service providers following the detailed criteria specified in the POM to electrify public institutions with solar technology under long term service agreements. Private service providers will receive debt and grant financing from UECCC to meet their capital cost. To address the non-payment risk, the GoU will create a DSRA account which would be maintained for the length of the service agreement, at a level of 12 months of payments. Maintenance of the DSRA account would be an obligation of the GoU and be a covenant under the IDA Financing Agreement.

16. **Component 3.** This component will be implemented by the PIUs at the MEMD and the UECCC in close collaboration with the OPM, which oversees refugees' management across the country through a decentralized structure and provides identification documents to refugees. Grid connectivity will be implemented by the PIU at the MEMD. The PDSC will identify least-cost technology options for access provision in the 12 RHDs, leveraging on available information from SPs for demand estimation. Off-grid connectivity and access to clean cooking and productive uses of energy technologies will be implemented under the UECCC. The UECCC PIU will appraise eligible beneficiaries (residential and commercial) and private sector companies based on the criteria and verification processes defined in the POM and approved by the World Bank. Grant financing will complement debt financing available under the UECCC for private sector

companies, and the disbursement amounts and schedule will be determined based on the business plans awarded by the UECCC through a competitive process. Achievement of results will be verified by the IVA following the documentation requirements detailed in the POM.

17. **Component 4.** Compliance with the PBCs and implementation of TA and capacity-building activities will be implemented by the PIUs at the MEMD and the UECCC. The MEMD has developed adequate capacity through the implementation of World Bank-funded projects to carry out institutional strengthening activities and impact monitoring in close coordination with the MoFPED and ERA. The MEMD will host the PCU, adequately staffed to supervise, monitor, and report on the activities under Components 1–4. The PCU will be responsible for coordinating with the World Bank and reporting on a quarterly and annual basis on progress, as well as on implementation challenges. The MEMD PCU will ensure that lack of adequate progress shall be promptly and adequately tackled and brought to the attention of the relevant decision makers and executive powers. The PCU will ensure coordination with the MoH, MoES, Ministry of Agriculture, and the OPM as needed.

ANNEX 2: Clean Technology Fund

Table 2.1 Result Framework

Indicator	CTF/IBRD-funded Project
Installed capacity for power generation (MW)	38[40]
Energy efficiency savings (MWh)	2,628
Tons of GHG emissions reduced or avoided	106,541 tons of CO_2
CTF financing requested	US$30 million *CRG: US$25 million* *Grant (TA and small and medium enterprises [SMEs] support): US$5 million*
Financing leveraged through CTF funding (US$ millions)	Multilateral development bank (MDB): US$176.5 million IDA and US$10 million ESMAP-MDTF Private sector: US$20 million
CTF leverage ratio (1:X)	CTF/IDA: 1:5.88 CTF/Private sector: 1:0.67 CTF/Total project: 1:6.88
Cost effectiveness ($/tCO₂)	CTF cost effectiveness: 281.58 Total project cost effectiveness: 2,125.94
Other Co-Benefits	Increased access to electricity Health and education co-benefits Increased employment opportunities Gender impact Humanitarian support to refugees and host communities

I. Introduction

1. ***Country context.*** **Uganda's population is fast-growing, predominantly young, and rural, with prevailing social and economic inequalities.** Driven by a high fertility rate of 5.59 births (2018), Uganda's population has doubled to 42.86 million over the last three decades and is expected to reach 80 million by 2040. More than 48 percent of the population is under the age of 15 and nearly 50 percent of the population is between 15 and 65 years. As of 2018, about 76 percent of the total population lived in rural areas and worked in the agricultural sector, which accounts for 70 percent of the total employment and around a quarter of the country's GDP.

2. **The topical issues of gender inequalities and climate impacts also persist in Uganda**. The people, environment and economy are highly dependent on natural resources and the country is experiencing impacts of climate change. Along with poverty, land degradation, and rapid and unplanned urbanization and with the increase in the spread of vector-borne diseases, these climate risks affect the people and major productive sectors in the country, which lack sufficient institutional and community capacities to adapt to climate change impacts. Gender inequalities are stark with Uganda ranking 131 out of 161 countries in the 2019 Gender Inequality Index.

3. **Hosting the refugees from the neighboring Horn of Africa has emerged as an important development challenge**. Uganda is the largest refugee-hosting country in Africa and the third largest

[40] I MW of this capacity will be attributed to energy savings.

worldwide. By the end of January 2022, the country hosted 1.58 million refugees and asylum seekers. Most refugees reside in settlements located in 12 districts (out of 121) across the country and alongside local host communities, mainly in Northern Uganda and the West Nile; which are among the poorest and the most underdeveloped areas of the country.

4. **The Coronavirus Disease 2019 (COVID-19) pandemic is putting Uganda's growth trajectory at risk, exacerbating structural constraints, and increasing pressure on the poor and vulnerable, including people living in Refugee Hosting Districts (RHDs).** Uganda's real GDP grew at 2.9 percent in FY20, less than half the 6.8 percent recorded in FY19[41], due in large part to the effects of the COVID-19 pandemic. Economic activity stalled during the latter part of the fiscal year due to a domestic lockdown that lasted over four months, border closures, and the spillover effects of disruption in global demand and supply chains. This resulted in a sharp contraction in public investment and deceleration in private consumption. The pandemic has also stalled telecommunications infrastructure investments and dampened consumer demand because of the falling purchasing power. For poor and vulnerable households in Uganda, the impact of COVID-19 is especially severe. The refugee and host communities have been significantly affected by successive COVID-19 related shocks which have decreased food security in RHDs. As of December 31, 2021, there had been almost 140,000 COVID-19 cases in the country.

5. ***Sector context.*** **About 58 percent of the population live without electricity**. The main access deficit is exhibited in rural areas, where 76 percent of the population reside and less than 40 percent have access to electricity. At the national level, Uganda has one of the lowest electricity consumptions per capita in the world, estimated at an average of 100 kWh per year in 2020, which is far below its peers (for example, Kenya at 155 kWh per year and Ghana at 300 kWh per year). Refugee communities are disproportionally affected by lack of access to electricity services.

6. **The outcomes in clean cooking are even more dire with about 95 percent of Ugandans using solid biomass fuels for their meals**. The SDG7 tracking report identified Uganda as one of the 20 largest deficit countries in the population without access to clean cooking and highlighted declining access rates as the population growth is outstripping the additional access. Exposure to household air pollution from burning of biomass fuels for cooking in Uganda is estimated to significantly affect the health of over 20 million people and cause over 13,000 deaths every year. In addition, reliance on wood fuels has been imposing pressure on natural resources, especially forests.

7. **Access to electricity services is about 50 percent for health centers and 20 percent for schools**, with access deficits most prominent among health centers at the sub-county (55 percent access) and parish levels (38 percent access) and in primary schools (16 percent access). This lack of electrical connectivity has become more critical due to COVID and limits the implementation of the MoH's COVID-19 Preparedness and Response Plan.

8. **The challenges to scale up access are multi-dimensional** and include, among others, (a) inadequate national-level integrated planning process which may lead to financial burden to the sector; (b) the affordability barriers and low consumption, access, and quality of electricity services; (c) the slow uptake of clean cooking and fuels and technologies; (d) the lack of low-cost network planning tools and cost-effective technologies for electrification; (e) the low access to equipment for productive uses and efficient appliances;

[41] World Bank. 2020. Uganda Economic Update, 16th Edition, December 2020: Investing in Uganda's Youth. December 2020

and (f) a broad range of different and poorly coordinated humanitarian partner approaches within refugee settlements.

9. **The GoU has launched several initiatives to scale up access**. The most prominent is the approval of the ECP in 2018. The ECP covers 2018–27 and subsidizes connection costs for customers in proximity of the existing network as the means for scaling up access to grid connectivity as well as improved consumption. Another important policy initiative has been the adoption of a quality assurance framework for component based SHS in 2019. The GoU has undertaken two important studies–national off-grid strategy and diagnostic of distribution sector institutional reforms–which will influence the direction of grid and off-grid programs in the run-up to the 2030 SDG7 targets.

10. ***Project description.*** **The proposed EASP will support the country's efforts to scale up access to clean energy for households including for refugee and host communities, commercial enterprises, and health and education facilities, as enshrined in Uganda's Vision 2040 and other policy documents.** Overall, the proposed EASP will: (a) increase energy access to over 5 million people[42] by grid connections (over 1 million connections) and 705,000 people by off-grid connections (150,000 connections), overall benefiting over 5.7 million people with electricity access, (b) increase energy access to over 1,000 social institutions and over 50,000 commercial loads, and (c) provide clean cooking solutions to 1.6 million people. Out of these, in refugee-hosting districts, the project will provide: (a) 100,000 grid connections and 27,000 off-grid connections, benefitting refugee and host community households; (b) access to 10,000 productive uses technologies including commercial loads, benefitting refugees and host communities; and (c) 53,000 clean cooking solutions, benefiting refugees and host communities. The implementing agencies (IAs) under the proposed project will benefit from institutional and capacity strengthening, and from improved data, planning and monitoring tools that would benefit sector planning as a whole.

11. **The project entails the following key components**

Component 1: Grid Expansion and Connectivity (US$357.5 million IDA equivalent, of which US$331.5 million IDA Credit, US$26 million IDA Grant)

12. This component targets the scale up of last-mile connectivity while ensuring adequate network strengthening and extension to priority loads. The component will be implemented by the PIU at the MEMD in close collaboration with all SPs and under the overall oversight and coordination of the MEMD PCU. Over the lifetime of the project, a total of about 970,000 grid connections are expected to be provided to households, commercial enterprises, including minerals and mining enterprises, institutions, and industrial parks.

Component 2: Financial Intermediation for Energy Access Scale-up (US$107 million, of which US$56 million IDA Grant equivalent, US$5 million CTF Grant, US$25 million CTF CRG, US$6 million ESMAP-MDTF Grant, and US$15 million private sector)

13. ***CTF support is being requested for this component***. The objective of this component is to scale up energy access and consumption for residential, commercial, industrial, and institutional consumers (households, productive uses, public institutions, and refugees and host communities in Uganda) through access to finance solutions for private sector sustainable service delivery and end user affordability. The component will tackle the main financial barriers to energy access scale up for grid and off-grid connectivity as well as for access to clean cooking solutions. In addition, activities will also target improved consumption

[42] Considering a household average size of 4.7 people. UBOS National Household Survey 2016-2017.

of electricity for the overall financial and commercial viability of grid and off-grid electrification efforts (increased revenues to balance costs of service provision) and development impact of access to electricity services. The provision of access to finance solutions for energy access service delivery is expected to leverage about US$20 million in private sector investments, both equity and debt under this component and sub-component 3.2. The project will provide about 115,000 household connections through off-grid solutions. In addition, it will support increased consumption of electricity services for income-generating activities, benefiting about 5,000 commercial loads and providing about 4,000 loans for access to off-grid productive uses technologies. In addition, the project will provide access to about 500 social facilities. The proposed project also provides 300,000 clean cooking solutions. Access to finance under the credit line will be provided on a first-come, first-served basis to allow for flexibility (households, productive uses, public institutions, and refugees and host communities) during project implementation and to adequately respond to market needs.

14. The component will provide private sector SPs with increased liquidity for working capital in support to the import, distribution, and retail of modern energy solutions. Liquidity support will be provided to end users to ensure ability to pay for capital costs of internal wiring, procurement of efficient appliances, electricity technologies, and so on. On the demand side, access to credit will allow end users to match the gap in affordability of grid and off-grid technologies, as well as fully benefit from access using appliances for livelihood improvements and powering of income generating activities. Different debt instruments tailored to different client personas will ensure access to finance to women who have traditionally faced barriers to access to finance.

15. All supported technologies will be required to meet the ERA specifications and standards (for internal wiring), VeraSol Quality Standards, and the Quality Assurance Framework for component-based SHS for off-grid solar systems and meet the minimum performance criteria based on the ISO TC285 standards for clean cooking solutions. Each product would require test certificates or suitable proof to demonstrate it meets the required standards. In addition, eligible products will comply with the definition of energy efficiency adopted in national regulations, as applicable, and support the GoU compliance with the 2016 Kigali Amendment of the Montreal Protocol on Substances that Deplete the Ozone Layer.[43] The implementation of the proposed EASP will ensure coordination of activities with the National Environment Management Authority (NEMA), responsible for the enforcement of the Kigali Amendment, under the leadership of the PCU of the MEMD.

16. ***Sub-component 2.1: Financial Intermediation through participating financial institutions***. The financial intermediation will expand its outreach to eligible PFIs (SACCOs, MFIs, leasing companies, Tier 4 and funds) to reach a national coverage and provide access to finance in both urban and rural areas. Both private sector entrepreneurs and end users will benefit from an increased availability of access to debt financing at attractive terms and grant support according to eligibility criteria stated in the POM.

17. **The access to finance support will contribute to de-risk the energy access market and increase the depth and breadth of domestic financial markets**. Through the UECCC, PFIs will expand their exposure and experience with different types of debt instruments and creditworthiness of final beneficiaries, the market for modern energy technologies and productive uses, and private sector firms of different sizes and age. Available CRGs would provide comfort to PFIs while they expand their customer base to promote new and improved technologies.

[43] The Kigali Amendment entered into force on January 1, 2019, following ratification by 65 countries. The GoU was one of the first countries to ratify the Kigali Amendment on June 21, 2018. Under EASP, coordination with the NEMA, responsible for enforcement of the Kigali Amendment, will be ensured.

18. **The financial intermediary support will achieve the following goals:**

(a) **Increase access to and consumption of grid-based electricity** by overcoming short-term affordability constraints for internal wiring, efficient appliances, and three-phase connections. Internal wiring costs range from US$80 to US$540 (approximately 20–130 percent of the average annual per capita income). While ready boards will be provided by the MEMD to selected households without internal wiring, the UECCC will provide loans to households for internal wiring and efficient appliances, which will increase electricity demand and benefits over time. This will be offered as a bundled item, advertised as part of the awareness and education campaign implemented under Component 4.

Increased consumption will contribute to the financial and commercial viability of SPs by limiting the number of non-vending and lifeline customers as the ECP rolls out to poorer rural areas. As the costs of grid outreach increase with distance from the existing network, ensuring adequate revenues is critical for the sustainability of SPs operations and macroeconomic stability, as well as to ensure capital availability for future investments for access expansion.

(b) **Increase access towards productive use technologies**. The ESMAP-funded Lighting Africa Program carried out a market assessment for PULSE. The assessment found that SWPs and SRUs could play a critical role in supporting the GoU Agricultural Sector Strategy Plan for enhancing agricultural productivity and adding value in priority commodity sectors such as maize, coffee, fruits, vegetables, livestock, poultry, dairy, and fish. The PULSE report acknowledges a market potential for off-grid solar technologies to be worth around US$5.8 million in 2020, with 70 percent of sales made of small-scale SWPs and SRUs and no more than a few thousand units in each product category deployed so far. Taken together, the SWP and SRU markets have the potential to achieve US$40 million in sales between 2022 and 2025.

