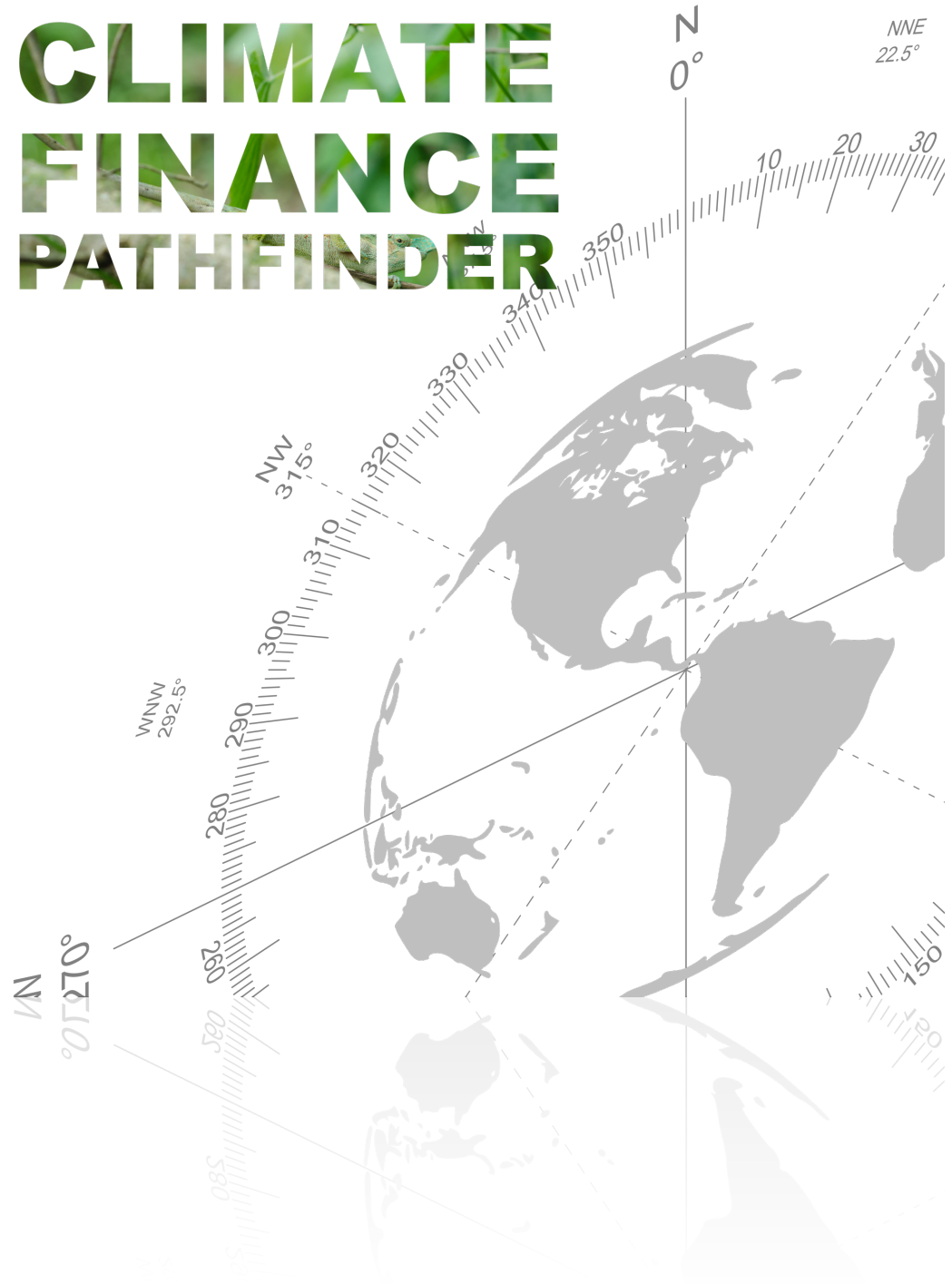
CLIMATE FINANCE PATHFINDER



UGANDA REPORT

Rockefeller Brothers Fund

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ACKNOWLEDGEMENTS

Photo Credit: Kelly Sikkema

This study was commissioned by the Rockefeller Brothers Fund (RBF). We would particularly like to thank Michael Northrop and Sonia Jagtiani of RBF and all those we interviewed during the project for their support and contributions to this study. A list of the organisations interviewed is provided at the end of this report.

The views expressed do not necessarily reflect RBF's policies or those of the organisations contacted. The authors are solely responsible for the content of this document.

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October 2020

ABBREVIATIONS

ACF	Agricultural Credit Facility
AfDB	African Development Bank
AGRA	Alliance for Green Revolution for Africa
AML	Anti-Money Laundering
ASSP	Agriculture Sector Strategic Plan
BAU	Business-As-Usual
BGFA	Beyond the Grid Fund for Africa
BoU	Bank of Uganda
BSU	Biogas Solutions Uganda
CCD	Climate Change Department
CCPC	Climate Change Policy Committee
CFP	Climate Finance Pathfinder
CFT	Combatting the Financing of Terrorism
CSA	Climate-Smart Agriculture
DFCU	Development Finance Corporation Uganda
DFI	Development Finance Institution
DFID	(UK) Department for International Development
EADB	East African Development Bank
ERA	Electricity Regulatory Authority
ERT	Energy for Rural Transformation
FCDO	Foreign, Commonwealth and Development Office
FDI	Foreign Direct Investment
FY	Financial Year
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GERP	Grid Expansion and Reinforcement Project
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GGGI	Global Green Growth Institute
GHG	Greenhouse Gas
GOGLA	Global Off-Grid Lighting Association
ICCTC	Inter-Institutional Climate Change Technical Committee
ICRP	Irrigation for Climate Resilience Project
ICS	Improved Cooking Solutions
IFC	International Finance Corporation
IGAD	Intergovernmental Authority on Development
IMF	International Monetary Fund
IRA	Insurance Regulatory Authority (Uganda)
LCE	Low-Carbon Economy
LDC	Least Developed Country
LPG	Liquified Petroleum Gas
MAAIF	Ministry of Agriculture, Animal Industry, and Fisheries
MDA	Ministries, Departments, and Agencies
MEMD	Ministry of Energy and Mineral Development

MFI	Microfinance Institution
MoFPED	Ministry of Finance, Planning, and Economic Development
MoWE	Ministry of Water and Environment
NCCP	National Climate Change Policy
NDC	Nationally Determined Contribution
NEFCO	Nordic Environment Finance Corporation
NGO	Non-Governmental Organisation
NRM	National Resistance Movement
PAYG	Pay-As-You-Go
PSFU	Private Sector Foundation Uganda
PUT	Productive Use Technology
PV	Photovoltaic
RBF	Rockefeller Brothers Fund
RCP	Representative Concentration Pathway
REA	Rural Electrification Agency
RESP	Rural Electrification Strategy and Plan
S&P	Standard and Poors
SACCO	Savings and Credit Cooperative
SE4ALL	Sustainable Energy for All
SHS	Solar Home Systems
SIDA	Swedish International Development Cooperation Agency
SMADF	Small and Medium Agribusiness Development Fund
SME	Small and Medium-Sized Enterprise
TEA	Transforming Energy Access
UDBL	Uganda Development Bank Ltd
UECCC	Uganda Energy Credit Capitalisation Company
UGEAP	Universal Green Energy Access Programme
UGX	Ugandan Shilling
UNACC	Uganda National Alliance on Clean Cooking
UNBS	Uganda National Bureau of Standards
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UNREEEA	Uganda National Renewable Energy and Energy Efficiency Alliance
UOMA	Uganda Off-Grid Energy Market Accelerator
URA	Uganda Revenue Authority
USAID	United States Agency for International Development
USEA	Uganda Solar Energy Association
WRS	Warehouse Receipts System

EXECUTIVE SUMMARY

CHAPTER 1: INTRODUCTION

The Climate Finance Pathfinder (CFP) is a project supported by the Rockefeller Brothers Fund (RBF) that scopes the opportunity for low and lower middle-income countries to access finance for their Nationally Determined Contributions (NDCs). It consists of a mapping and analysis of each country's climate finance landscape and, based on this analysis, provides specific initial recommendations on steps that countries may take to attract increased climate finance flows, especially of private and concessional finance.