These new technologies are only beginning to emerge at the global level and not yet widely available in Uganda. In addition, in both the SWPs and SRUs markets, affordability is a key barrier, with just 5–10 percent of smallholder farmers able to afford SWPs or SRUs at the current prices, and consumer financing at attractive and sustainable terms is limited. To scale up availability and affordability of off-grid technologies and appliances, consumer financing is needed for individual smallholders and cooperatives/SMEs, alongside working capital for distribution companies.

(c) **Access to clean cooking solutions**. The purpose of the financing facility is to scale up the nascent but growing clean cooking market in Uganda, building on the successful experience of the Distribution Challenge Fund under the World Bank-funded Uganda Clean Cooking Supply Chain Expansion Project (P153679) and expanding to include LPG, efficient electric cooking appliances, ethanol cooking fuel, and biogas. Affordable local currency-denominated credit in Uganda for working capital needs is scarce, and hard currency debt is only available to some international players with access to foreign sources of funding. The expansion of the support to clean fuels will ensure that co-benefits related to health (maximum reduction of household air pollution), environment, and gender are fully captured.

19. ***Sub-component 2.2: Electrification of public institutions by stand-alone solar technologies.*** Critical public institutions such as health centers, schools, water pumps, and government offices are at the heart of the socioeconomic development in any community. This sub-component will support electrification of public institutions including public schools, public health centers, public water supply systems, and so on, through stand-alone solar technologies. This component will address the routine operation and maintenance requirements to ensure installed solar systems perform throughout their expected lifecycle and benefit the

public institutions from reliable electricity service. A nation-wide mapping of the energy demand and supply of public institutions is underway. This study will identify key performance indicators and contractual modalities critical for the successful implementation of these electrification schemes. The beneficiary ministries in coordination with MEMD will select the electricity service providers/contractors following a competitive bidding process and contracting structure that will be detailed in POM.

20. ***Rationale for CTF Funding.*** **Market assessments identified that due to the lack of track record of innovative stand-alone solar technologies using disruptive business models, they are considered too risky due to a misperception and lack of information**. This is preventing the solar companies from raising debt financing from PFIs to scale up their businesses. CTF CRG will be used to create a contingent grant facility to provide adequate comfort to the PFIs against the risk of revenue shortfall of solar entrepreneurs. Challenges to implement this component are to mitigate the risks associated mainly with technical failures. The CTF funds will be used to guarantee the risk of technical failure, which will reduce the risk exposure of the financial intermediary to support institutional solar through a service-based intervention. Lessons from other World Bank-funded projects, such as Regional Off-Grid Electricity Access Project (ROGEAP), will inform the design of this component. Lastly, the project will provide TA. The type of assistance includes workshops and training for private sector, entrepreneurs, and financial institutions. Incentives will be provided for promoting solar, efficient appliances and clean energy cooking solutions in refugee settlements and their host communities. CTF funding could also support the SRMI, an integrated approach to tackle policy, technical, and financial issues associated with scaling up solar energy deployment in Uganda.

Component 3: Energy Access in Refugee Host Communities (US$125.5 million, of which US$ 13.5 million IDA Grant equivalent, US$107 million IDA WHR Grant equivalent, and US$5 million private sector)

21. This component will increase access to electricity and clean cooking solutions for refugees and their host communities. This component will support ongoing efforts under the leadership of the OPM, to ensure the sustainable socioeconomic inclusion of refugees and equitable access to development opportunities for social stability in Uganda.

22. The component will ensure that resources from the IDA-19 WHR are utilized to finance the similar interventions of components 1 and 2 in the selected 12 districts of Uganda hosting refugees. For example, while IDA resources will be utilized for MV/LV grid network extensions into prioritized areas based on the geospatial master plan, resources from the WHR will allow prioritizing last-mile connectivity and grid network expansion into selected 12 districts to benefit refugees and their host communities. These resources will be utilized to provide partial grant-based incentives–both on the demand and supply sides–to promote access to grid, off-grid, and clean cooking solutions as well as productive uses in refugee settlements and their host communities. Under the UECCC, access to finance will rely on the network of Tier 4 financial intermediaries, leveraging on and expanding the outreach of MFIs and SACCOs already servicing refugees and their host communities in the 12 districts. Some of these institutions have already engaged in lending for off-grid solar technologies. Partial grants on the demand side will be provided to bridge the gap in affordability of end users, while debt financing will be provided at market rates to avoid distortions. Private sector service delivery will be incentivized through the availability of partial grants supporting the additional costs associated with market assessments for the new segment of beneficiaries (currently perceived as highly risky) and establishment of operations in the areas. To sustain energy access over time, private sector enterprises will be required to provide training and job creation in these areas, particularly for women, to reduce the dependency on grants through income generation. The terms of lending and criteria for private sector participation to the scheme will be detailed in the POM. Efforts will be made to seek complementarities with relevant projects and

programs, including the World Bank-funded Albertine Landscape Project (under preparation) within the Environment and Natural Resources Global Practice, and the program on clean cooking funded by EnDev.

23. This component will be implemented by the PIUs at MEMD and UECCC in close collaboration with the OPM and relevant stakeholders.

Component 4: Project Implementation Support and Affordable Modern Energy Solutions* (US$48 million, of which *US$17 million IDA Grant equivalent, US$17 million IDA WHR Grant equivalent, US$4 million ESMAP-MDTF Grant, and US$10 million GoU)

24. This component will support the two IAs (the MEMD and UECCC) and help the GoU improve the enabling business environment to attract private investment in the energy sector, improve gender outcomes, and support the implementation of the proposed project, including monitoring of results. The component will ensure adequate project management support including financing for ad hoc TA through individual consultants to support the PIUs and PCU, envisaged to include, but not limited to, consultants to provide technical support for project and procurement management, contracts management, E&S management, and FM.

Component 5: Contingent Emergency Response Component (US$0 million IDA Credit)

25. The objective of this component is to improve the Government's ability to respond effectively in the event of an emergency, similar to COVID-19 or something entirely different. This component will enable a rapid project restructuring, including the reallocation of funds and disbursements if needed.

II. Assessment of Proposed Project with CTF Investment Criteria

A. Potential for GHG Emission Savings

26. **Emission reduction potential of investment.** The project will provide off-grid electricity services and clean cooking solutions to households, productive uses, public institutions and refugees in host communities in Uganda. The project would entail approximately 38 MW[44] of stand-alone solar PV installation, resulting in approximately 107,000 tons of avoided CO_2 emissions over five years.

27. **Technology development status.** The project supports the promotion of stand-alone solar systems that can range from a small solar lantern that can be used as a reading lamp to a large stand-alone solar system that can be used to electrify a health clinic or an SME for productive uses. Innovation and falling costs of stand-alone solar systems have resulted in more efficient and cheaper products. The systems come with (a) a solar panel that converts sunlight to electricity; (b) a battery, to store electricity to be supplied as per demand; (c) a charge controller/inverter, to protect the battery from overcharging or over-discharging; and (d) lights, switches, and outlets to operate appliances such as charging mobile phone or operating TV, fan, radio, or other efficient appliances that can be operated with stand-alone solar systems. The physical size of the systems varies depending on their capacity. Most stand-alone solar systems are housed within the user's residence, with the solar panel being put in the sun for battery charging. Larger systems would require installation of the solar panel either on the roof of the building being electrified or at the yard of the consumer. These products are commercially available but yet face specific barriers for their implementation due to a lack of information and a lack of confidence in this technology that keeps evolving and relies on disruptive business models such as the PAYGo technology which represents a real development lever regarding access to electricity for millions of people living in remote areas.

[44] I MW of this capacity will be attributed to energy savings.

28. Households (or people) and commercial enterprises including public institutions that lack access to an electricity connection (grid or mini grid) or that have poor reliability (unreliable grid) will benefit from stand-alone solar systems. The stand-alone solar systems include (a) solar lanterns and simple multi-light systems (which may enable mobile phone charging) of up to 11 Wp enabling partial or full Tier 1[45] electricity access; (b) all-in-one packaged SHS kits up to 350 Wp, typically powering several lights as well as energy-efficient appliances and enabling full Tier 1–Tier 3[46] electricity access for a household; and (c) component-based systems, where PV module, battery, lights, inverter, wiring, and so on are compiled independently. These systems are modular and can meet larger loads. In addition to electrifying households, these systems are currently being used to operate SWPs for drinking water and irrigation. These systems are also used for productive uses in conjunction with efficient appliances.

29. While innovations in the stand-alone solar system space have drastically reduced the price of this technology and made it affordable to the poor people who can meaningfully use it as an alternative solution to grid electricity, the same innovative nature of this business has made it difficult for the entrepreneurs to raise debt financing to scale up the promotion of the solar systems. As new, cheaper, and efficient products are entering the market, existing products are becoming obsolete in a short time. Furthermore, new solar products that can be used for productive uses are entering the market at a fast pace. Hence, a specific product has not built a long-term track record to provide comfort to the PFIs to raise debt financing.

B. Cost-effectiveness

30. **CTF investment per tCO_2eq reduced.** The adoption of stand-alone solar systems will result in an estimated emission reduction of 0.107 million tCO_2 on a five-year effective project lifetime basis (considering the first year of the project as start-up phase). On this basis, the CTF intervention of US$30 million will result in a cost-effectiveness of US$281.58 per tCO_2 (table 2.1).

Table 2.1: Estimate of CTF Cost-effectiveness

Scope and Results	Units	Values
CTF Funding	US$ millions	30
Total Funding (IDA, Private Equity)	US$ millions	196.5
Total Emission Reductions from the project (5 years)	tCO_2 millions	0.107
CTF Cost effectiveness	US$/$tCO_2$	281.58
Total Project Cost effectiveness	US$/$tCO_2$	2,125.94

31. **Expected cost reduction of technologies.** The global trend of falling costs and rising efficiency of components and appliances—which has allowed for steady reductions in the price of off-grid solar products—is likely to continue, although at a slower pace. Direct current appliance efficiency is improving rapidly and is playing an increasingly important role in improving the economics and service capacity of SHSs. The main drivers of declining global prices of stand-alone systems have been improvements in the efficiency and economics of the three main components–PV panels (predominantly C-Si), LED lights, and batteries (Li-ion)–prices for which have dropped by 79 percent, 80 percent, and 73 percent, respectively between 2010 and 2016.[47]

[45] Tier 1 refers to task lighting and phone charging with daily consumption of > 12 Wh.
[46] Tier 2 refers to general lighting and phone charging and television and fan with daily consumption of > 200 Wh. Tier 3 refers to Tier 2 and any medium-power appliances, such as refrigerator. Daily consumption is > 1,000 Wh.
[47] Off-Grid Solar Market Trends Report 2018

C. Demonstration Potential at Scale

32. **This project aims to scale up energy access through enhanced private sector participation.** The provision of access to finance solutions for energy access service delivery is expected to leverage about US$20 million in private sector investments, both equity and debt. This private sector funding will be leveraged by US$63 million in the form of IDA grants as well as ESMAP-MDTF grant. This could pave the way for a market for the private sector to help scale energy access. Uganda presents tremendous market potential for the private sector to invest in electrification for households, public institutions, and productive uses. CTF will support the scale up and consolidation of sectors which are nascent in Uganda and hence riskier (solar for productive uses, public institutions, and clean cooking). It should be noted that projects dealing with similar technologies such as ROGEAP had similar leverage ratios. Regardless, efforts will be made during project implementation to increase the CTF leverage ratio to levels consistent with typical CTF projects.

33. **Transformation potential.** The project will have transformational and ambitious impact while improving energy access in Uganda**.** PFIs until now have largely kept a distance from innovative and disruptive solar PV technologies. The project will benefit from a line of credit that can be accessed by eligible PFIs to provide access to finance to private companies promoting electrification services through stand-alone solar systems. The project will provide TA to solar entrepreneurs through training, capacity building and incubation support, to ensure market sustainability and satisfactory electricity service delivery. To provide comfort to the PFIs to lend to solar companies who will be disseminating innovative technologies, the project will use CRG fund to reduce the risk of technology failure that would prevent the solar companies meet their lending obligations to the PFIs. Apart from private sector crowding and climate benefits, the project will have a transformational impact on health and education services, productive uses and employment opportunities, gender equality, and refugee and host communities. This is detailed in the next section.

D. Development Impact

34. **The following development outcomes are expected:**

35. **Environmental co-benefit.** Increased proliferation of off-grid solar products in the market will divert households', commercial institutions', and public facilities' heavy reliance on carbon-intensive fossil fuels for meeting their basic energy needs. Switching to cleaner energy alternatives can help mitigate climate change by cutting down GHG emissions, as these alternatives have low specific emissions of carbon dioxide into the atmosphere relative to fossil fuels.

36. **Climate co-benefits of improved cookstoves**. Out of the 353,000 households targeted under subcomponent 2.1 and component 3, 85 percent of these are targeted for the provision of improved biomass stoves of Tier 3 and above. Switching from traditional biomass cooking techniques to improved biomass stoves is expected to result in net emission reduction of 2.4 million tCO_2 over the project lifetime. In addition to the reduction in emissions and health benefits, due to increased efficiency, the use of improved biomass stoves is expected to reduce consumption of woody biomass by up to 2.2 million tons of firewood. Reduced consumption of woody biomass is expected to lead to a decrease in deforestation rates and thus promote building climate resilience by maintaining forest cover. Considering that forest cover helps protect communities against the impact of climate hazards like flash floods, these interventions are expected to further improve the adaptive capacity of communities.

37. **Climate co-benefits of switching to LPG.** The targeted switch to LPG (Tier 5) is limited to 15 percent of households targeted under subcomponent 2.1 and component 3, and will be funded by the ESMAP-MDTF Grant. LPG is available in the country and is limited to higher-income population due to barriers of upfront

equipment cost etc. The use of LPG will not create lock-in effect owing to the short lifetime of basic LPG stoves (i.e., five to seven years). The uptake of other alternatives such as electric cooking is limited due to affordability issues. The net benefit of switching to LPG is considerable given the net emission reductions is estimated at 0.89 million tCO_2 over the project lifetime, and corresponding reduction in consumption of woody biomass is estimated at 0.9 million tons.

38. **Health and education co-benefits.** Limited access to electricity imposes significant constraints on the provision of essential public services such as health care and education, hindering the development of human capital. COVID-19 has increased the strain on health services and demands on laboratory and intensive care needs given that electricity is essential to delivering healthcare 24 hours a day. COVID-19 has also increased the importance of distance learning through radio, television, and digital platforms. Ensuring that quality education is delivered in this era of distance and digital learning, improving electricity access can entail better health and educational outcomes and thus enhance human capital development that mitigates the impact of COVID-19 and similar emergencies.

39. **Increased access to electricity.** Households, businesses, public facilities, and refugee and host communities will receive new or improved electricity services. With improvements in solar technology the market is experiencing higher demand for larger SHS from grid-connected consumers. The National Electrification Survey Report-2018 (UBOS 2020) shows that in general, more than 60 percent of the grid-connected consumers receive less than Tier 3 of electricity service. Most of these grid consumers experience load shedding during evening hours when electricity demand is at its peak. Stand-alone solar systems are in high demand to these households, which help them get into a higher tier level of electricity reliability.

40. **Increased employment opportunities.** By supporting a favorable business environment, the project will create new employment in electricity service delivery business using stand-alone solar technologies. The project, through its various technical interventions, will develop local entrepreneurs' skills and knowledge to increase their value proposition. Furthermore, end users will be able to use their off-grid solar equipment to improve income-generating capacity, for example, extended business hours, using solar systems to boost agricultural productivity, and so on. This will be extremely important for communities suffering the economic impacts of COVID-19 and can play an important role in revitalizing employment post-COVID-19.

41. **Gender impact.** Increasing access to renewable energy and clean cooking can contribute to narrowing of impact gaps between females and males and mitigate the increased COVID-19 risks females face associated with fuel collection and wood/charcoal-fired stoves. Women are an integral part of the energy value chain; they play a crucial role in the widespread adoption and use of modern energy services, including household cooking solutions and off-grid products, and are a critical component for the sector's ability to reach scale. Key areas of intervention have been identified in the design of the project and in support of gender equality across interventions and components. Primary focus areas include (a) enhancing equitable energy service delivery; (b) enhancing availability of data and knowledge around female and male consumers and beneficiaries; (c) enhancing skills development, employment, and entrepreneurship opportunities for women; and (d) ensuring GBV prevention and response.

42. **Citizen engagement.** As the project deals with innovative technologies and disruptive business models, its success will depend on successful awareness campaigns and capacity building of the ultimate project beneficiaries—citizens. The project supports interventions to inform and train the end beneficiaries and citizens on the use and maintenance of grid and off-grid energy services and clean cooking products to reduce misuse and ensure appropriate care of these products. Adequate awareness campaigns and information dissemination will be conducted to inform citizens on their diverse benefits, safe use, and

grievance redressal. Initial stakeholder consultations were undertaken during the preparation of the ESMF and the RPF. The consultation processes will be an ongoing activity throughout the project cycle to ensure that stakeholders are fully engaged, especially the vulnerable and disadvantaged groups. The project will establish a citizen's feedback mechanism and grievance redress system. In addition, to prevent and respond to GBV during project implementation, measures will be taken to sensitize and train the PIU, IAs, and contractors against GBV.

43. **Humanitarian support to refugees and host communities.** With a targeted focus on refugees and hosting communities, the proposed project will support rural socioeconomic development and targets areas that have been chronically poor to support social stability and graduation from humanitarian to development aid. This project will also support host communities in the form of development support for their hosting services to enable access to more dependable health services, distance learning, and higher-value employment opportunities–all made more critical in the context of COVID-19.

E. Implementation Potential

44. **The proposed EASP contributes to the GoU's NDP-III and Vision 2040's goal of increasing clean energy access in Uganda to spur socioeconomic transformation.** The proposed project will directly support the scaling-up of electricity connections and electricity demand in Uganda through both on-grid and off-grid solutions, which is aligned with the objectives, strategies, and interventions highlighted in the NDP-III for the energy sector. Increased access to electricity and clean cooking solutions will also contribute to the GoU's long-term vision of structurally transforming the economy as stipulated in the Vision 2040 and achieving middle-income status. By increasing availability and efficiency of bulk power supply in these areas, the project will ease electricity supply constraints and lay the foundation for improving household electricity access and the development of income-generating and productive electricity use activities. The project will also contribute to improved energy access and economic development in the poorest areas of the country–West Nile and Northern Uganda–where access rates are extremely low, poverty rates are the highest, and the influx of refugees is putting pressure on scarce resources available to surrounding (host) communities.

45. **The proposed EASP also supports Uganda's NDC,**[48] which includes a series of priority mitigation and adaptation measures such as building enabling infrastructure for electricity sector development, promoting renewable energy sources, and increasing the efficiency in the use of biomass. The proposed project will promote renewable energy sources through off-grid solar solutions for households and public institutions (for example, education and health centers). Finally, the project will contribute to market development of clean cooking solutions, promoting efficient biomass stoves that will reduce the inefficient use of solid biomass fuels for cooking.

46. **Leverage**. CTF would provide a US$25 million CRG and a US$5 million grant. IDA would provide US$176.5 million grants for Component 2 (US$56 million) and Component 3 (US$120.5 million). A further US$10 million grants is obtained from ESMAP-MDTF (Component 4). This amount of US$186.5 million grant is expected to leverage around US$20 million of private sector investment. The CTF/IDA, CTF/private investments, and CTF/total project leverage ratios will be 1:5.88, 1:0.67, and 1:6.88, respectively.

F. Implementation Readiness

47. **UECCC is implementing the ongoing World Bank-funded ERT-3 project,** where it has gained experience of implementing the working capital line of credit and credit guarantee facility. UECCC has

[48] Uganda's NDC (October 12, 2021) sets out priority actions in adaptation and mitigation. *https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Uganda%20First/Uganda%20interim%20NDC%20submission_.pdf*

enhanced its implementation capacity to implement the scaled-up facility under the proposed EASP. UECCC has been strengthened with staff in areas relevant for the preparation and implementation of the project and its expanded scope in terms of targeted beneficiaries, financial intermediaries, and eligible private sector companies. The main additional UECCC staffing includes program managers for each of the sub-components (internal wiring, electrical appliances and productive uses, solar facility, results-based financing and clean cooking, and public institutions), finance specialist, social safeguard specialist, environmental, health and safety specialist, refugee coordinator, marketing specialist, credit analyst and procurement specialist. The PIU will be headed by a director transaction execution, supported by a project manager and risk manager.

ANNEX 3: Economic and Financial Analysis

Economic Analysis

1. The economic viability of the proposed project was assessed using a standard cost-benefit methodology. Economic costs were estimated based on primary research, feasibility studies and industry reports. The economic benefits for the beneficiaries of the project are estimated based on avoided costs.

2. The grid component of the project assumes a total cost of US$451 million that is expected to connect over 1 million households and commercial enterprises, including minerals and mining enterprises, through grid extension and densification (under Component 1 and Sub-component 3.1 - Energy Access in Refugee Host Communities - Grid connectivity and expansion). It is assumed that the new households currently use diesel gensets for their household energy consumption. The avoided cost of electricity consumption is considered as the economic benefit for this component. The total cost of the component assumes an O&M cost of 15 percent and a levelized electricity generation cost of US$0.07/kWh to provide additional electricity to the new households. The macroeconomic assumptions and the input data for the grid component analysis are shown in table 3.1 and table 3.2 respectively.

Table 3.1. Macroeconomic Assumptions

Carbon price	Low[49]
Economic analysis discount rate	6%
Financial analysis discount rate	10%
Exchange rate (UGX equivalent to US$1)	3,541

Table 3.2. Input Data for Grid Component Analysis

Parameter	Unit	Value
Total no. of connected households by grid connection	No.	1,073,500
Total cost for grid component	US$	451,000,000
Average household consumption per month	kWh/month	72[50]
Levelized cost of diesel gensets	US$/kWh	0.27[51]
O&M cost of installed grid lines	%	15
Transmission and distribution losses	%	8
% of total connection		
Year 1	%	10
Year 2	%	15
Year 3	%	20
Year 4	%	25
Year 5	%	30
Baseline emission reduction	tCO_2/kWh	0.001[52]
Project emission added	tCO_2/kWh	0.000487[53]
Generation cost (levelized cost of generation in Uganda)	US$/kWh	0.07[54]

[49] 2021 Guidance Note on Shadow Price of Carbon in Economic Analysis, World Bank.
[50] Assuming 200 W, 12-hour daily electricity consumption (ERA national electrification survey 2018).
[51] https://www.rvo.nl/sites/default/files/2019/02/Final-Energy-report-Uganda.pdf.
[52] WB GHG emissions guidelines.
[53] https://www.iges.or.jp/en/pub/list-grid-emission-factor/en
[54] ERA.

Parameter	Unit	Value
Residential tariff (15 units and below)	US$/kWh	0.07[55]
Residential tariff (above 15 units)	US$/kWh	0.21[56]

3. For this analysis, the off-grid component assumes that the project will provide 150,000 off-grid solutions in the form of Tier 2 SHSs (under Component 2 and Sub-component 3.2 - Energy Access in Refugee Host Communities - Financial intermediation through participating financial institutions). It is assumed that 35 percent of those households use diesel gensets in the base case and 65 percent of those households use traditional lighting sources (candle, battery, kerosene lamps, and so on). The avoided cost of electricity compounded by the economic benefit from GHG emissions reduction account for the total economic benefits from the off-grid component of the project. The SHS will service Tier 2 loads and is assumed to cost US$500 per system. The analysis also assumes a battery replacement cost of 60 percent every 10 years and an annual O&M cost of 2 percent of the system cost. The assumptions are illustrated in table 3.3.

Table 3.3. Input Data for SHS Component

Parameter	Unit	Value
Retail price for Tier 2 system (4 lights, radio/television and 1 fan)	US$	500[57]
Average energy expenditure - small systems (Tier 1–Tier 2)	US$/month	5.32[58]
Emission reduction factor for household using traditional sources	tCO2/household	0.6275[59]
Total no. of off-grid systems	No.	150,000
% of households using diesel gensets	%	35
% of households using traditional fuel source	%	65
Recurring battery replacement cost (every 10 years)	%	60
O&M cost	%	2
Portion of total system deployed		
Year 1	%	10
Year 2	%	15
Year 3	%	20
Year 4	%	25
Year 5	%	30

Economic *Rate of Return*

4. The net benefits of the project and individual components are calculated for a project lifetime of 20 years and an economic discount rate of 6 percent. Considering the GHG emissions reduction, the NPV of the project is estimated to be US$1,182 million with an EIRR of 53 percent, which indicates that the project has a high economic rate of return. Even without accounting for benefits of the GHG emission reductions, the EIRR is at 39 percent which is much higher than the hurdle rate of 6 percent. The project remains economically viable when an economic discount rate of 11 percent is applied, yielding the same EIRR of 53 percent and an NPV of US$661 million. At the same discount rate of 11 percent, and without accounting for benefits of the

[55] ERA Residential Tariff in Q3 2021.
[56] ERA Residential Tariff in Q3 2021.
[57] Alibaba express including shipping cost to the region.
[58] Household energy spending of EURO2.4–4.8 on traditional fuels for lower income settlements in Uganda, including refugee communities as cited in the KfW report 'Refugee Settlements and Host Communities in Uganda'.
[59] World Bank GHG emissions guidelines.

GHG emission reductions, the project still registers a much higher EIRR of 39 percent than the hurdle rate. A conservative approach to the GHG accounting indicates that the project contributes to 10,191,139 tCO_2 reduction. The summary of the results is shown in table 3.4.

5. The PFI component of the project offering micro-credit to customers for smaller and more affordable off-grid solutions including improved cookstoves and energy efficient appliances is expected to be economically feasible as the costlier SHSs already show high economic benefit.

Table 3.4: Economic Analysis Summary

	Unit	Value with GHG Benefit	Value without GHG Benefit
Overall Project			
NPV	US$	1,181,992,591	871,254,307
EIRR	%	53.3	39.3
GHG	tCO_2	10,191,139	-
Grid Component			
NPV	US$	1,049,995,776	796,107,152
EIRR	%	55.5	41.6
GHG	tCO_2	8,326,667	-
SHS component			
NPV	US$	131,996,815	75,147,155
EIRR	%	42.3	27.0
GHG	tCO_2	793,800	–

Financial Analysis

6. The financial viability of the project is assessed by aggregating the net financial benefits of each component in the project against a financial discount rate of 10 percent. FIRR value above the hurdle rate of 10 percent indicates that the component is financially viable.

7. The grid component for the project calculates its net benefits using its projected annual revenue and the annual cost of operating the system. The tariff used to calculate the revenue is shown in table 3.2, and the total cost of the system is calculated using the same methodology used in the economic analysis.

8. The off-grid SHS component checks the financial feasibility from the consumers perspective by calculating the net financial benefits of switching from diesel-run gensets and traditional energy sources to cleaner SHSs. The cost parameters can be found in table 3.3.

9. The financial feasibility of the Financial Intermediation Component is calculated by discounting the net cash flows and outflows of the institution. The outflows will include (i) results-based grants to clean energy technology companies. This will aim to address the affordability barriers associated with the upfront cost of acquiring clean energy technologies; and, (ii) funding to PFIs for purposes of making available revolving innovative financing mechanisms through the PFIs, comprising of concessional lines of credit and guarantees to de-risk the PFI's provision of credit to households and commercial enterprises to acquire clean energy technologies. The PFIs will include Commercial Banks regulated by Bank of Uganda, Savings and Credit Co-operative Organizations (SACCOs) and Microfinance Institutions (MFIs). The inflows will comprise of repayments by PFIs to UECCC. Funds extended to PFIs will be repaid to UECCC, including a charge of 5 percent to cover inflation. The input data for the PFI financial analysis are illustrated in table 3.5.

Table 3.5. Input Data for PFI

UECCC lending tenor to PFI	8-year tenor
PFI lending tenor to consumers	3-year tenor
Default rate	2%
O&M cost	4%
World Bank disbursement rate	
Year 1	US$ 7,500,000
Year 2	US$ 11,250,000
Year 3	US$ 15,000,000
Year 4	US$ 18,750,000
Year 5	US$ 22,500,000

Financial *Rate of Return*

10. The results from the financial analysis of the project shows that all three components and the overall project are financially viable. The net financial benefit of the project is estimated at US$444 million with a financial rate of return of 38 percent which is much higher than the hurdle rate of 10 percent. The results of financial analysis are shown in table 3.6. Although the grid and the SHS components have a financial rate of return much higher than 10 percent, the PFI has an FIRR of 10.7 percent based on the earlier assumptions. The rate of return is highly sensitive to the UECCC lending term. To achieve financial viability, the UECCC lending terms needs to have a minimum tenor of eight years.

Table 3.6. Financial Analysis Summary

	Unit	Value
Overall Project		
NPV	US$	422,583,556
FIRR	%	32.6
Grid component		
NPV	US$	378,644,100
FIRR	%	35.8
SHS component		
NPV	US$	42,731,194
FIRR	%	27.0
PFI component		
NPV	US$	1,208,263
FIRR	%	10.7

Sensitivity Analysis

11. The economic rate of return for the grid and off-grid component is sensitive to the price of diesel, which is the avoided cost of electricity for consumers. Thus, a sensitivity analysis was conducted to reflect how the EIRR is influenced by changes in the diesel price. The result is shown in table 3.7. As seen from the table, the rate of return on the grid component is relatively more sensitive to diesel price and has a switching value of US$0.15 per kWh, which is the price when the EIRR reaches the hurdle rate of 6 percent. For the off-grid component, the EIRR is seen to be much higher than the hurdle rate for the same price.

12. The outbreak of COVID-19 is expected to increase the average cost of on-grid electricity connection. Consequently, a sensitivity analysis was conducted. The on-grid component can withstand an increase in

connection costs. The project's NPV turns negative if connection costs increase to US$714, or by more than 75 percent.

13. For the off-grid component a sensitivity analysis was conducted to see the impact of the price of the off-grid SHS on the component's EIRR. As seen from table 3.8, the EIRR for the component decreases to 6 percent when the price of the SHS reaches US$1,180.

14. The financial return for the PFI is sensitive to the financing term extended to the consumers. Hence a sensitivity analysis was conducted to reflect the impact of the interest rate on the PFI's FIRR. As seen from table 3.9, for a three-year tenor, the FIRR is above the hurdle rate of 10 percent for an interest rate of 15 percent or more.