The CFP process consists of three stages:

1. An initial research and country scoping visit
2. An in-depth in-country assessment, including interviews with key stakeholders, and a recommended approach
   (because of COVID-19 travel restrictions, these interviews have been conducted remotely); and
3. Dissemination

This report focuses on the agriculture and energy sectors, but the same approach could be applied to other priority sectors. Interviews with key stakeholders have been particularly important in analysing the barriers and enablers set out below and in drawing up our conclusions and recommendations.

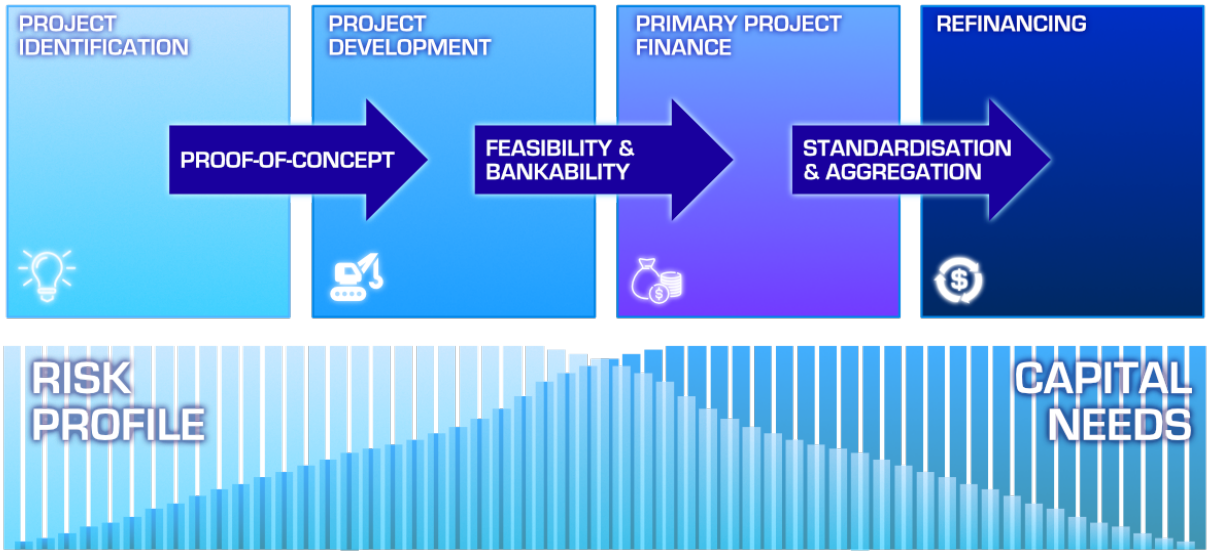
The climate finance supply chain

The CFP approach is based on the concept of the 'climate finance supply chain', built from experience and observation in a number of countries. For any country to be successful in mobilising climate finance at scale, this supply chain needs to work effectively. The chain typically has four main stages:

1. Project origination: the identification of projects contributing to the implementation of a country's NDC or low-carbon strategies
2. Project development to the state where a project can be considered for finance
3. Primary project finance, ideally/typically in local markets; and
4. Refinancing of projects (for projects with certain types of cashflow) via instruments such as green bonds, often raised on international capital markets

The risk profile and capital needs of projects are inversely proportional as they proceed along the chain. Proof of concept will be required to move from project identification to development, feasibility, and bankability to primary project finance and standardisation and aggregation to facilitate refinancing.

THE CLIMATE FINANCE SUPPLY CHAIN



Source: CFP team analysis

CHAPTER 2: COUNTRY PROFILE

TOPOGRAPHY AND DEMOGRAPHY

As a landlocked Eastern African country, Uganda depends on its relations with Kenya and Tanzania for access to the sea. Most of the country consists of a plateau ranging between 800 metres to 2,000 metres in height, and the Rift Valley runs from north to south through the western half of the country.

As of 2019 Uganda's population is 44.3 million,[1] with an annual growth rate of over 3%, and is projected to reach 100 million people by 2050. Uganda is an ethnically diverse nation, with 65 indigenous communities already recognised under the constitution and further communities seeking that same status. Uganda is a young country, with 69% of its population being under the age of 25. Of the population, 76% lives in rural areas, but the rate of urbanisation is above 5%.[2]

POLITICAL STRUCTURE

Uganda has been a republic since gaining independence in October 1962, with the President being both head of state and head of government. President Yoweri Museveni came to power in January 1986. The current constitution, which has been in place since 1995, established Uganda as a republic with executive, legislative, and judicial branches. General elections will be held in February 2021 in Uganda to elect the President and the National Assembly and this is a major source of political and economic uncertainty.

LEGAL SYSTEM AND ADMINISTRATION

Applicable laws in Uganda include statutory law, common law, doctrines of equity, and customary law. The country is comprised of more than 130 districts divided among four administrative regions and the capital city, Kampala.

Uganda introduced its Decentralisation Policy in 1997 to create more democratic governance, but evidence on whether the policy has improved service delivery in Uganda is still inconclusive.

[1] https://data.worldbank.org/indicator/SP.POP.TOTL?locations=UG.
[2] World Bank.

ECONOMY

Uganda is endowed with substantial natural resources. Fertile soil and regular rainfall create favourable conditions for agriculture and exports are dominated by primary agricultural commodities. In 2006 oil reserves (estimated at over 1 billion recoverable barrels) were discovered in Uganda. Revenues from oil exports were projected to boost Uganda's gross domestic product (GDP). However, the commencement of commercial production of oil has been delayed by a series of disagreements between the government and oil companies—the most recent of which has been over the tax aspects of a deal through which Tullow Oil would sell its interests to Total and CNOOC. Additionally, the recent drop in global oil prices, details over development of a 1,445 km export pipeline, and ongoing concerns over human displacement and conservation continue to cast doubt on the perceived benefits of oil production.[3]

Despite its bountiful resources, Uganda remains a Least Developed Country (LDC), with a with a GDP per capita of US $776 in 2019.[4] Economic growth is hampered by a range of challenges, including changing political will; corruption; poor economic management; insufficient investment in health, education, and job creation; weak infrastructure; and regional insecurity.