15. The outbreak of COVID-19 is expected to have financial impacts on utility, since the revenue collection will be affected. Consequently, a sensitivity analysis was performed to model the impacts of a reduction in the bill collection rate. The project's on-grid component is robust against a reduction in the bill collection rate. The results of the project's financial analysis turn negative when the bill collection rate falls below 62.4 percent.

Table 3.7. Sensitivity Analysis for Price of Diesel

	Diesel Price (US$/kWh)	EIRR (%)
Grid Component	0.140	3.6
	0.150	6.7
	0.200	23.5
	0.250	44.8
	0.270	55.5
	0.300	75.0
	0.320	91.0
	0.340	110.2
Off-grid Component	0.050	16.4
	0.100	21.9
	0.150	27.5
	0.200	33.4
	0.270	42.3
	0.300	46.4
	0.320	49.3
	0.340	52.2

Table 3.8. Sensitivity Analysis for Price of SHS

Price of SHS (US$)	EIRR (%)
450	50.5
500	42.3
550	36.1
600	31.2
800	18.5
1,000	11.0
1,180	6.2

Table 3.9. Sensitivity Analysis for PFI Interest Rate

Interest Rate (%)	FIRR (%)
12	2.7
13	5.6
14	8.2
15	10.7
16	13.1
17	15.4
18	17.6

ANNEX 4: Gender Gap Analysis and Action Plan

1. A gender gap analysis was directed at summarizing the gender gaps in Uganda and investigating the existence of a link between key gender gaps and the energy sector. The gaps identified informed the design of interventions under the project to support gender equality in access to clean energy solutions, and more broadly to ensure inclusive socioeconomic development. The main findings of the gender gap analysis indicated the need to support gender equality both on the supply and demand sides of the clean energy market: that is, targeted support to women as beneficiaries of clean energy technologies–including for productive uses–as well as women as energy SPs.

2. Primary focus areas include (a) enhancing equitable energy service delivery; (b) enhancing availability of data and knowledge around female and male consumers and beneficiaries; (c) enhancing skills development, employment, and entrepreneurship opportunities for women; and (d) ensuring GBV prevention and response.

A. Equitable Access to Energy Services

3. **Enhancing female-headed households' and female-led enterprises' access to energy services and enhancing consumer awareness and education.** At the national level, the access deficit is 4 percentage points higher for women (60 percent) than for men (56 percent). While grid access is similar (~24 percent), a gap exists in access to off-grid solutions, where 20 percent of male-headed households have access to Tier 1+ off-grid access compared to 16 percent of female-headed ones. A higher proportion of female-headed households (29 percent in urban areas and 64 percent in rural) than male-headed households (19 percent and 61 percent, respectively) currently lack access to electricity. The share of households using clean energy sources (gas and electricity) is low and similar for male- and female-headed households. First, given the access deficit observed, the project team will ensure that 26 percent of household connections (on-grid) would target female-headed households, which translates into 235,000 grid connections for female-headed households. In addition, about 29,000 off-grid connections will be provided to female-headed households, representing 26 percent of all connections provided. Of the commercial enterprises and minerals and mining enterprises electrified under the project, 38 percent will be female led, representing the female share in enterprise ownership.

4. Experience in several Sub-Saharan African countries shows that consumer awareness campaigns are important to educate both males and females on the benefits, correct use, and payment for modern energy services. Moreover, men and women have different product preferences and uses of electricity. The uptake of grid-based electrification, off-grid systems, efficient products, and clean cooking solutions could be affected by the dominance of men in matters of decision-making regarding household purchases and educating households on joint decision-making could increase uptake. As part of these campaigns, targeted messages and consultations specifically addressing the women consumers are therefore warranted. The campaign will be implemented by the MEMD to ensure legitimacy and outreach of the messages.

5. **Offer financial products tailored to female borrowers and female enterprises.** Women present a different customer profile compared to men. They rely more on informal sources like family and friends, store credit, or savings clubs. In terms of formal financial inclusion, women are less likely compared to men to have an account, to borrow money, or to save. Women also face unique challenges in accessing finance that emanate from collateral requirements due to lower ownership of land and homes. Targeted solutions to improve access to finance for female borrowers will be identified under the study '*Financial profiling of beneficiaries for customized debt instruments*' by the UECCC under Component 4. The proposed project targets an increase in the share of women with access to finance for productive use of electricity from 24

percent (which is the average share of female asset ownership in Uganda) to 30 percent, corresponding to about 1,200 loans for female recipients under the project. Finally, focus will be placed in ensuring female-led commercial enterprises also have access to finance for modern energy technologies for use in their enterprises. An increase in access to finance of female-led commercial enterprises is expected from the current 24 percent to 35 percent, which corresponds to about 1,750 recipient enterprises, to bridge the gap in female-led enterprises and female access to resources.

B. Enhancing Data and Knowledge on Male and Female Consumers

6. **UBOS/MTF Survey update**. Lessons learned from international experiences and best practices indicate the key role played by up-to-date data and analytics for the efficient and effective delivery of services. To provide more insight on the access outlook for the country, the Electrification Survey Report-2018 (UBOS, 2020) will be updated to include more granular information on grid and off-grid gender disaggregated access rate. The information collected would feed into the national geospatial planning platform for access targeted to socioeconomic development. The activity will be implemented by the MEMD and UBOS, in close collaboration with the SPs. The updated UBOS/MTF Survey and access assessment will include the following datasets:

a) Ongoing geo-referencing of customers by the MEMD will establish the platform to keep track of gender-disaggregated data on customers.

b) Data collected by the UECCC would provide information on male and female access to efficient appliances, productive uses technologies, and clean cooking solutions.

7. **Productive uses market assessment update.** Women and men use energy differently. Women in Uganda work in micro and small-scale enterprises, particularly in the informal sector. Women frequently run income-generating activities from home since it enables them to combine productive tasks with activities in the household, such as cooking and childcare[60]. With the support of the World Bank, an assessment of the solar off-grid market for productive uses was conducted in 2019.[61] The assessment, a first of its kind, would be updated to include an assessment of women's access to productive uses technologies, affordability, willingness to pay, and financial inclusion. The assessment will be conducted in close collaboration with the '*Financial profiling of beneficiaries for customized debt instruments'* study under the UECCC under Component 4. The ongoing geo-referencing of customers would further inform improved gender-disaggregated consumption trends and demand estimation. The activity will be implemented by the UECCC in close collaboration with the MEMD and the SPs.

8. **Clean cooking market assessment**. Limited customer exposure and inadequate buy-in for new stove technologies reduce demand and are a constraint to the adoption of clean cooking solutions. To increase uptake, an understanding of that market is required. This will in-turn inform the products that are sold and allow manufacturers and distributors to adopt marketing strategies that boost local demand.[62] A series of consultations between suppliers of clean cooking products and end users; focus groups with end users, a majority of whom are women; and analysis of industry material will be undertaken under this activity. This will provide manufacturers and distributors of clean cooking solutions insights on product preferences, willingness to pay, and constraints to clean cooking products purchase that are faced by the end users. The

[60] UBOS and ICF. 2018. Uganda Demographic and Health Survey 2016. Kampala, Uganda and Rockville, Maryland, USA: UBOS and ICF.
[61] Market Assessment Study: Stand-alone Solar for Productive Uses in Uganda, The World Bank. Study conducted by Economic Consulting Associates Ltd, and African Solar Designs.
[62] Uganda Clean Cooking Behavioral Diagnostic, ESMAP (Energy Sector Management Assistance Program). 2019. Washington, D.C.: World Bank

activity will build on the market activation activities under the Uganda Clean Cooking Supply Chain Expansion Project (P153679) and insights from the *'Willingness to Pay and Consumer Acceptance Assessment for Clean Cooking in Uganda report'*.[63] The market assessment will be implemented by the UECCC.

C. Skills Development, Employment and Entrepreneurship

9. **Skilling women in districts that host refugees.** Half of the refugee population is characterized by women and girls, and they are faced with a lack of income-generating activities. Under Component 3, suppliers of off-grid products to refugees and host communities under the RBF scheme are selected for receiving partial grants. Under this activity, an additional selection criterion for grant eligibility is included wherein the supply enterprises are required to close gender gaps in refugee settlements and host communities. Activities that can be undertaken by supply companies include training women in universal transferable skills that will allow them to start their own businesses, find employment, and become self-reliant. This will in turn reduce end users' dependence on grants for the purchase of products and services. The activity will be supported by the WHR and implemented by the private sector under the supervision of the UECCC. Training activities will be part of the verification process required to access the grant funds under the RBF scheme.

10. **Capacity building for women entrepreneurs in the energy access market.** With proper capacity building, women can be empowered to expand access to products and services, thereby improving uptake, creating jobs, and reducing poverty.[64] Data indicate that female sales agents in clean energy enterprises have a higher sales performance than their male peers, along with a greater ability to build and maintain relationships in local communities.[65] Therefore, integrating women into value chains can potentially lead to more effective clean energy initiatives. Women can fill gaps in local capacity, and because of their ties to the community, they can also yield positive behavioral spillover effects. Given the scope for last-mile services within the project and the strong female employment trends, there is scope to build capacity for increased female entrepreneurship for distribution, sales, and marketing of clean cooking products, equipment for productive uses, and efficient appliances in grid and off-grid areas. Capacity building of women entrepreneurs will be implemented by the UECCC in close collaboration with USEA. Women will be trained to join distribution networks using a combination of classroom training and on-field training and provided a grant to acquire the first basket of products. The training will cover topics such as (a) marketing - concepts and promotional skills, (b) sales - concepts and selling skills, (c) FM, (d) business planning, (e) tracking, and (f) behavioral and soft skills. The program will also aim to integrate with existing local distribution networks and partner with women entrepreneurs and women-led groups.

D. Gender-Based Violence/ Sexual Exploitation Abuse and Harassment Prevention and Response:

11. **GBV/SEA risk mitigations measures will be taken into account during the rollout of electrification connections.** Under Component 1, 2 and 3 there will be an influx of construction workers, who for grid expansion and service connections activities visit household premises to provide internal wiring services, schools and communities to provide connection services. These workers will be near women and girls in the community, schools as well as within households. Evidence shows that influx of male labor in poor and vulnerable communities with high levels of gender inequality and gender-based violence can exacerbate the risk of GBV and SEA/SH when project workers interact with community women and girls. In addition, targeting vulnerable households for access to energy services, while potentially beneficial to household members, sets up the type of unequal power differential between vulnerable women and girls and those who provide access

[63] Conducted by Rebel Group Consortium in October 2015, commissioned by the World Bank.
[64] International Finance Corporation, 2011. *Expanding Women's Role in Africa's Modern Off-Grid Lighting Market*.
[65] Global Alliance for Clean Cooking, 2013. *Scaling Adoption of Clean Cooking Solutions through Women's Empowerment.*

to a valuable asset–energy–that can increase risk of sexual exploitation and abuse. Additionally, having project workers in schools with children also pose additional risks. To prevent GBV from activities under Component 1, 2 and 3, several activities will be conducted including (a) ensure that all workers, staff, contractors and sub-contractors sign code of conduct that prohibits GBV/SEA, (b) workers are trained and awareness raising activities conduct on the risk of GBV/SEA for both workers and affected communities, (c) that the project level GRM is sensitive to GBV/SEA and (d) ensure a functional GBV/SEA referral system. The activity will be implemented by the MEMD PIU and the SPs.

ANNEX 5: Procurement

1. Procurement for project activities, including those that will follow PBCs, will be carried out in accordance with 'The World Bank Procurement Regulations for IPF Borrowers, for Goods, Works, Non-Consulting and Consulting Services, dated July 2016', revised November 2017 and August 2018 under the 'New Procurement Framework (NPF)' and hereafter referred to as the 'Procurement Regulations'. The project will also be subject to the 'World Bank's Anti-Corruption Guidelines, dated July 1, 2016, and the implementation country-specific provisions stipulated in the Legal Agreement including beneficiary disclosure requirements.

2. The procurement framework in Uganda is well established and supported by the Procurement Act, Regulations, Standard Bidding Documents, and the Regulatory Authority. Public Procurement in Uganda is governed by the Public Procurement and Disposal of Public Assets Act 2003 (PPDA Act) and attendant Regulations of 2014. The PPDA has a universal pool of bidding documents and various forms. The PPDA also conducts procurement audits, compliance checks, and procurement monitoring and imparts procurement trainings. There are multiple anti-corruption agencies providing procurement oversight. However, efficient articulation and overall efficacy of the procurement framework is limited with various constraints. The PPDA Act enables the projects to adopt the agreed New Procurement Framework through Article 4 - International

Box 5.1.

For implementation of the EASP, the project procurement is according to the following procurement arrangements:

(a) Carry out the project procurement activities in accordance with the World Bank Procurement Regulations.
(b) Initiate the procurement process only after obtaining no objection from the World Bank to the PP. Enter the PP through the World Bank's STEP and update the PP at least annually; Update the PPSD at least annually or whenever there are substantial changes in the PP; Submit updated PPSD to the World Bank for seeking concurrence before changing the PP in the STEP.
(c) Use the World Bank's Standard Procurement Documents for goods, non-consultancy services, and works and the World Bank's Standard RFP for consultancy services.
(d) Publish the contract award details in the IAs official websites.
(e) Adhere to the prior/post review thresholds prescribed in the PP for first 18 months and subsequent revisions according to the World Bank's instructions.
(f) Extend the necessary cooperation for conducting World Bank's post-procurement review or any other reviews desired by the World Bank including complaints cases if any. The IAs uploads all relevant procurement documents to the STEP portal.
(g) Maintain separate complaint registers and procedures for redressing grievances and complaints, if any.

obligations: (a) where this act conflicts with an obligation of the Republic of Uganda arising out of an agreement with one or more states, or with an international organization, the provisions of the agreement shall prevail over this Act, and (b) where an agreement referred to in this section contains a preference or preferences in favor of national and resident providers, a procuring and disposing entity shall ensure that the applicable preference or preferences are clearly stated in the bidding documents.

3. **Use of national procurement procedures.** All national open competitive procurement shall apply only if the following requirements as required by the paragraph 5.4 of the Procurement Regulations are met: (a) Open advertising of the procurement opportunity at the national level; (b) The procurement is open to eligible firms from any country; (c) The request for bids/RFP document requiring that bidders/proposers submitting bids/proposals present a signed acceptance at the time of bidding, to be incorporated in any resulting contracts, confirming application of, and compliance with, the World Bank's Anti-Corruption Guidelines, including without limitation the World Bank's right to sanction, and the World Bank's inspection and audit rights; (d) Procurement Documents with provisions, as agreed with the World Bank, intended to adequately mitigate against environmental, social (including sexual exploitation and abuse and GBV), health and safety risks and impacts; (e) Contracts with an appropriate allocation of responsibilities, risks, and liabilities; (f) Publication of contract award information; (g) Rights for the World Bank to review procurement documentation and activities; (h) An effective complaints mechanism; and (i) Maintenance of records of the procurement process.

4. In March 2017 (updated February 2018), PPDA issued a guideline titled "reservations to promote local content in public procurement," which specifies thresholds[66] below which only Ugandan or Ugandan-registered companies are eligible to participate–this is part of the wider "Buy Uganda Build Uganda" initiative of the GoU. The national procedures therefore do not meet the requirement under paragraph 5.4 (b) of the Procurement Regulations that "(b) the procurement is open to eligible firms from any country". However, under the same guidelines, there is a provision under article 8 stating that "The reservation shall also apply to procurements funded by Development Partners except where the conditions of funding limit the application of reservations." Therefore, national procedures will only be used in accordance with this article/clause 8, which will make the Ugandan national procurement procedures consistent with the universal eligibility requirement of the Procurement Regulations, otherwise this PPDA guidelines will not apply.

5. The PPDA has oversight and regulatory functions, including undertaking procurement reviews and audits. For the procurement-related complaints, the project will follow the procedure prescribed in the Procurement Regulations (paragraphs 3.26 and 3.31).

6. **PPSD, PP, and STEP.** A draft PPSD was developed to improve the implementation of the project and help achieve results. The PPSD resulted in the preparation of an initial 18-month PP setting forth the selection methods to be followed by the IA during project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the World Bank. The PP will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The IA will use STEP in the implementation of the project. This is a planning and tracking system, which would provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance. After getting the World Bank's agreement to the work plan, all documents at each stage of the procurement process will be uploaded in STEP for the World Bank's post review.

7. **Procurement capacity risk assessment.** The procurement activities will be implemented by the PIUs at MEMD and UECCC. Assessment of the respective IAs was conducted as part of project preparation, and it was noted that project management will make use of existing procurement management arrangements. The proposed IAs have experience implementing World Bank-funded projects, and the project will leverage the gain in procurement capacity training of procurement staff through the implementation of the previous and the ongoing World Bank-funded projects, ERT-3 and GERP. The MEMD has a PCU and a PIU supported by

[66] Supplies- UGX 1 billion (US$266,667), road works - UGX45 billion (US$12 million), public works - UGX10 billion (US$ 2,7 million), consultancy services - UGX1 billion (US$266,667), and non-consultancy services - UGX 200 million (US$ 53,000).

senior procurement officers and project-based procurement staff. It was established that though the IAs and existing staff assigned to the PCU/PIU have experience in implementing IDA-financed projects, the new dedicated PCU/PIU staff when appointed they will have to be adequately trained on World Bank's Procurement Regulations. The project will have to retain some or all the existing project-based procurement staff in addition to other technical staff that may be required under the project. The local contract committees mandated under the PPDA have staff proficient in PPDA guidelines and will require training on the World Bank Procurement Regulations. The assessment also noted challenges with contract management where no specific unit or department was assigned with staff for contract management that resulted in delays and numerous addenda to contracts. Under the project, each agency will be advised to establish a contract management unit with staff.

Box 5.2. Summary of PPSD

The IAs – MEMD and UECCC–are currently implementing the Albertine Projects, the ERT-3, and the GERP. Each of the projects has hired individual consultants to implement project activities working with each agency's staff. Each IA has a local contract committee mandated to provide oversight function. The IAs have gained experience from implementing the current projects and those in the past financed by the World Bank.

The MEMD PIU will adopt a delivery model, that is, separate design and separate supply contract (procurement of materials in bulk) arrangement, and procurement of works contracts for network expansion, network strengthening and service connections. Key requirements used for last-mile connectivity are standard in nature with well-established specifications and not technologically complex. By bulk acquisition of these key requirements, there is likely a price advantage by leveraging economies of scale. The requirements are based on the electrification expansion plan in various STs. The requirements may not be accurately estimated upfront; hence, these will be procured through framework agreements–close ended. This arrangement is fit for purpose and has merits such as possibility of optimum packaging that may help potential domestic contractors and efficient coordination and use of PDSC and MLSP consultant and monitoring of the PIU at the MEMD. The MLSP will be charged with storage and distribution of materials to named delivery points. The MLSP will receive, store, and deliver materials to SPs for connections and works contractors for network strengthening and expansion activities outside the Umeme footprint. A dedicated PDSC and MLSP consultant will be hired under the EASP. The separate procurement of goods and works will allow Uganda to benefit its local industries through the provisions of domestic preferences.

To mitigate procurement capacity risks, there will be a need for hiring additional staff to augment the numbers in each IA; staff capacity building and training; continuous oversight, reviews, and audits; and use of real-time monitoring and tracking tools. The works/construction activities will use established technological practices and construction methodologies and can be categorized as non-complex works. The local contractors have been established to have sufficient capacity to execute these works, as demonstrated under the ERT-2 and the ERT-3.

8. **Standard Procurement Documents.** The World Bank's Standard Procurement Documents shall be used for procurement of goods, works, and non-consulting services under Open International Competitive Procedures. The PPDA Bidding Documents for works were amended in September 2019 to include provisions on environmental, social (including sexual exploitation and abuse and GBV), health and safety provisions. Earlier in March 2017,[67] the PPDA issued a guideline titled "reservation scheme to promote local content in public procurement," which specifies thresholds below which only Ugandan or Ugandan-registered companies are eligible to participate. National bidding documents as set forth in the PPDA Act, 2003 may be used under open national competitive as well as for the Request for Quotation method subject to the inclusion

of the universal eligibility. Selection of consultant firms shall use the World Bank's Standard Procurement Documents, in line with procedures described in the Procurement Regulations.

9. In accordance with paragraph 5.3 of the Procurement Regulations, the request for bids/RFP document shall require that bidders/proposers submitting bids/proposals present a signed acceptance at the time of bidding, to be incorporated in any resulting contracts, confirming application of, and compliance with, the World Bank's Anti-Corruption Guidelines, including without limitation the World Bank's right to sanction and the World Bank's inspection and audit rights.

10. The procurement to be undertaken for the project (identified by appraisal) is as follows:

a) **Procurement of works.** Constructions and installations of electric line for network expansions in various regions. The contracts will be in lots depending on the region and the length of the lines. The lots will consider the financial capacity of local contractors based on the lessons learned from the ERT-3 and the GERP.
b) **Procurement of consultancy services.** (i) Consultancy services for network planning, design and supervision; (ii) IVA; (iii) Consultancy firm to provide TA–promotion of entrepreneurship and job creation to solar companies (under USEA); (iv) Consultant to develop the UECCC ESMS–policies, procedures and reporting templates; (v) Consultancy firm to support the UECCC in financial profiling of beneficiaries for customized debt instruments; (vi) Development of market attractiveness index for local off-grid solar market; (vii) Capacity building tailored to women entrepreneurs; (viii) Consultancy firm to provide TA–business development support for clean cooking companies; (ix) Consultancy firm to design tender documents for solar electrification of public institutions on service contract basis; (x) Consultancy services for development of ESMS; (xi) Quality Assurance Framework for productive uses technologies.
c) **Procurement of goods**. Procurement of meters and accessories, procurement of ready boards, procurement of transformers and accessories, procurement of poles and conductors, and upgrade of loan and guarantee tracking system and existing accounting system upgrade.
d) **Procurement of non-consulting services.** Hire of MLSP for storage and distribution of bulk materials.

11. **Beneficial ownership pilot.** The project involves procurements within the World Bank (Operations Procurement Review Committee) thresholds; hence, beneficial ownership pilot will be applicable**.**

12. **Procurement risk and mitigations measures.** The experience in implementation of ongoing projects will be an added advantage in implementation of the EASP. However, the project may face challenges such as remoteness and difficulty in accessing project sites; scattered nature of implementation spread across STs and multiple SPs that may pose challenges related to coordination, contract management, and monitoring; weak procurement and contract management capacity for large-value contracts with potential time and cost overruns; delay in processing procurement/substantial Lead time around 10 months for award of contracts; IA staff not being familiar with the Procurement Regulations under the World Bank's New Procurement Framework; limited competition as a few competent bidders may refrain from submitting bids due to the COVID-19 pandemic and migrating to complete new delivery model with challenges of sequencing of procurement, synchronization, and coordination at multiple levels on both the supply and demand side; and the PIU/PCU requiring a substantive learning curve. Also here is a significant risk of forced labor in the global supply chain for solar panels and solar components. To support forced labor risk mitigation, the Bank requires Borrowers to strengthen procurement documents that include solar panels/components for the "core functions of a project" as defined in the World Bank Environmental and Social Framework. Appropriate mitigation measures have been proposed including strengthening staffing and capacity in the aspects related

to contract management and monitoring; development of an internal procurement and contract monitoring web-based application for monitoring; training of staff on the World Bank Procurement Regulations; efficient contract management using KPIs and regular review meetings; and oversight through annual procurement reviews. After deployment of these measures, the mitigated procurement risk will be Substantial.

13. Procurement during the COVID-19 crisis shall adopt flexibility and include the use of electronic submissions and opening of bids/proposals in the approaches. All the approaches shall conform to the World Bank Procurement Regulations and procedures.

14. **Contract management.** High-risk and high-value procurements will be identified in the PPSD for increased contract management support and indicated in the PP. The IAs will develop KPIs for such identified contracts, and the indicators would be monitored during actual execution of contracts. The World Bank team would provide additional due diligence and independent review of the contract performance of such identified procurements. The project will be implemented by the fully staffed PCU/PIU and is responsible for the overall coordination and project/contract management.

15. **Operating costs.** Incremental operating costs will include expenditures for the maintenance of goods and equipment such as vehicles and computers; fuel; office supplies; consumables; communication costs; workshop venues and materials; and authorized travel costs of officials of the Government, including per diems, travel costs, and accommodation for staff when travelling on duty during the implementation of this project, but excluding salaries of civil/public servants. Items under this category would be procured using the IA national procurement and administrative procedures acceptable to the World Bank. These operational expenditures for implementation of the project are reflected in the Annual Work Plan and submitted to the World Bank. However, these expenditures shall not be included in the World Bank's PP and not to be entered through the World Bank's STEP.

16. **Procurement oversight.** The World Bank shall prior review contracts according to the prior-review thresholds set out in the PPSD/PP. All contracts not covered under prior review by the World Bank shall be subject to post review during implementation support missions and/or special post-review missions, including missions by consultants or third-party institutions hired or appointed by the World Bank. However, the World Bank may conduct, at any time, independent procurement reviews of all the contracts financed under the credit if it determines the need for such a review based on the assessment of risk.

17. **Disclosure of procurement-related information.** The following documents shall be disclosed on the ministry/IA's official website: (a) PP and updates; (b) invitations for bids for goods and works for all contracts; (c) request for expression of interest for selection/hiring of consulting services; (d) contract awards of goods, works, and non-consulting and consulting services; (e) monthly financial and physical progress report of all contracts; and (f) reports on actions taken to address any complaints received on a quarterly basis.

18. The following details shall also be published in the United Nations Development Business and the World Bank's external websites: (a) General Procurement Notice before making available the initial bidding opportunity, (b) invitation for bids for procurement of goods and non-consulting services following open international market approaches, (c) request for expression of interest for the selection of consulting services following open international market approaches, and (d) contract award details of all procurement of goods and works and selection of consultants using open international market approaches.

19. **Complaints handling.** For the procurement-related complaints, the project will follow the procedure prescribed in the Procurement Regulations (paragraphs 3.26 and 3.31). To deal with the complaints from

bidders, contractors, suppliers, consultants, and the general public at large, a complaint handling mechanism will be set up at the PIU/PCU at the IAs and the detailed procedure is prescribed in the PAD.

20. **Record keeping and management.** All records pertaining to the award of tenders, including bid notification; registers pertaining to sale and receipt of bids; bid opening minutes; bid evaluation reports; and all correspondence pertaining to bid evaluation, communication sent to/with the World Bank in the process, bid securities, and approval of invitation/evaluation of bids, would be retained by the IA and uploaded in STEP on time. The PCUs will be responsible for record keeping for ease of retrieval of procurement information. In this respect, each contract will have its own file and should contain all documents on the procurement process.

Table 5.1 The Risk Mitigation Action Plan Matrix

Risk Description	Description of Proposed Mitigation Through Procurement Process	Risk Owner and Residual Risk
Implementation in decentralized manner; remoteness of project sites and these are scattered across project sites, which may pose challenges related to coordination, contract management, and monitoring. Weak procurement and contract management capacity for large value contracts with potential time and cost overruns.	• Proactive engagement of various level of implementation functionaries, and stakeholders • Use of Contract Implementation Plan for monitoring • Strengthening of staffing and capacity at the IA level in the aspects related to contract management and monitoring; • An internal procurement and contract monitoring web-based application that is appropriate for monitoring;	All IAs With adequate support from the top management, contract management and monitoring can be improved for minimum time/cost overrun and reasonable scope. Residual risk is developing and using the web-based application for monitoring. Staff turnover may be limited to retain institutional memory.
Delay in processing procurement/substantial lead time of around 10 months for award of contract. IA staff may not be familiar with Procurement Regulations under the World Bank's New Procurement Framework.	Training on Procurement Regulations will be carried out. The IAs will also check their processes, identify the bottlenecks, and take adequate measures to minimize the delays in decision-making.	All IAs
Delays in payment of SPs due to long approval processes.	• Fast track the verification, internal approval processes and relevant external approvals (MoFPED and IDA). • The IAs will also be responsible for prudent procurement practices and efficient implementation.	All IAs

Risk Description	Description of Proposed Mitigation Through Procurement Process	Risk Owner and Residual Risk
	• IDA and internal and external auditors will carry out annual audits to guard against fraud and corruption. Furthermore, the IVA will be contracted to verify connections.	
Due to the global nature of the COVID-19 outbreak, supply chains for key materials for expanding energy access may be disrupted resulting in shortages of supplies and necessary services leading to price volatility Limited competition as some competent bidders may refrain from submitting bids due to the COVID-19 pandemic;	• Closely watch market trends, promptly propose more efficient procurement approaches and methods as need arises and update PP accordingly with support from the World Bank. The electronic bid submission subject to World Bank's permission • Consider introducing important provisions in the SCC for contractors and consultants to comply with health and safety regulations and protocols for the containment of health pandemics like COVID-19.	All IAs
IA-specific: MEMD: Migrating to complete new delivery model with challenges of sequencing of procurement, synchronization, and coordination at multiple levels on both the supply and demand sides. PIU/PCU may require substantive learning curve	The PIU is staffed with dedicated appointed contract managers who will liaise with the PDSC and MLSP consultants to ensure: • Efficient inventory management without stock outs and excess storage, • Efficient contract management using KPIs and regular review meetings, and • Use of information and communication technology platform for procurement monitoring and inventory management.	MEMD
Forced labor in the global supply chain for solar panels and solar components	• Forced labor bidder declarations, qualification requirements, strengthened forced labor contractual provision in the advert, bidding documents All contracts prior review/No-objection by the World Bank	MEMD

ANNEX 6: Financial Management

1. The project's FM transactions will be managed within the existing set-up in the participating institutions, whose accounting officers are the Accounting Officer for MEMD, the Permanent Secretaries for the other ministries, and Managing Director for the UECCC. The institutions' accounting departments are adequately staffed with Assistant Commissioner/Principal Accountants as head (for the ministries) and Finance Director/Manager for the other institutions, senior accountants, accountants, and several accounts assistants. For the ministries, the principal accountants report to the under-secretaries who also report to the permanent secretaries, while for the other institutions the Finance Manager/Director reports to the Executive Director. The participating institutions have accounting policies and procedures that will be used for the project. The institutions are computerized with various accounting packages and the ministries are also computerized with the IFMS. The institutions have internal audit units comprising heads of internal audit and internal auditors who will include the project activities in their work plan. The project's financial statements will be audited in accordance with statutory requirements, and suitable terms of reference acceptable to IDA will be developed. To ensure that the project is effectively implemented, the institutions will ensure that appropriate staffing arrangements are maintained throughout the life of the project.