Despite these challenges, Uganda has made significant gains in poverty reduction in the last few decades, the main driver being the agricultural sector. This sector (particularly smallholder farming) remains a vital part of the economy, employing over 70% of the country's workforce. However, over the last decade the contribution of agriculture as a percentage of GDP has declined from 33.7% in 2009 to 21.9% in 2019,[5] also due to its high vulnerability to climate shocks and trends, and there has been a shift in economic activity to the service and industry sectors.

ECONOMIC POLICIES AND STRATEGIES

Uganda's Vision 2040 was launched in 2013 with the goal of a 'transformed Ugandan society from a peasant to a modern prosperous country within 30 years'. Implementation of the Vision 2040 strategy is to be achieved through a series of five-year National Development Plans—the second is currently being implemented, with the third due to commence in 2021.

In light of these strategies, the government has prioritised infrastructure development, particularly increasing the country's power generation capacity through utilising Uganda's plentiful renewable energy resources. A number of power projects are being developed (or have been completed) and the majority of these have been externally financed. As a result of this, public debt has grown and stood at 40% of GDP in 2018. While Uganda was previously seen as being at low risk of debt distress,[6] debt is expected to reach 47.5% of GDP in 2020 as a result of impact of the COVID-19 pandemic.[7]

The impact of the COVID-19 pandemic is expected to hit the Ugandan economy severely and through a number of channels, with detrimental effects on economic activity and social indicators, although the government has been putting in place a set of mitigation measures supported by international institutions.

[3] https://africanbusinessmagazine.com/sectors/energy/the-wait-is-over-ugandas-long-road-to-first-oil/.
[4] https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=UG.
[5] https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=UG.
[6] IMF (May 2019).
[7] https://africa.cgtn.com/2020/09/03/uganda-debt-nears-crisis-level/.

In May 2020, the World Bank approved US $300 million in budget support and Uganda secured US $491.5 million in emergency financing from the International Monetary Fund (IMF), of which 70% will be devoted to boosting international reserves, thus preserving macroeconomic stability. The rest will support health spending and the vulnerable population.

CHAPTER 3: CLIMATE CHANGE PROFILE, STRATEGIES, AND ETHIOPIA'S NDC

CLIMATE CHANGE VULNERABILITY AND IMPACTS

Despite its comparatively low emission levels, Uganda is at high risk of the negative impacts of climate change. Since 1960 average temperatures have risen by 1.3°C and seasonal rainfall has decreased significantly. Extreme weather events such as droughts, floods, and landslides are increasing in frequency and intensity.

Climate change is predicted to have a significant economic impact on Uganda, with the sectors most affected being agriculture, water, energy, and transport. A report commissioned by the government on the economic impacts of climate change in Uganda found that while the cost of adaptation was high (about 5% of net official development assistance received and 3.2% of total government revenues (excluding grants)), the cost of inaction was 20 times greater.[8] Should no adaptive action be taken, annual costs could reach $3.2–$5.9 billion by 2025.

CLIMATE CHANGE POLICIES AND STRATEGIES

Management of the environment and sustainable development is enshrined in Uganda's constitution, as well as in Vision 2040.

Uganda's National Climate Change Policy (NCCP) was approved in 2015. The NCCP and its accompanying costed implementation strategy are intended to guide all climate change activities and interventions in the country. The goal of the policy is to ensure a harmonised and coordinated approach towards a climate-resilient and low-carbon development path for sustainable development in Uganda.

UGANDA'S NDC

Given its comparatively low levels of greenhouse gas (GHG) emissions, Uganda's NDC prioritises adaptation. The NDC contains actions in seven vulnerable sectors, including the following in agriculture and energy (the focus of this report).

[8] https://cdkn.org/project/economic-assessment-of-the-impacts-of-climate-change-in-uganda/?loclang=en_gb.

Uganda's NDC: Adaptation priorities in the agriculture and energy sectors

AGRICULTURE
• Expanding extension services • Expanding climate information and early warning systems • Expanding Climate-Smart Agriculture (CSA) • Expanding diversification of crops and livestock • Expanding value addition, post-harvest handling, and storage and access to markets, including microfinances • Expanding rangeland management • Expanding small-scale water infrastructure • Expanding research on climate-resilient crops and animal breeds • Extend electricity to rural areas or expanding the use of off-grid solar system to support value addition and irrigation

ENERGY
• Increasing the efficiency in the use of biomass in the traditional energy sector • Promoting renewable energy and other energy sources • Increasing the energy efficiency in the modern energy sector, mainly of electricity • Ensuring the best use of hydropower by careful management of the water resources • Climate proofing investments in the electricity power sector

Uganda's NDC targets an emissions reduction of 22% from business-as-usual (BAU) estimates by 2030 through the implementation of priorities in different sectors, including the following for energy.

Uganda's NDC: Mitigation priorities in the energy sector

ENERGY
• Construction of enabling infrastructure for electricity sector development, including power lines, substations, and transmission facilities (Development of the electricity sector holds great mitigation potential for Uganda due to the potential offsetting of wood and charcoal burning and its consequential deforestation) • Achieve a total of at least 3,200 MW renewable electricity generation capacity by 2030, up from 729 MW in 2013

Following approval of the NCCP, a Climate Change Department (CCD) was established within the Ministry of Water and Environment (MoWE), with the objective of strengthening Uganda's implementation of the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.

CHAPTER 4: CLIMATE FINANCE LANDSCAPE

The bulk of Uganda's international climate finance is presently being sourced from climate funds and multi-lateral and bilateral development banks and partners. Among these are the following.

CLIMATE FUNDS

- To date, the Green Climate Fund (GCF) has invested nearly US $70 million in five projects, of which only one so far is Uganda-specific (Building Resilient Communities, Wetland Ecosystems and Associated Catchments in Uganda, implemented by the United Nations Development Program (UNDP)). Among the multi-country programmes are Climate Investor One (a renewable energy blended finance facility implemented by the Dutch development bank FMO) and the Universal Green Energy Access Programme (UGEAP) delivered through Deutsche Bank. Additionally, MoWE has recently been accredited for direct access to the GCF

- GEF has approved funding of more than US $130 million across 37 national projects (many more multi-country ones), including:
  - Energy for Rural Transformation (ERT) Phase III
  - Integrating Climate Resilience into Agricultural and Pastoral Production in Uganda, through a Farmer/Agro-Pastoralist Field School Approach; and
  - Building Resilience to Climate Change in the Water and Sanitation Sectors

- Adaptation Fund: projects funded include:
  - Enhancing resilience of communities to climate change through catchment-based integrated management of water and related resources in Uganda (US $7.5 million); and
  - Djibouti, Kenya, Sudan, and Uganda: Strengthening Drought Resilience for Small Holder Farmers and Pastoralists in the Intergovernmental Authority on Development (IGAD) Region (US $13 million); and

- The Global Green Growth Institute (GGGI) has been supporting the development of the Uganda Green Growth Development Strategy, Uganda's engagement with the GCF, and the development of the Uganda Green Investment Facility, among others

MULTI-LATERAL INSTITUTIONS

- The East African Development Bank (EADB) is headquartered in Kampala and its mission is 'to promote sustainable socioeconomic development in East Africa by providing development finance, support and advisory services'. Climate change is one of EADB's focus areas and the bank supports programmes, policies, projects, and technologies towards a low-carbon economy (LCE)