2. Table 6.1 identifies the key risks that the project management may face in achieving these objectives and provides a basis for determining how management should address these risks.

3. The overall residual risk is assessed as Substantial and supervision missions will monitor progress in implementing mitigation measures.

Institutional and Implementation Arrangements

4. The overall institutional setup will be simplified compared to previous projects. The MEMD will be responsible for reporting and coordinating line ministries' activities implementing this project. The project will require two Designated Accounts held by the MEMD and UECCC, while the Designated Account under the MEMD will handle the participating line ministries. The other line ministries will access advances from the MEMD following the well laid down accountability instructions currently in place under the World Bank-funded ERT-3 project.

Planning and Budgeting

5. Budget preparation follows a bottom-up process with annual work plans and budgets prepared in line with the activities stipulated in the Financing Agreement. A call for work plans is issued by the MEMD PCU, and all components submit their annual work plans and budgets for the respective financial year. These are consolidated with submissions from the other IAs for review and approval by the World Bank. The project will have a budget code in IFMS, where every activity in the work plan has an attached cost and respective budgets are referred to before payments are executed. Funds are released by the MoFPED based on work plans and projections in the Budget Framework Paper. The capacity of the accounting staff to fulfill budgeting needs of the project is adequate.

Internal Controls

6. The project POM will describe all the necessary internal control procedures, including approval and authorization controls. Segregation of roles is evidenced by the segregation of initiation requests, approval, execution, recording, and custodial roles. Payments are made through IFMS, duly approved and authorized by the accounting officer and assistant commissioner accounts.

Table 6.1. FM Risk Assessment Matrix

Risk	Risk Rating	Risk Mitigating Measures	Risk after Mitigation	Condition Y/N
Inherent Risk				
Country level – Office of the Auditor General and Public Expenditure and Financial Accountability reports identified weaknesses in government public financial management systems. Enforcement of Procurement rules still presents major challenges.	H	Weaknesses in accounting capacity, budget classification and procurement compliance are being mitigated through government public financial management reform programs such as Resource Enhancement and Accountability Program and E-procurement.	S	N
Entity level-Line ministries involved could delay in submitting relevant reports due to weak capacity. FM in-depth review report identifies weaknesses in advances payment processes across participating ministries.	H	A PCU will be in place at the MEMD to coordinate all line ministries' activities for prompt reporting. Performance Based Conditions established for timely payment processing.	S	N
Project level- It is a complex project implemented by many participating institutions including ministries and autonomous agencies, and hence difficult to monitor.	S	This will be mitigated by issuing accountability instructions spelling out duties and responsibilities together with staff specifically assigned to the project.	M	N
		Overall Inherent Risk	**S**	
Control Risk				
Budgeting and Accounting-				
Although all World Bank-funded projects are captured under the annual national budget, there are risks of under-budgeting or transactions could be mischarged on different expense codes.	S	Project accounts will be prepared by the MEMD in coordination with line ministries using the IFMS accounting software. The MEMD and the UECCC have accounting software in use. Line ministries with low level of transactions will consolidate through the coordination unit.	M	N

Risk	Risk Rating	Risk Mitigating Measures	Risk after Mitigation	Condition Y/N
Internal Control - Inability to follow up reported internal control weaknesses. FM in-depth review reports identify weaknesses in FM across participating ministries.	H	Participating institutions will dedicate qualified accounts staff and experienced internal auditors who will include the project within their work plan to review activities. Pre-approved annual work plans to be followed.	**S**	N
Financial Reporting - Financial information may be late and unreliable for preparation of required reports.	**S**	Participating institutions use unaudited IFRs under ERT-3 that will be replicated under the EASP. Current reporting is satisfactory.	**M**	N
External audit - There could be late submissions of reports and lack of follow-up on audit issues.	**M**	There has been a good record on audit submissions and action plans to resolve issues raised in the reports by Office of the Auditor General	**M**	N
	H	**Overall Risk Rating**	**S**	

Note: H = High; S = Substantial; M = Moderate; L =Low.

7. **Accounting**. The MEMD and UECCC will maintain similar books of accounts as those for other current IDA-funded projects. The books of accounts to be maintained specifically for the proposed Project should thus be set up and should include cash book, ledgers, journal vouchers, fixed asset register, and a contract register. There is a list of accounts codes (chart of accounts) that allows project costs to be directly related to specific work activities and outputs of the project.

8. **Staffing arrangements**. The MEMD and UECCC are adequately staffed with qualified and experienced accounting staff. The function is headed by the Undersecretary at the MEMD who reports to the Permanent Secretary while a finance manager heads the departments at the UECCC, including an accountant and assistant accountant. The staff are qualified and experienced. To maintain a strong coordination function at the MEMD, its current staffing arrangement will continue to have a dedicated accountant for prompt reporting by line ministries.

9. **Information systems**. The UECCC uses Sun Systems and Pastel computerized accounting software while the MEMD is on IFMS. These packages can produce project financial reports instantly and will be used to produce reports for this project. The users are also well trained to use the software. Line ministries will keep basic records which will be consolidated at the MEMD.

10. **Internal controls and audit.** The UECCC have FM manuals that describe the accounting system while ministries have existing treasury accounting instructions issued under the Public Finance Management Act which describes the accounting system, that is, major transaction cycles of the project, funds flow processes, the accounting records, supporting documents, computer files, and specific accounts in the financial statements involved in the processing of transactions; the list of accounting codes used to group transactions (chart of accounts); the accounting processes from the initiation of a transaction to its inclusion in the financial statements; authorization procedures for transactions; the financial reporting process used to prepare the

financial statements, including significant accounting estimates and disclosures; financial and accounting policies for the project; budgeting procedures; financial forecasting procedures; and procurement and contract administration monitoring procedures.

11. The two IAs have qualified and experienced internal auditors. The UECCC internal auditor reports to the executive director and the board. The internal auditor issues reports based on the review of the internal control system of the organization, and management acts on the recommendations. Line ministries have internal audit units headed by either a principal or assistant commissioner who reports to the permanent secretaries and the Internal Auditor General in the MoFPED. The qualification and experience of the internal auditors are adequate.

12. **Bank accounts.** Designated Accounts will be maintained by the two IAs—MEMD and UECCC— for implementing the project. The Designated Account for the MEMD will serve the MEMD PCU, MEMD PIU, participating ministries (ministries in charge of finance, health, education, and water and the OPM).

a. **Designated Account.** Denominated in US dollars, disbursements from the IDA Credit/Grant will be deposited in this account.

b. **Project account.** This will be denominated in local currency. Counterpart funds and transfers from the Designated Account (for payment of transactions in local currency) will be deposited in this account in accordance with project objectives.

13. These bank accounts shall be opened at Bank of Uganda in accordance with the Financing Agreement. The signatories for the project and payment processing, in the case of the ministries, will be in accordance with the treasury accounting instructions. As for other institutions, it will be the Executive Directors as principal signatories and Finance Manager/Directors or other authorized officers according to the respective FM manuals.

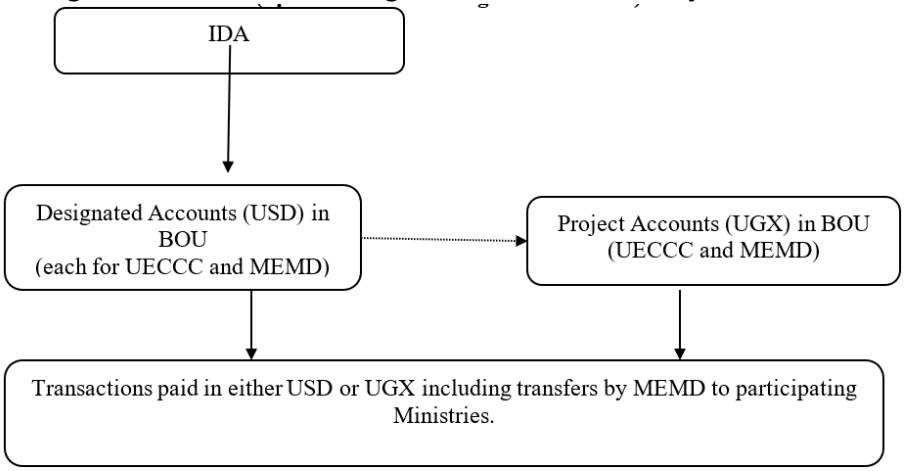
14. **Disbursements and flow of funds.** The IAs have established effective FM and accounting systems which will facilitate the use of report-based disbursement. These agencies will prepare a six-monthly cash flow forecast for the project based on the work plan and submit the withdrawal application to the World Bank after the effectiveness of the project. Subsequent withdrawal applications should be submitted semi-annually with IFRs within 45 days after the end of the semester. The semi-annual periods follow the calendar year semesters; hence, IFRs should be prepared as of the end of June and December. IDA will make an advance disbursement from the proceeds of the Credit based on the cash flow forecast by depositing into a borrower-operated Designated Account held at Bank of Uganda denominated in US dollars.

15. These bank accounts shall be opened at Bank of Uganda in accordance with the Financing Agreement. The signatories for the project and payment processing, in the case of the ministries, will be in accordance with the treasury accounting instructions. As for other institutions, it will be the Executive Directors as principal signatories and Finance Manager/Directors or other authorized officers according to the respective FM manuals.

16. **Implementation Optimization Plan.** Costs incurred against the Implementation Optimization Plan may only be documented once the activities included in the Implementation Optimization Plan have been met in a manner acceptable to the World Bank. Any advances utilized without implementing the Implementation Optimization Plan satisfactory to the World Bank, shall be considered unjustified advances to be refunded to the World Bank as detailed in the POM.

17. **Performance-based activities.** Disbursement against PBCs will follow verified and approved results according to agreed protocol through an IVA. Funds will flow to the Government through reimbursement for achieved results or advances against PBCs for which accountability will be through verified results.

Figure 6.1. Structure of Designated Accounts and Project Accounts



18. Upon effectiveness, the IAs will have the following disbursement methods during implementation for the different components: advances, reimbursements, direct payments, and special commitments. If ineligible expenditures are found to have been made from the Designated Account, the borrower will be obligated to refund the same. If the Designated Account remains inactive for more than six months, the borrower may be requested to refund to IDA amounts advanced to the Designated Account. IDA will have the right, as reflected in the Financing Agreement, to suspend disbursement of the funds if reporting requirements are not complied with.

Financial Reporting Arrangements

19. Each of the institutions – MEMD and UECCC – will use formats of the periodic financial monitoring reports like the current formats as agreed under the ongoing ERT-3 project, which provide quality and timely information to the project management, IAs, and various stakeholders monitoring the project's performance.

20. The following semester IFRs will be produced by the institutions:

a. A statement of sources and uses of funds for the reported quarter and cumulative period (from project inception) reconciled to opening and closing bank balances.

b. A statement of uses of funds (expenditure) by project activity/component comparing actual expenditure against the budget, with explanations for significant variances for both the semester and cumulative period.

21. In addition to the above IFRs, the institutions will have to submit to the World Bank the following information to support report-based disbursement:

a. Designated Account activity statement

b. Designated Account bank statements

c. Summary statement of Designated Account expenditures for contracts subject to prior review.

22. The annual financial statements should be prepared in accordance with International Public Sector Accounting Standards (which, among others, include the application of the cash basis of recognition of transactions) for ministries and International Financial Reporting Standards for the others. These financial statements will comprise:

a. A statement of sources and uses of funds/cash receipts and payments which recognizes all cash receipts, cash payments and cash balances controlled by the entity.

b. A statement of affairs/ balance sheet as at the end of the financial year showing all the assets and liabilities of the project.

c. The accounting policies adopted and explanatory notes. examples of this information include a summary of fixed assets by category of assets, and a summary of Statement of Expenses withdrawal schedule, listing individual withdrawal applications; and

d. A management assertion that World Bank funds have been expended in accordance with the intended purposes as specified in the relevant World Bank Legal Agreement.

External Auditing

23. Each of the IAs (that is, MEMD, and UECCC) will be independently audited. The Auditor General is primarily responsible for the auditing of all government projects. Usually, the audit may be subcontracted to a firm of private auditors, with the final report being issued by the Auditor General, based on the tests carried out by the subcontracted firm. The private firms to be subcontracted should be among those that have been shortlisted by the World Bank, following a review of audit firms in Uganda. In case the audit is subcontracted to a firm of private auditors, IDA funding may be used to pay the cost of the audit. The audits are done in accordance with International Standards on Auditing. Each of the implementing institutions will submit an audit report to the World Bank within six months after the end of each financial year. Current audit terms of reference developed under ERT-3 will be used for the proposed project while the scope for the MEMD will cover the participating line ministries.

24. The audit reports that will be required to be submitted by the implementing institutions and the due dates for submission are as follows:

Table 6.2. Audit Reports

Audit Report	Due Date
EASP audited project financial statements for each IA: MEMD and UECCC	Submitted within six months after the end of each financial year, that is, by December 31, given that the accounts will be prepared for the year ended June 30.

25. **Conclusion.** A description of the implementing institutions FM arrangements above assesses the FM risk as Substantial and indicates that although the project satisfies the World Bank's minimum requirements under OP/BP 10.02, there remain improvements to be affected for the system to be more adequate to provide, with reasonable assurance, accurate and timely information on the status of the project as required by the World Bank. The recommended improvements are detailed in the risk mitigation table. Given the risk rating, there will be two planned supervision missions every fiscal year.

ANNEX 7: Refugees and Host Communities in Uganda

1. **Uganda started hosting refugees in 1958 when the first refugee settlement, Oruchinga, was established in Isingiro District.** The recent inflow of refugees in 2018–2019, combined with the overall growing population of hosting districts, has imposed additional pressure on already constrained resources, escalating the vulnerabilities of refugees and host communities. Both these groups have been significantly exposed to natural hazards and weather shocks, leading to profound short- and long-term impacts on people, services, resources, and infrastructure, as well as social and cultural assets. Climate change, deforestation, floods, and earthquakes are prevalent in these communities and have disrupted economic activity and damaged infrastructure and in some cases caused injury and death. Consequences such as job losses and falling incomes have had significant long-term impacts on people's well-being and life. COVID-19 has seen loss of lives and a decline in economic activity, increased poverty, and food insecurity, and unemployment levels have risen[68]. Figure 7.1 indicates the current refugee population by location.

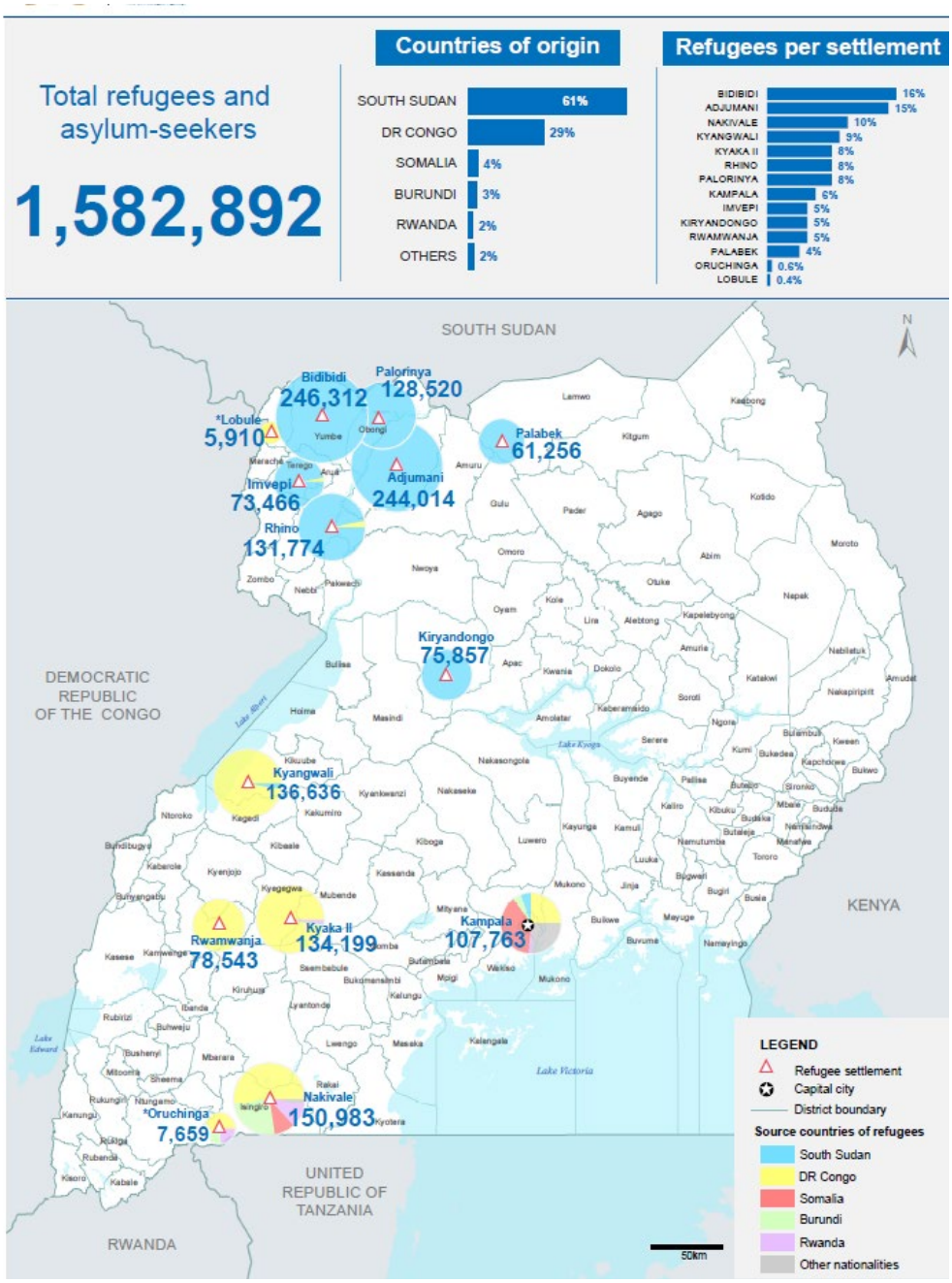
2. **The absence of electricity negatively affects access to quality health and education and prevents kick-off of income-generating activities**. Health centers are unable to provide quality and reliable services to the refugees and host communities due to limited and inadequate electricity supply. Social facilities are over capacity as they are serving nationals and refugees, while power supply is inadequate and non-reliable. Most of these critical loads are powered by solar systems and high-cost diesel generators provided by UNHCR, but supply is unable to meet the ever-increasing demand from the refugee settlements and host communities. To improve on service delivery and livelihoods within these settlements and surrounding host communities, it is necessary to enhance access to reliable and sustainable forms of energy services. UNHCR has identified energy as a critical area for refugees and host communities needing financing support from development partners[69]. COVID-19 has only increased the necessity for these improvements. Furthermore, energy for productive uses to support livelihood activities like agro-processing and appropriate technology for food preservation is scarcely available in refugee settlements and their host communities, leaving refugees communities dependent on humanitarian aid.

3. **The design of Component 3 was also informed by the Diagnostic Study**[70] conducted by the World Bank in selected refugee-hosting districts to address behavioral challenges for refugees and host communities in switching from traditional fuels to off-grid and clean cooking technologies. The study led to the identification of several psychological and social bottlenecks for the uptake of off-grid solar products and clean cooking. This enabled the design of a comprehensive range of context- and problem-specific behavioral solutions, taking as a basis behavioral science literature and analysis of the evidence collected. As example, behavioral approaches have been successfully applied in the past to increase effectiveness of economic stimulus such as cash transfers. The study also identified solutions to address behavioral challenges that impede system maintenance and power generation for public institutions. To address lack of local ownership, options include localized job training for solar O&M, sharing power generation with surrounding communities, and required (nominal) payments from the facilities themselves. Information campaigns can be used to address pre-conceived perceptual biases against both solar systems and the service model, including cost comparisons between stand-alone solar and other options, and assurance of payments over contract lifetimes. To address confirmation bias which leads to a lack of appreciation for the solar systems and the

[68] UBOS and World Bank (2020) Economic and Social Impacts of COVID-19 on Refugee Population in Uganda: Results from the High-Frequency Phone Survey for Refugees in Uganda – First Round.
[69] UNHCR (2022) Uganda Refugee Protection Assessment Update 3 for the period July to December 2021.
[70] Forthcoming.

power they generate, information campaigns can also promote benefits of electricity to facilities that have not had sufficient and reliable supply and use the demonstration effect to prove the value of such systems and the efficacy of the service model to support them.

Figure 7.1: Refugee Population by Location



Source: UNHCR, OPM, January 2022

4. **The design of the component supports the implementation of Uganda's COVID-19 priorities and Strategy Note on Support for Refugee and Host Communities, as well as UNHCR's Uganda 2020–21 Refugee Response Plan, the directions outlined in the CRRF Strategic Direction and National Plan of Action, and the SERP**. More specifically, the project follows the overall request of the GoU to development partners to switch from in-kind contributions to cash-based support and overall market stimulation. This new approach also builds on the recent literature on Minimum Expenditure Baskets, which highlights that establishing markets in refugee areas supports the graduation from humanitarian to development aid. Overall, experience world-wide also indicates that entirely free electricity services (grid and off-grid) do not translate into adequate quality of services and sustainability of access efforts.

5. **The WHR grant funding will also support the integration into the Geospatial National Planning Platform of the data available for the districts hosting refugees.** The platform will ensure a least-cost approach to grid and off-grid service delivery, to inform the GIS-based design of the PDSC under MEMD and private sector markets. Furthermore, it will provide least-cost solutions targeted for the socioeconomic development of the districts through a cross-sectoral approach. The Platform will be developed under Component 4. The cross-sectoral Geospatial National Planning Platform will support stakeholders' coordination of interventions, as recommended in the CRRF Road Map. In close collaboration with OPM and UNHCR, the platform will map ongoing interventions across sectors to fill the information gap for synergies and collaboration among development partners; as well as with the GoU public programs. The platform will support the efforts of the OPM to coordinate stakeholders' activities and syndicate the financing needed. The CRRF identifies improved coordination of stakeholders as a driving force for the graduation of this population from humanitarian to development aid.

6. **The lessons learned with the implementation of the WHR grant offer opportunities for scale up in similar rural, chronically poor, COVID-19 affected, and vulnerable areas in the country and in the context of displacement in other countries**. If successful, the activities could be rolled out at the national level and provide the first lessons learned from an energy project in the context of displacement and shock response linked to COVID. The approach adopted under the project includes a critical role for the *scale up* and *scale-out* of the quality of electricity services needed to power income-generating activities. Simulating economic growth and improving affordability is a key feature for the sustainability of interventions and to avoid dependence from humanitarian and development aid.

7. **To maximize the development impact, the project seeks synergies across the World Bank portfolio and with development partners enabling communities to respond more effectively to COVID pressures through a whole-of-portfolio approach**. Collaborations with the World Bank portfolio in Uganda are detailed in table 7.1. The World Bank consultations on the portfolio with a component on displacement also led to the identification of synergies at the national level. Collaboration is also envisaged for technical specifications for (a) off-grid solar systems for social institutions, (b) solar powered water systems, and (c) technical specification and design of solar-powered street lighting.

Table 7.1. Summary of Synergies with Projects Financed under the IDA-18 Regional Sub-window for Refugees and Host Communities in Uganda

Project	Status	Total (US$, millions)	RSW/ WHR (US$, million)	Development Objectives	Synergies
The Development Response to Displacement Impacts Project in the Horn of Africa – Additional Financing (P164101)	Active	150	125	Bottom-up cross-sectoral planning for site-specific development projects for improved access to basic services, expanded economic opportunities, and enhanced environmental management in 11 refugee-hosting districts. Ministries involved include: Ministry of Agriculture and Natural Resources, OPM, Ministry of Local Government, and Ministry of Gender, Labor and Social Development.	1. Strengthening of MEMD/OPM/Ministry of Local Government institutional coordination (for example, MEMD participation to the cross-sectoral steering committee established at the PIU) 2. Behavioral change: community mobilization for demand activation at the local level in support of transition to modern energy (in collaboration with OPM and district authorities), particularly for clean cooking solutions 3. Enabling higher value-added livelihoods and accelerated employment interventions in response to COVID-19 pressures by improving the energy enabling environment.
Integrated Water Management and Development Project (P163782)	Active	280	58	Improve sustainable provision of water supply and sanitation service delivery and support long-term investments in infrastructure development, in refugee-hosting districts in the West Nile and Northern region. Locations targeted for solar based water pumping have already been identified in six RHDs	1. Strengthening of MEMD and Ministry of Water and Environment coordination under OPM 2. Support for technical design of solar systems 3. Coordination of activities to avoid duplication and maximize interventions (for example, development of water networks solar-powered water pumping) 4. Lessons learned from progressive switch to payment for water services in refugee settlement 5. Increasing efficiency of water schemes further stretched by COVID-19 increased water demands and reduced fiscal space.
Uganda Support to Municipal Infrastructure Development	Active	360	50	Enhance institutional performance of program local governments for urban service delivery. This includes	1. MEMD PIU/PDSC collaboration with the Ministry of Land and Urban Development for

Project	Status	Total (US$, millions)	RSW/ WHR (US$, million)	Development Objectives	Synergies
Program Additional Financing (P163515)				planning, land tenure security, and small-scale infrastructure investments within refugee-hosting urban centers and their wider districts. It will support eight refugee-hosting districts. The focus is secondary cities.	the adequate inclusion of energy needs into the cross-sectoral fiscal plans for local development (only the framework has been developed) 2. MEMD PIU/SPs to provide available information on existing electricity infrastructure to inform Fiscal Plans development 3. Right of way to follow fiscal plans and provide a path for the design of additional infrastructure (MV and high voltage).
The Uganda Secondary Education Expansion Project (P166570)	Pending effectiveness	150	50	Construction of about 170 new lower secondary day-schools in targeted districts, including districts hosting refugees. The team is considering the use of solar power to provide the local schools with a reliable source of electricity.	1. Ensuring delivery of quality services: advise on Lighting Global and Quality Assurance Framework (technical specifications) for off-grid component-based systems for schools 2. Overall coordination of activities (provision of solar systems to schools) to avoid duplications of efforts 3. Mapping of education facility conducted by MoES/UBOS integrated into the ongoing energy assessment of public institutions to inform Sub-component 2.2 4. Identification of plans for establishment of new schools for coordination of energy provision 5. Support for energy connectivity to enable remote learning options made necessary by COVID-19.
Uganda: Roads and Bridges in the Refugee Hosting Districts Project (P171339)	Active	130.8	109	Goal is to enhance: (a) road transport connectivity in select refugee-hosting districts of Uganda (Koboko, Yumbe, and Moyo); and (b) the capacity of Uganda National Roads Authority to manage environmental, social and road safety risks.	1. The PDSC will use road development as an input to grid network design and identification of off-grid areas, particularly in the West Nile 2. Road development will provide some of the key infrastructure needed for private sector delivery

Project	Status	Total (US$, millions)	RSW/ WHR (US$, million)	Development Objectives	Synergies
					3. Road construction and updates consider right of way and future possible development of the high voltage electricity infrastructure– which will inform future efforts in the power sector.
Uganda Investing in Forests and Protected Areas for Climate-Smart Development Project (P170466)	Active	148.2	58	To improve sustainable management of forests and protected areas and increase benefits to communities from forests in target landscapes (including Refugee settlements)	1. Improved energy access under EASP will contribute to climate mitigation and resilience and mitigate GBV associated with fuel collection and increased COVID-19 pressures through aligned support for clean-cooking solutions.
Gender Based Violence and Violence Against Children Prevention and Response Services in Uganda's Refugee-Hosting Districts Report	Active	0.5	n.a.	To mitigate GBC and prevent violence against children through engagement in productive activities.	1. Local entrepreneurship development: trainings for women and youth to become distributors of clean cooking solutions and for their maintenance 2. Bottom-up information on local food preferences and related cooking methods 3. Awareness on traditional fuel consumption and GBV risks for demand activation for energy efficient and/or fuel alternatives 4. Support for mitigation of increased COVID-19 pressures which have increased GBV rates.
Uganda Intergovernmental Fiscal Transfer (UgiFT) - Additional Financing (P172868)	Active	250	50	The project's objective is to improve the adequacy and equity of fiscal transfers and fiscal management of resources by local governments for health and education services.	1. Improved access to health and education services under EASP will be able to have recurrent institutional electricity costs better met through recurrent cost support and management strengthened under UgIFT and reduce fiscal pressures caused by COVID-19 impacts 2. Increased agricultural irrigation supported under UgIFT will be more effective with connectivity facilitated under EASP.
Uganda Digital Acceleration Program (P171305).	Pending Effectiveness	200	54	The project development objectives are to expand access to high-speed internet in underserved areas,	1. Providing energy solutions aligned to digital access to ensure cost effective digital

Project	Status	Total (US$, millions)	RSW/ WHR (US$, million)	Development Objectives	Synergies
				improve efficiency of digital government services nationwide, and strengthen the digital inclusion of host communities and refugees.	implementation and last-mile digital connectivity 2. Ensuring affordable digital device charging solutions within refugee settlements 3. Exploring scales of economy procurement options which could bundle digital connectivity and electrical infrastructure in refugee-hosting districts.
Investment for Industrial Transformation and Employment project (P171607)	Pending Effectiveness	155	45	To mitigate the effect of COVID-19 on private sector investment and employment and to support new economic opportunities including in refugee and hosting communities.	1. Reducing energy cost barriers to MSMEs in RHDs. 2. Providing necessary energy connections for digital connectivity to facilitate SMES access to mobile money, digital learning platforms and digital business inputs.
Additional Finance to COVID-19 Response and Emergence Preparedness Project (P177273)	Pending Effectiveness	141	27	To prevent, detect and respond to COVID-19 and strengthen national systems for public health emergency preparedness in Uganda, including for refugees and host communities.	Provide energy connectivity for health infrastructure to enable effective cold chains necessary for vaccine delivery, epidemiology and strengthening of health service delivery.
Total		**1,965.5**	**626**		

ANNEX 8: Financial Intermediary Financing Policy Review

1. The UECCC's proposed role in Component 2 of the EASP builds on its current role and experience of managing credit lines in the ongoing ERT 3 project. Under Sub-component 2.1 of the EASP, the UECCC will continue to channel funding through PFIs in sectors likely to attract commercial lending for (a) stand-alone solar equipment distributors, (b) solar companies promoting productive uses, and (c) companies selling cookstoves and clean fuel technologies. Under Sub-component 2.2, the UECCC's role will be augmented to include direct lending to companies electrifying public institutions. The UECCC will channel funding through Tier 4 PFIs (SACCOs and MFIs) to provide end user credits to households for cookstoves and clean fuel technologies. Expanding the UECCC's role to include direct lending applies a key lesson from ERT-3 that PFIs are reluctant and slow to commence lending to these sectors on their own. UECCC direct lending may help catalyze commercial lending in the future and will be critical to the successful utilization of the EASP credit lines.