- The World Bank has several active programmes in Uganda, including ERT III, Irrigation for Climate Resilience Project (ICRP), and the Grid Expansion and Reinforcement Project (GERP)
- The African Development Bank (AfDB) is active in Uganda in both the energy and agriculture sectors. In the energy sector, the Bank has supported a number of hydropower and other forms of clean energy

- GGGI supports the Ministry of Finance, Planning, and Economic Development (MoFPED) in strengthening its relationship with the GCF, including through the development of project pipelines and accreditation support

- UNDP is supporting Uganda in NDC implementation and in establishing a climate finance facility; and

- The United Nations Capital Development Fund (UNCDF) is very active in Uganda, engaging both public institutions and small and medium-sized enterprises (SMEs) in the agriculture, energy, education, and healthcare sectors

BILATERAL DEVELOPMENT PARTNERS INCLUDE THE FOLLOWING

- The United States, through Power Africa, is supporting a master planning effort for 13 distribution company concessions, identifying opportunities for over 800,000 new on-grid connections and over 400 mini-grid sites

- The United Kingdom's Foreign, Commonwealth and Development Office (FCDO) works to increase investment in off-grid energy firms, overcome regulatory barriers, and foster innovation

- Germany's *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) has provided support to both the government and private sector to further advance access and support clean energy; and

- The Swedish International Development Cooperation Agency (SIDA)'s collaboration in the newly launched 'Beyond the Grid Fund for Africa' (BGFA) aims to stimulate the scale up of sustainable business models that incentivise the private sector to offer affordable and clean off-grid energy access at scale in Uganda

Alongside these public international sources, **Foreign Direct Investment** (FDI) flows to Uganda in 2019 were $1.266 billion (3.86% of GDP).[9] The main contributors are Kenya, Germany, and Belgium. However, it is not clear what proportion of FDI could be classified as climate finance.

There are a number of **international and regional commercial banks** operating in Uganda, including Standard Chartered, Citigroup, and Cairo International Bank.

In terms of institutional investors, while both the pensions and insurance sectors in Uganda are continuing to grow, these institutional investors are yet to show significant interest in investing in climate change-related sectors.

Uganda has a small **private equity** market, although the majority of investment is done in and through Nairobi, Kenya. The Ugandan Pearl Capital Partners currently manages two funds—Yield Uganda Investment Fund (2017–2027) and Fund ASIF (2010–2021)—both of which have a strong focus on agriculture. Additionally, in August 2014, the government and the European Union launched the EUR 25 million (US $29 million) Small and Medium Agribusiness Fund (SMADF).

[9] https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?locations=UG.

There are 12 **impact investing and venture capital funds** with active investments in Uganda. Of these, only three are headquartered in the country. The relative youth of Uganda's impact investing industry means there are few examples of successful exits so far.

There is no official record or database of **non-governmental organisations (NGOs) or philanthropic organisations**, so it is challenging to identify all those operating in the climate change sector in Uganda. Examples, however, include the Rockefeller Foundation, the Mastercard Foundation, the Children's Investment Fund Foundation, and Oxfam.

DOMESTIC SOURCES OF FINANCE

In terms of **government budget**, there is a commitment to allocate 10% of the national budget to the agriculture sector, but this target has not been met consistently, if at all. Spending on energy focuses mostly on generation of hydroelectricity, with less than 5% of the energy budget being allocated to other alternative energy sources.

Uganda's **commercial banking** sector has grown in recent years. As of the end of 2019, there were 26 active commercial banks in Uganda with over 500 branches. The banking industry had an estimated US $8.3 billion in total assets and US $6 billion in total deposits spread across 14 million deposit accounts. However, only a handful of financial institutions have created products for sectors with a high climate impact. Examples include:

- Development Finance Corporation Uganda (DFCU)
- Stanbic Bank
- Centenary Bank
- Post Bank; and
- Finance Trust Bank

As of June 2018, there were 117 **microfinance institutions (MFIs)** in Uganda. Of these, five were deposit-taking institutions, with total assets of approximately US $150 million.

Uganda's **stock exchange** presents equity financing opportunities for Ugandan businesses, with companies relevant to climate change and energy including Umeme, Stanbic, and the Equity Group, among others. However, there are a number of barriers to entry for small businesses.

Carbon markets are emerging as an additional source of revenue in Uganda. Examples include:

- Mandulis Energy selling forward carbon credits (at US $16/ton CO_2) to United States-based WREN (a Y-combinator project) into the voluntary offset market to secure early cash flow; and
- UpEnergy have created product subsidies by monetising the reduced carbon output of their fuel-efficient stoves at a price of US $4/ton CO_2

Impact Carbon provides intermediary services linking local producers of cook stoves and household solar products with carbon markets, thereby ultimately helping to reduce the cost of such products for consumers.

CHAPTER 5: BARRIERS AND ENABLERS

Critical barriers to the access and mobilisation of finance persist, but Uganda has also made extensive progress in creating enablers for the transformation of its economy. The CFP methodology analyses these barriers and enablers across five headings:

1. Policy and regulatory
2. Finance and economics
3. Technology and markets
4. Information and capacity; and
5. Social, cultural, and behavioural

Key findings from the interviews and other research carried out during the CFP project under each heading are summarised in the table below.

POLICY & REGULATORY

BARRIERS

- Results in terms of attaining the objectives of decentralisation are mixed (large capacity and finance gaps)
- Lengthy development and approval of policies due to high levels of bureaucracy
- Limited clarity and decisiveness from the government on key decisions (such as extending the Umeme concession) create uncertainty for investors
- Climate action is not a top priority for the government due to budgetary constraints. Budget issues are likely to be exacerbated by the COVID-19 pandemic
- Uganda ranks 116th out of 190 countries in the World Bank's Doing Business Report 2020[10]
- Contract enforcement has been a concern for international investors

ENABLERS

- Commitment towards decentralisation to improve democratic governance through a specific policy
- Strong commitment to protecting the environment and sustainable development within Uganda's constitution and main economic policies and strategies (including Vision 2040 and the National Development Plan)
- Uganda's regulatory landscape is welcoming to foreign investment: investors can own local companies, repatriate profits, and access foreign currency easily
- The Bank of Uganda (BoU) has been successful in creating a more business-friendly environment
- Uganda's financial regulations are aligned with international standards on anti-money laundering (AML) and Combatting the Financing of Terrorism (CFT) and it is in the process of implementing the Basel III financial regulations
- Monetary policy is accommodative, and the Ugandan shilling (UGX) has remained generally stable

FINANCE & ECONOMICS

BARRIERS

- No domestic climate fund or green investment fund
- MoFPED is accredited to the GCF but limited funding has come through so far
- Capital markets are relatively nascent
- Available financial structures do not serve the needs of the majority of the market
- Lack of appetite from financial institutions to lend to the agriculture sector due to limited knowledge and high perceived risks
- Collateral requirements set by banks (such as land title) prevent many individuals (particularly smallholder farmers) and SMEs from accessing finance
- Single lender limit of US $2 million limits local banks from adequately servicing businesses with greater funding needs
- Uganda's stock market is relatively small, with only 18 companies listed so far

[10] On 27 August 2020, the World Bank announced that it will pause publication of its Doing Business report and conduct an internal audit of data integrity. This was in response to findings of 'irregularities' in the treatment of the basic data in the reports published in 2017 and 2019.

ENABLERS

- GGGI are supporting MoFPED on GCF work areas, including on accreditation for the Uganda Development Bank Ltd (UDBL) and Kampala City Authority as candidates
- UNDP is creating a climate finance facility to mobilise finance from both the public and private sector through different instruments
- Relatively active foreign exchange market, with an annual turnover of more than US $10 billion
- Improvement in financial inclusion due to wide adoption of mobile money
- Penetration of financial services is increasing through growth of banking services, MFIs, savings and credit cooperatives (SACCOs), community savings groups, and mobile money services
- Risk guarantees are being used to incentivise banks to take an interest in new sectors, such as renewable energy

TECHNOLOGY & MARKETS

BARRIERS

- The private sector is fragmented and present only in certain sub-sectors
- Business associations struggle to engage effectively with government
- Product standardisation, especially in cookstoves, is still lacking

ENABLERS

- Representation of the private sector is improving within several sectors mainly through associations, including the Private Sector Foundation Uganda (PSFU), the Uganda National Renewable Energy and Energy Efficiency Alliance (UNREEEA), and the Uganda National Alliance on Clean Cooking (UNACC)
- Product standardisation and quality control are progressing

INFORMATION & CAPACITY

BARRIERS

- Lack of adequate data and processes to track climate finance
- Limited research capacity
- Limited support to education, research, and development
- Limited coordination and information sharing between ministries and departments
- Low project appraisal capacity of financial institutions
- Limited capacity and personnel in government agencies to handle a large number of projects and funding applications
- Banks and MFIs have low capacity to understand business models and trends in new and untested markets, limiting their ability to accurately evaluate investment risk
- The private sector lacks soft skills and experience to carry out business tasks (e.g. accounting; developing business plans and financial models to the standards required by financial institutions and other donors)
- Finance and business capacity associations need to be strengthened

ENABLERS

- The World Bank is supporting MoFPED with the development of a climate budgeting and tagging programme
- Coordination among development partners and aid agencies is good, also through establishment of donor coordination group

SOCIAL, CULTURAL & BEHAVIOURAL
BARRIERS
• Conservative business culture: companies seeking funding tend to prioritise debt over equity
ENABLERS
• The business environment is generally open

CHAPTER 6: SECTORAL ANALYSIS

AGRICULTURE

Sectoral priorities include:

- Increase in productivity for food security: yield gaps of 50%–75% for many commodities, coupled with a rate of population growth of 3.3% and a fertility rate of 5.9%, means that more than 80% of the population is minimally food secure; and
- Reduction in climate vulnerability: as the country is heavily dependent on rain-fed agriculture, the sector is heavily prone to climate risks, particularly drought

Key institutions are:

- Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF); and
- Agricultural Credit Facility (ACF)

The main sectoral policy is:

- The Agriculture Sector Strategic Plan (ASSP) 2015–2020

As well as the general ones noted above, barriers and enablers specific to the agriculture sector are as follows.

FINANCE & ECONOMICS
BARRIERS
• Unmet demand for finance for smallholders to invest in better equipment and practices due to limited financial inclusion of smallholder farmers • Unmet demand further along commodity value chains for short-term working capital and medium to longer-term finance for productivity and quality-enhancing investments in marketing and processing • High risk–low return profile due to low economies of scale of small farming ventures (interest rates for loans are prohibitive, approximately 20%) • Small project sizes; increasing transaction costs • 'Lumpy' cash flows: typical cash flows consist of one large outflow (loan) followed by a large inflow several months later following harvest • High covariance across borrowers: all borrowers are similarly affected by the same macro-risks, especially climatic shocks • Lack of appropriate collateral, as leases are often not accepted • Access and use of agricultural insurance remain limited • Operational costs increase due to animal disease outbreaks; poor seed quality; limited irrigation; weak infrastructure (particularly roads)

ENABLERS
• (Partial or total) credit guarantees have been used successfully in Uganda since the mid-2000s. Examples include: Agribusiness Loan Guarantee Company, started in 2006 as an offshoot of the Agribusiness Initiative Trust; and Alliance for Green Revolution for Africa (AGRA) • BoU is working to lower interest rates

TECHNOLOGY & MARKETS

BARRIERS
• Dispersed population: over 75% live in rural areas, with these being sparsely distributed, making value chain development and outreach hard
ENABLERS
• High uptake of digital financial services has provided a partial solution to challenges of dispersed population • Warehouse Receipts Systems (WRS) are a proposed solution to the lack of collateralisable land titles for loans • Mobile payments and digitisation of land titles also facilitate transactions

INFORMATION & CAPACITY

BARRIERS
• Mostly outdated practices used by smallholder farmers • Limited number of skilled agronomists in the country • Diverse types of sub-businesses, each with distinct dynamics, impact appraisal capacity of lenders
ENABLERS
• Some improvement in practices through extensive capacity building in CSA in the past years

ENERGY

Sector priorities include:

- The overriding policy goal is 'to meet the energy needs of the Ugandan population for social and economic development in an environmentally sustainable manner'.

Specifically, Uganda's energy policy seeks to meet the following broad objectives:

1. To establish the availability, potential, and demand of the various energy resources in the country
2. To increase access to modern affordable and reliable energy services as a contribution to poverty eradication
3. To improve energy governance and administration
4. To stimulate economic development; and
5. To manage energy-related environmental impacts[11]

[11] Ministry of Energy and Mineral Development (2002) The Energy Policy for Uganda.

Key institutions are:

- The Ministry of Energy and Mineral Development (MEMD)
- MoFPED
- The Uganda Revenue Authority (URA) is responsible for tax policy enforcement
- The Electricity Regulatory Authority (ERA)
- The Rural Electrification Agency (REA)
- The Uganda Energy Credit Capitalisation Company (UECCC)
- The Uganda National Bureau of Standards (UNBS); and
- Umeme (the largest distribution company in Uganda)

Policies and legislation include:

- The Draft Energy Policy and Energy Efficiency Bill
- The Rural Electrification Strategy and Plan (RESP); and
- The Draft Off-Grid Strategy

Additional sectoral barriers and enablers specific to the energy sector include the following.