Legal Structure

2. As stated in its Memorandum and Articles of Association, the UECCC was established as a company without share capital whose primary purpose is to manage the Uganda Energy Capitalization Trust (UECT), a pool of public funds for rural electrification, renewable energy, and grid connectivity. The UECCC acts as a public trustee in this capacity. Its objectives and role as stated in its Articles of Association are fully consistent with all of its proposed responsibilities within the EASP. For example, the UECCC's stated role includes facilitating private sector participation, introducing innovative financial solutions, transacting directly with financial institutions and private companies, and providing TA to relevant sectors, to further the objectives of the UECT.

Governance

3. The three official "Members" (shareholders) of the UECCC are the Minister of Finance (MoFPED), the Minister of Energy and Mineral Development (MEMD) and the chairman of the board of the Private Sector Foundation Uganda. The UECCC's board has eight directors as follows:

a. Permanent Secretary, MoFPED (Chair)
b. Permanent Secretary, MEMD
c. Executive Director, Private Sector Foundation Uganda
d. Executive Director, Uganda Investment Authority
e. A person with significant banking and finance experience nominated by the Uganda Bankers Association.
f. A person with significant experience in accounting and audit nominated by the Institute of Certified Public Accountants
g. A representative of a recognized renewable energy association in Uganda
h. The Managing Director of the UECCC.

4. The experts in banking, finance, audit, and renewable energy should provide independent oversight of the UECCC activities thus strengthening governance and providing a commercial viewpoint. The UECCC is not supervised by the central bank (Bank of Uganda) as it does not take deposits from the public. The public auditor performs annual financial audits of the UECCC's performance and submits the report to the Parliament of Uganda for review by the Public Accounts Committee of Parliament.

Organization and Staffing

5. The UECCC's organization structure covers the necessary activities for EASP under four departments, Finance and Admin, Transaction Management, Audit and Legal. As of October 2019, the UECCC had a total of 32 staff. While not all of the positions were filled, the key senior management positions including Managing Director, Director of Transactions, Risk Officer, and Finance Manager were filled. There are six Transaction Specialists under the Director of Transactions and the Director and team of Transaction Specialists have experience in commercial banking, which helps strengthen the UECCC's proposed role as a direct lender.

Credit Line Structure and Terms

6. The UECCC will provide working capital loans, term loans, and guarantees under its facilities, to address the diverse needs of household, productive use, and public institutions markets. The UECCC will select PFIs including commercial banks, SACCOs, and MFIs that have the capability to satisfy the World Bank's Financial Intermediary Funds (FIF) policies for PFIs. The World Bank will review the proposed list of PFIs and have a 'no objection' right for PFI selection. Within the ERT program, the UECCC has already worked with established and capable commercial banks including Stanbic Bank, Centenary Bank, Post Bank, and Finance Trust Bank. Furthermore, the UECCC has started to work with Tier 4 PFIs such as SACCOs and MFIs including Tujijenge, Hofokam, EBO SACCO, and Buyanja SACCO. The detailed terms and conditions of credit line loans and guarantees will be finalized once the UECCC has established its loan and guarantee pricing policy and will depend on a number of factors including market demand for finance, the credit risk of PFIs and companies, market interest rates, and PFI interest to participate.

7. When working through PFIs, the UECCC will permit the PFIs to determine their own lending terms following market-based policies and practices as required by the World Bank FIF policies, to cover funding costs, operating costs, risks and an appropriate profit margin.

8. The UECCC is currently developing its loan and guarantee pricing policies for direct lending. It is in the process of selecting a consultant to recommend a framework for its loan and guarantee pricing policies. The terms of reference for this work were developed in coordination with the World Bank's EASP project team, to ensure that the objective of compliance with the World Bank's FIF policies is incorporated in the study. Due to the current COVID-19-related travel restrictions, this work is delayed. The UECCC is exploring whether to have the work done remotely or hire a local consultant. It will not commence direct lending activities until a pricing policy satisfactory to the World Bank has been developed. The UECCC is also hiring a consultant to study its Treasury Department requirements.

Environmental and Social Standards

9. For direct lending, the UECCC has hired two specialists one to cover environmental and the other to cover social E&S. It will review the E&S systems of all selected PFIs and provide information on these systems for the World Bank's no objection review of PFI selection.

Conclusion

10. The EASP project is expected to comply with World Bank FIF policies. The UECCC will not commence direct lending activities until a pricing policy satisfactory to the World Bank has been developed.

ANNEX 9: Clean Cooking Fund and Clean Cooking Interventions

1. The World Bank's ESMAP announced the establishment of a US$500 million ESMAP-MDTF at the 2019 United Nations Climate Summit, to galvanize political commitment and investment to achieve universal access to clean cooking by 2030. To achieve this goal, the ESMAP-MDTF's objectives are to (a) leverage WBG/MDB finance and attract private sector investments in the clean cooking sector; (b) catalyze technology and business innovations by generating additional revenue sources/incentives for players across clean cooking value chains; and (c) link incentive payments with verified results at the levels of output, outcome (number of households with access to clean cooking, directly contributing to SDG 7), and impact (improved health, gender equity, and global climate), using a RBF mechanism. The Uganda EASP proposes co-financing project components with the ESMAP-MDTF to accelerate access to clean cooking in Uganda.

2. The clean cooking interventions fall along the following key areas: (a) provision of working capital debt finance to clean cooking SMEs and of credit to consumers through MFIs, (b) establishment of an RBF grant facility for SMEs financed by ESMAP's ESMAP-MDTF, (c) provision of clean cooking solutions for public and private institutions, and (d) support and enabling environment for the clean cooking sector.

3. The above activities have been integrated in the following parts of the project, Sub-component 2.1: Financial intermediation through participating financial institutions, Sub-component 3.2: Financial intermediation through participating financial institutions, Sub-component 4.2: Enabling environment. The specific interventions supported are stated as follows:

a. **Debt financing for working capital.** The UECCC will provide line of credit to PFIs to extend working capital to eligible companies offering efficient cookstoves and clean fuel technologies. Debt financing will be provided to eligible companies involved in manufacturing, importing, and distribution of cookstoves and clean fuel technologies. The UECCC will also provide financing to Tier 4 financial institutions (for example, SACCOs and MFIs) for on-lending to end users, under their energy-efficient appliances program, for the purchase of clean cooking technologies to enable flexible payment options for households. Based on market need, the UECCC may extend this financing support directly to eligible companies.

b. **RBF grant.** RBF incentives will be designed to support clean cooking business development which targets high-performance technological solutions (Tier 3 and above), innovative business models, or particularly challenging market segments with verified outputs. Additional impact-linked financing incentives may also be designed to link to verified outcomes such as climate, health, and gender co-benefits following the established methodologies and monitoring, and verification protocols.

c. **Institutional cooking.** Support will be provided for scaling up access to clean cooking solutions for public and private institutions (for example, schools, hospitals, and prisons), which rely heavily on biomass for cooking, thereby contributing to biomass sustainability problems. The UECCC will provide (i) subsidies for installation of efficient institutional biomass stoves or alternate fuel systems in public institutions and (ii) consumer financing to private institutions for the purchase of clean cooking solutions. The UECCC will provide loans to large private institutions (particularly schools) via lines of credit to participating commercial banks eligible to lend to the sector to purchase efficient cookstoves and clean fuel technologies.

d. **Support an enabling environment.** Support will include (i) policy development and improvement, for example, improving fuel/stove quality standards, and tax/tariff policies to support clean cooking market development; (ii) TA to market players, for example, market intelligence studies, entrepreneurship technical support including targeted training for women entrepreneurs, innovation challenge, and so on; and (iii) consumer awareness campaigns, for example, working with the health practitioners, women groups, and educators on the issue of household air pollution and clean cooking options.

4. The key outcomes and outputs from the intervention will be tracked using the indicators stated in table 9.1:

Table 9.1. ESMAP-MDTF Framework Indicators and Targets

OUTCOME: Improved access to clean cooking in Uganda		
Outcome indicator 1	Number of people who gained access to clean cooking resulting from the ESMAP-MDTF co-financed project	1.66 million people (or ~353,000 households)
Outcome indicator 2	Amount of investments mobilized (including both public and private financing)	US$20 million
INTERMEDIATE OUTCOME: Governments have adopted policies and regulations to support public and private sector investment in clean cooking		
Intermediate outcome indicator 1	Number of policies and regulations adopted by the governments to support clean cooking market development	1 (Adoption of standards related to clean cooking technologies)
Intermediate outcome indicator 2	Proactive actions to promote female employment/entrepreneurship and gender co-benefits (number).	5 (TA on female entrepreneurship mentorship, innovation grant for female entrepreneurs, TA on product design to incorporate women needs, awareness raising targeting women groups, and gender co-benefits measurements)
OUTPUTS:		
Output 1	Strategies, policies, regulations to support clean cooking (number)	2 (TA on policies/regulations review and TA on standards and testing)
Output 2	Innovative technology, business, and financing approaches, incorporating both women's and men's preferences and needs (number)	2 (innovations on local product design, consumer financing/PAYGo, or business bundling)

5. Over 90 percent of the population in Uganda still uses wood fuels for cooking. The demand for these fuels will remain strong in the foreseeable future, and fundamental barriers still remain to the scale up of clean cooking options and nation-wide distribution. From 2017 to 2020, the World Bank through the Uganda Clean Cooking Supply Chain Expansion Project (P153679) financed a value chain integration approach to promote efficient biomass stoves in Uganda. This project, of US$2.2 million, followed a market-based approach and utilized RBF as its primary instrument. The activities under the EASP will build on lessons learned and implementation approaches from this project; however, the EASP will expand its support beyond efficient biomass stoves to other clean fuels and technologies.

6. **Implementation arrangement.** The project will be implemented by the UECCC in coordination with the MEMD. Two separate implementation approaches will be adopted to provide household clean cooking solutions and institutional level clean cooking solutions. The MEMD will carry out the awareness of the different cooking solutions to the different stakeholders and work with UNBS to set standards. The MEMD will identify the institutions benefitting from these solutions. The MEMD will also identify and classify the clean cooking technology providers. The UECCC will disburse the funds to the clean cooking technology providers upon confirmation by MEMD on the adequate installation of the systems. These approaches are presented in the figure 9.1 and figure 9.2.

Figure 9.1. Implementation Arrangements and Flow of Funds for Working Capital Finance and RBF Grants

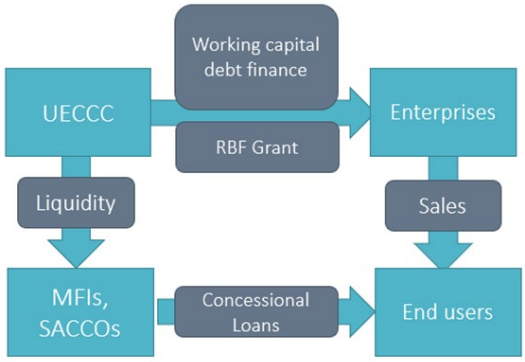


Figure 9.2. Implementation Arrangements and Flow of Funds for the Institutional Clean Cooking Solutions

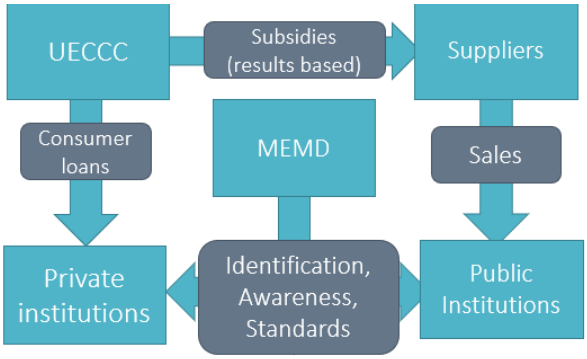


Table 9.2: Comparative Cooking Costs for Key Baseline Technologies and Fuels in Kampala

Technology	Purchase Unit	One-off costs (US$)	Usage (years)
Improved institutional Cooking Stoves	Twin stoves cooking stoves with capacity ranging 100-400 liters, saucepans inclusive	1,500 – 3,000	5
Improved Household Cooking Stoves to use woody biomass charcoal, briquettes	Twin stoves cooking stoves with capacity range of (5 to 15 liters)	20 – 50	5
LPG	Cylinders for household of 12.5 kg	US$54 for the cylinder, US$40 for the burners	10
Institutional bio-latrine systems	Digester capacity size of 40 to 80 cubic meters for waste management and generating gas for partial substitution of woody biomass	12,500 – 25,000	20
Household biogas systems	For utilization of domestic waste including animal waste and other biodegradables to generate gas for cooking	2,000 – 5,000	20
Ethanol stoves for cooking	Double burner stoves	100 – 150	3
Electric cookers		100 – 1,000	5

7. The following clean fuel and clean cooking solutions will be supported under the project with funding support from ESMAP-MDTF:

a. **LPG.** Currently available in limited locations in urban areas; however, new business models allowing metered LPG to be sold using the PAYGo platform are now available in Uganda, providing new opportunities to overcome the cash flow problems of households that otherwise prefer to cook with LPG.

b. **Electricity.** Due to the dramatic cost reduction in storage technology, PV technology, and efficient appliances, it is now possible to integrate clean cooking with both grid and off grid systems (mini grids and larger SHS focusing on productive uses). New generation of efficient appliances such as electric pressure cookers and slow cookers present opportunities to incorporate electric cooking as a primary or secondary form of cooking for Ugandan households. Electric cooking presents a particularly strong potential considering the country's energy generation surplus and the Government's power demand stimulation goals. Considering the rising prices of charcoal, preliminary analyses shows that electric cooking is becoming more competitive with these baseline fuels.

c. **Ethanol.** The largest ethanol operator in East Africa is now planning expansion to Uganda and Tanzania in partnership with large scale local distribution companies. Initial assessment shows that ethanol (without any subsidies) would retail at a price 25 percent cheaper than charcoal.

d. **Biogas.** It can be viable only in densely populated areas in particular where cattle are kept for dairy and meat. The capacity of mason artisans building quality has improved through various trainings and they have established microenterprises. The upfront costs of biogas digesters remain very high for households.

e. **Briquettes.** This is a processed biomass fuel made of agricultural residues such as husks and sawdust. Several briquette manufacturers operate in and around Kampala and focus on niche markets such as institutional cooking solutions.