POLICY & REGULATORY
BARRIERS
• Lack of integrated power sector planning • Undefined policy and regulatory framework in the mini-grid sector, undermining the confidence of developers and investors • Lack of transparency around licensing and permitting • Lack of a uniform tariff policy to enact cost-reflective tariffs—this also requires regulatory approval • Uncertainty over concession renewal for Umeme • Limited political will so sector not given adequate priority
ENABLERS
• Liberalised and financially viable energy market, with generation, transmission, and supply segments unbundled since 2001 • Regulation of the sector is effective, with ERA viewed as one of the best regulators in the region • Uganda is working to publish a mini-grid regulation • Global Off-Grid Lighting Association (GOGLA) is advocating for greater clarity on taxation of products within the solar ecosystem

FINANCE & ECONOMICS

BARRIERS

- Generation overcapacity (demand is not increasing as fast as generation), thereby undermining the financial sustainability of projects as excess energy needs to be sold to pay for the project loans
- High and outdated consumer electricity tariffs
- Feed-in tariffs need to be updated to reflect the cheaper price of solar
- High grid costs
- Unclear and inconsistent tax policy on solar imports: Uganda has waived taxes on solar panels, but not other solar equipment. Also, only the members of the Uganda Solar Energy Association (USEA) are able to benefit from the waiver
- Low access to finance for mini-grids, especially at scale
- Financing for operation and maintenance is often lacking
- Limited access to finance for rural communities
- Due to high upfront costs needs, low payment capacity of potential clients and insufficient financing
- Shortage of grants to reduce the cost of mini-grid electricity and make it more affordable for poorer households

ENABLERS

- Productive use of energy study on barriers and opportunities supported by the World Bank
- Solar vendors in Uganda have called on the government to establish a revolving fund to reduce the costs of solar equipment
- Fiscal support for mini-grids is offered through the Rural Electrification Fund
- The World Bank is supporting Uganda on-grid extension and connection

TECHNOLOGY & MARKETS

BARRIERS

- There are many actors, but lack of coordination across the supply chain
- Standardisation of products and services, particularly for clean cookstoves and household solar systems
- Progress on interconnection projects with Kenya and Rwanda has been mixed
- Fears over grid intrusion in mini-grid service areas

ENABLERS

- Numerous associations are operating in the market
- The German EnDev and UNDP are supporting the development of product standards for clean cookstoves and household solar products
- UNREEEA is working with UNBS to develop quality standards across different sub-sectors

INFORMATION & CAPACITY

BARRIERS

- Consumers often do not understand the role of off-grid technologies
- The lack of focus on demand limits the growth of the market for energy-efficient technologies and productive use technologies (PUT)

ENABLERS

- Numerous bilateral and multi-lateral institutions provide capacity building support, including FCDO's Transforming Energy Access (TEA)

Source: CFP team analysis

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

The table below summarises the main conclusions and recommendations that arise from the research presented in this report. They are intended to represent actionable opportunities for parties interested in improving climate finance flows in and to Uganda, and we also propose next steps and potential funding options for such parties.

 SUPPLY CHAIN SUPPORT
CONCLUSION
• There is no sustainable or structured approach to support the operation of an efficient climate finance supply chain
RECOMMENDATIONS
• Support establishment of a support unit for project developers and entrepreneurs to originate projects or business ideas and take them successfully through the climate finance supply chain
SUGGESTED NEXT STEPS
• Development of concept note to outline options for the unit
FUNDING
• Philanthropic, multi-lateral, or bilateral donors (or a combination of these)

 MAPPING OF FINANCE SOURCES AND PROJECT SUPPLY CHAIN
CONCLUSION
• There are gaps across the entire supply chain (see below), especially in project identification and refinance
RECOMMENDATIONS
• Engage with potential financiers across the supply chain to develop a more complete assessment
SUGGESTED NEXT STEPS
• Development of proposals for the revision and regular updating of climate finance landscape mapping
FUNDING
• Philanthropic, multi-lateral, or bilateral donors, or climate funds (e.g. GCF Country Readiness funding)

DEVELOPMENT OF INTERNATIONAL AND DOMESTIC FINANCIAL MARKETS

CONCLUSION

- Domestic markets are developing fast but have limited climate finance capacity

RECOMMENDATIONS

- Technical assistance will be required through a combination of:
  - Knowledge sharing of best practices
  - On-the-job training
  - Development of instruments and asset classes
  - Direct financing
  - Capacity building

SUGGESTED NEXT STEPS

- Revision and validation of barriers and enablers analysis
- Detailed capacity building assessment of financial sector

FUNDING

- Philanthropic, multi-lateral, or bilateral donors, international commercial banks, or climate funds

INSTITUTIONAL CAPACITY BUILDING

CONCLUSION

- Capacity gaps in a range of governmental and non-governmental actors

RECOMMENDATIONS

- Dedicated technical assistance programme, focusing initially on energy and agriculture, to provide capacity building in, among other capabilities:
  - Monitoring and reporting on climate finance
  - Demand-side support to cost-reflectiveness of tariff systems
  - Resource mobilisation for local governments
  - Coordination through partnerships and inter-ministerial committees
  - GCF accreditation in particular for domestic financial institutions

SUGGESTED NEXT STEPS

- Detailed capacity building needs assessment

FUNDING

- Bilateral or multi-lateral sources or climate funds

PIPELINE DEVELOPMENT
CONCLUSION
• There are unfunded opportunities cutting across the energy and agriculture sectors
RECOMMENDATIONS

• Topics that may become bankable projects include:
  • Productive energy use
  • Mini-grid development at scale
  • Collateral, working capital, development finance

SUGGESTED NEXT STEPS
• Identification of a long list and prioritisation through agreed criteria
FUNDING
• A multitude of blended finance options for donor, concessional, and commercial finance providers

Source: CFP team analysis

MAPPING OF FINANCE SOURCES AND PROJECT SUPPLY CHAIN

Using the climate finance supply chain concept as its base, the table below indicatively maps the existing resources available and identifies gaps in the current operation of the chain in terms of the various kinds of finance that need to be present at each stage of the chain in order for it to function effectively.

Green dots indicate that a particular type of finance is relevant to the respective stage and is available to at least some degree, while red dots indicate major gaps in what is required. Amber indicates there is still significant room to increase levels of finance/support from current levels, or that pipeline is not available (for example for institutional investors). Where a cell is empty, the type of finance is not considered relevant either to the stage in the supply chain or to the type of institution represented in the cell.

The purpose of the table is to indicate quickly where providers of different types of finance may wish to focus their analysis of what new or additional resources they may be able to provide. As recommended above, our initial mapping should be taken to a further level of detail in order to be more complete.

Mapping of finance sources and project supply chain

CATEGORIES			PROJECT SUPPLY CHAIN			
			Identification	Development	Primary finance	Refinance
Sources	Climate funds	International	●	●	●	
	Multilateral institutions		●	●	●	
	Bilateral development partners		●	●	●	
	FDI				●	
	Commercial banks			●	●	
	Institutional investors				●	●
	Private equity and venture capital			●	●	
	Impact funds			●	●	
	NGOs and philanthropic organisations		●	●	●	
	Government budget	Domestic			●	
	Commercial Banks		●	●	●	●
	Microfinance and credit institutions			●	●	

CATEGORIES		PROJECT SUPPLY CHAIN			
		Identification	Development	Primary finance	Refinance
Instruments	Company balance sheets		●	●	
	Bank loans/project finance		●	●	●
	Structured finance			●	●
	Bonds/green bonds			●	●
	Institutional investments			●	●
	Specialist sector finance		●	●	●
	De-risking products		●	●	
	Microfinance		●	●	
	Concessional finance		●	●	
	Grants	●	●	● (co-finance)	

Source: CFP team analysis

- ● = Relevant, available
- ● = Relevant, partially available
- ● = Relevant, significant gap

TABLE OF CONTENTS

1. INTRODUCTION

1.1 THE CLIMATE FINANCE PATHFINDER (CFP)

CFP is designed to assist low and lower middle-income countries to develop strategies for accessing finance for projects related to their NDCs under the Paris Agreement and other low-carbon and development policies. The Pathfinder process involves a detailed country-level mapping, including of climate finance priorities and sources, institutional arrangements, and project case studies, leading to recommendations on what steps the country might take to attract increased climate finance flows, especially of private and blended finance. The CFP also aims to identify initial potential project pipelines in key sectors identified within the country's NDC.

CFP has been funded by RBF. It is developed and implemented by a team of international climate finance experts in alliance with local partners. Initial pilot assessments are being undertaken in Ethiopia and Uganda (both 2020). In addition, a detailed climate finance mapping was conducted in Nigeria in 2019, also with RBF funding.

The CFP process consists of three stages.

1. INITIAL RESEARCH AND COUNTRY SCOPING VISIT

An initial desk review was conducted to validate publicly available information on the NDC and other climate and LCE ambitions and policies. This also identified key sectors in the economy with particular relevance to the NDC, including the make-up of local capital markets and the availability of development and philanthropic finance (including official development assistance), the enabling environment for likely priority sectors (such as energy and agriculture), and the main risks and constraints associated with the country.

Following short initial visits to establish key relationships, a local partner consultant was identified in each country with significant expertise in climate policy and finance. The main role of this partner has been to help set up and conduct interviews with local experts and policy makers. An initial country scoping report was prepared, capturing the information gathered during this first phase of the project.

2. IN-DEPTH IN-COUNTRY ASSESSMENT AND RECOMMENDED APPROACH

The original CFP methodology foresees a second stage of the process comprising a longer visit to the country, assisted by local partner(s), to engage with and conduct interviews with a variety of stakeholders, including government agencies, development finance institutions (DFIs), multilateral development banks, commercial bank private equity funds, and relevant private sector businesses.

These interviews focus on barriers to and enablers of climate finance, such as:

- The nature and finance-readiness of potential project pipelines
- Risk appetite and awareness of climate finance modalities among finance providers of various kinds
- Delivery capacity of institutions and markets; and
- Levels of government interest in, and commitment to, improving the enabling environment in response to the unique needs of typical NDC-aligned projects

Due to the COVID-19 pandemic, with significant travel restrictions in place, these in-country stakeholder interviews had to be conducted remotely. However, apart from the missed opportunity of establishing face-to-face relationships, the quality of the dialogue and information gathering was unaffected.

Desk and interview research have been brought together and analysed in the present report for each country.
The agriculture and energy sectors were identified from the initial research as key to Uganda's economy in the context of climate change. The same methodology as used in this report could be employed to analyse other sectors.

3. DISSEMINATION

This report will be suitably disseminated to external stakeholders, including by means of webinars and other remote means.

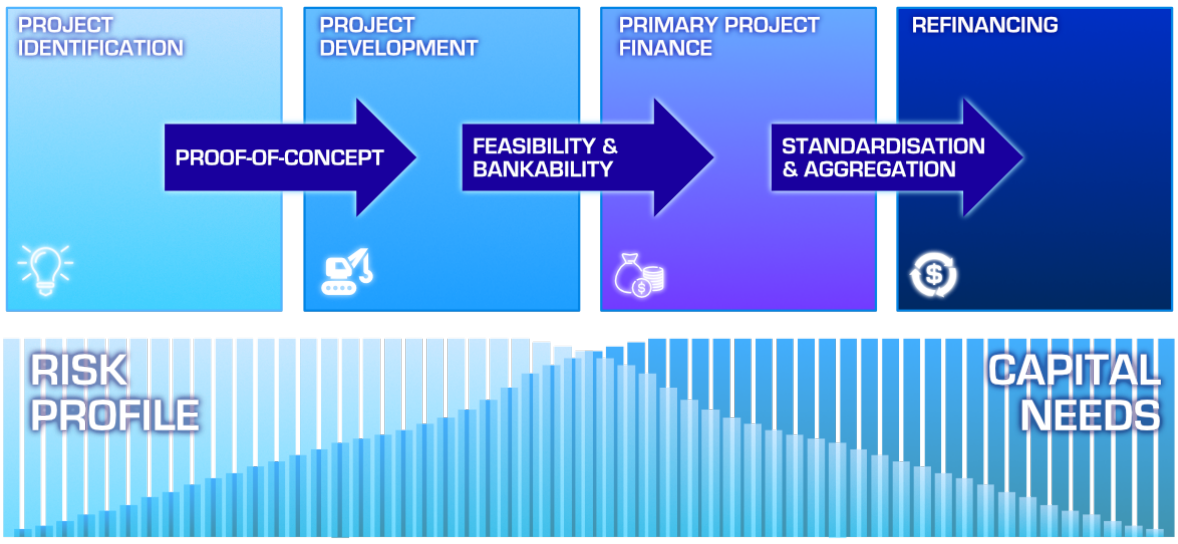
1.2 THE CLIMATE FINANCE 'SUPPLY CHAIN'

A key concept in the CFP approach is that there is an identifiable supply chain for climate-related projects, comprised of four main components:

- The **identification** of projects that will help meet a country's NDC and development goals
- The **development** of project concepts into investable proposals
- **Primary financing** of these projects, wherever possible, in local capital markets; and
- **Refinancing** of them, where suitable, in international markets (e.g. via green bonds)

The risk profile and capital needs of projects are inversely proportional as they proceed along the chain. Proof of concept will be required to move from project identification to development, feasibility, and bankability to primary project finance and standardisation and aggregation to facilitate refinancing.

The climate finance supply chain



Source: CFP team analysis

To work efficiently, projects need access to appropriate finance sources at different stages, for example:

- Grants for technical assistance at the project identification and development stages
- Equity at the project development stage; and
- Guarantees for commercial finance at the primary finance stage

An efficient supply chain should deliver a reliable stock of investable projects to local and international finance providers, which is essential if flows of climate and blended finance are to be radically accelerated over the coming decade. However, in many countries, the supply chain has bottlenecks which need to be addressed.

Typically, key challenges include:

- Finance providers and climate policy makers having limited understanding of each other's approaches, terminology, and requirements, resulting in insufficient collaboration between them and a 'siloed' way of working
- Project developers not having an awareness of appropriate kinds of finance for different stages of a project's lifecycle and/or an inability to access the right finance at the right time; and
- Challenges in convening the necessary actors to create the complex financial instruments and structures needed to de-risk low-carbon projects and to attract commercial finance, particularly in emerging economies

1.3 STRUCTURE OF THIS REPORT

After this introduction, this report is structured as follows:

- **Section 2** contains a country profile of Uganda, covering its topography and demography, political and legal systems, and economy
- **Section 3** presents Uganda's climate change profile, strategies, and institutions, with particular focus on the NDC
- **Section 4** illustrates the climate finance landscape, including international and domestic sources of finance
- **Section 5** contains barriers and enablers for finance access and mobilisation across (i) policy and regulatory; (ii) finance and economics; (iii) technology and markets; (iv) information and capacity; and (v) social, cultural, and behavioural
- **Section 6** presents a 'deep dive' into energy and agriculture, priority sectors for development, and climate change in Uganda
- **Section 7** provides concluding remarks and recommendations; and
- The Annexes contain additional details relating to renewable energy sub-sectors and a list of institutions interviewed

2. COUNTRY PROFILE

Photo Credit: Hassan Omar Wamwayi

2.1 TOPOGRAPHY AND DEMOGRAPHY

Uganda is a country in East Africa whose capital city is Kampala. Situated on the equator, it is bordered by South Sudan (to the north), the Democratic Republic of Congo (to the west), Kenya (to the east), and Rwanda and Tanzania (to the south). As a landlocked country it depends on its relations with Kenya and Tanzania for access to the sea.

Figure 1 Map of Uganda

Source: Shutterstock

Uganda occupies an area of 241,038 square kilometres, with almost a third of this being comprised of water bodies and wetlands. There are 69 lakes in the country, the largest of which, Lake Victoria, is the source of the White Nile. Most of the country consists of a plateau ranging between 800 metres to 2,000 metres in height. The highest points in the country are the Rwenzori Mountains in the west (5,109 metres) and Mount Elgon in the east (4,321 metres). The Rift Valley runs from north to south through the western half of the country.

Uganda's population is 42.7 million (based on most recent figures from 2018). Uganda is an ethnically diverse nation, with 65 indigenous communities already recognised under the constitution and further communities seeking that same status. With an annual growth rate of over 3%, its population is projected to reach 100 million people by 2050. Currently, 75.6% of Uganda's population lives in rural areas, but the rate of urbanisation is above 5%.[12] Uganda is a young country, with 68.8% of its population being under the age of 25.[13]

2.2 POLITICAL STRUCTURE AND LEGAL SYSTEM

2.2.1 POLITICAL STRUCTURE

Uganda has been a republic since gaining independence in October 1962. The President is both head of state and head of the government. The current President is Yoweri Museveni of the National Resistance Movement (NRM), who came to power in January 1986. The country operates a multi-party system with general elections for presidency and national assembly held every five years: the next are due to be held in January or February 2021. Presidential term limits were abolished in 2005.[14]

The current constitution, which has been in place since 1995, established Uganda as a republic with executive, legislative, and judicial branches. The roles and powers of each branch are enshrined and spelled out in the constitution. The branches operate as follows.

- The executive branch is headed by the President and deputised by the Vice President when required. The Prime Minister and cabinet ministers are also members of the executive
- Parliament is the legislative arm of the government. There are currently 427 seats (290 constituency representatives, 112 women representatives, 10 representatives from the Uganda People's Defence Force, five workers' representatives, five youth representatives, and five representatives for persons with disabilities). Members are mostly elected by ballot, except for a few special interest groups (including army workers and the disabled) whose representatives are elected by electoral colleges; and
- The judiciary is responsible for interpreting and applying the law. It is formed of the various courts of judicature—including the Magisterial Courts, the High Court, the Court of Appeal, and the Supreme Court—which are independent of the other arms of government. The judiciary is headed by the Chief Justice. Judges for the High Court are appointed by the President; judges for the Court of Appeal are appointed by the President and approved by the legislature.[15]

[12] World Bank, Uganda Overview, available from https://www.worldbank.org/en/country/uganda/overview.
[13] World Bank Data, Uganda.
[14] The Commonwealth, https://thecommonwealth.org/our-member-countries/uganda/constitution-politics.
[15] Mahuro and Matte (April 2020).

2.2.2 LEGAL SYSTEM AND ADMINISTRATION

Uganda's legal system is based on English common law and customary law. Customary law, however, is only effective to the extent that it does not contravene and is in accordance with statutory law.[16]

Administratively, Uganda is comprised of more than 130 districts (divided among four administrative regions) and the capital city, Kampala.

Uganda introduced the **Decentralisation Policy** in 1997 under the Local Government Act of that year.[17] The goal of the policy is to create more democratic governance, to be responsive and accountable to the public, to introduce local choices into the delivery of services to create a sense of local ownership, and to promote capacity building at a local level.

Results in terms of attaining the objectives of decentralisation are mixed. While decentralisation has generally resulted in greater participation and control over service delivery and governance by local communities, local governments are still grappling with a range of challenges, including:

- Inadequate local financial resources and over-reliance on conditional central government grants
- Inability to attract and retain sufficient trained and experienced staff; and
- Corruption, nepotism, and elite capture

A recent study of decentralisation in Uganda found an urgent need to increase capacity of both the Ministry of Local Government and local governments, particularly so as to improve resource mobilisation to address constraints of underfunding and unfunded mandates.

The study concluded that capacity building initiatives should include:

- Developing strategies and skills for local government managers to engage the private sector, development partners, and civil society organisations; and
- Building robust skills in identifying bankable and sound projects, in order to engage financial markets (in liaison with MoFPED) as a source of alternative financing[18]

In 2005, the Ministry of Local Government launched the National Local Government Capacity Building Policy to harmonise capacity building initiatives for local government. With the support of UNDP, the policy was revised in 2014, with greater focus placed on enhancing the human and institutional capacity of local governments for improved service delivery.[19]

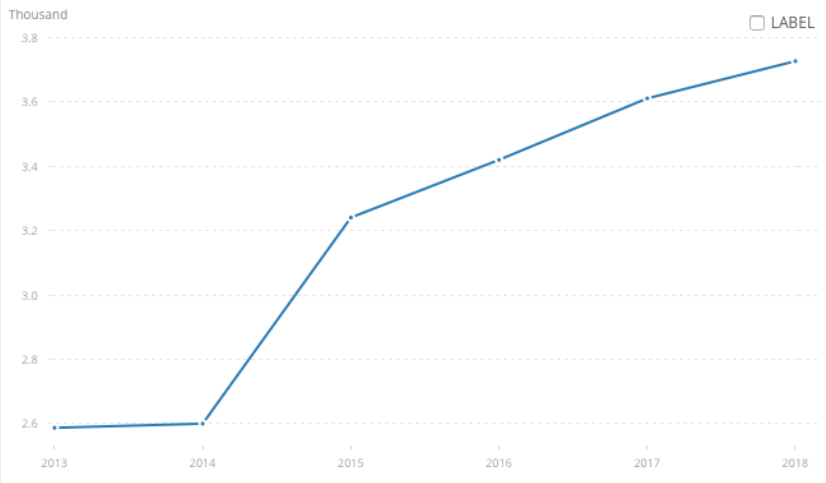
[16] Thompson Reuters Practical Law.
[17] Bashaasha et al. (2011).
[18] Mushemeza (2019).
[19] UNDP (2014), https://www.ug.undp.org/content/uganda/en/home/library/democratic_governance/RevisedNationalLocalGovernmentCapacityBuildingPolicy.html.

2.3 ECONOMY

Table 1 Key economic and financial indicators

Indicator	Value
Population (World Bank)	42,723,139 (in 2018)[20]
Age demographics (CIA)	0–14 years: 47.84% (male 9,753,880/female 9,789,455) 15–24 years: 21.04% (male 4,250,222/female 4,347,313) 25–54 years: 26.52% (male 5,422,096/female 5,412,112) 55–64 years: 2.64% (male 522,637/female 554,287) 65 years and over: 1.96% (male 351,481/female 450,266) (2018 est.)[21]
Urban/rural split and urbanisation rate (CIA)	Urban: 24.4% (2019 data) Rural: 75.6% (2019 data) Urbanisation rate = 5.7% (average based on data from 2015 to 2020)[22]
Key industries/economic sectors (CIA)	Key economic sectors (2017 estimates): • Agriculture (% of GVA): 28.2% • Industry (% of GVA): 21.1% • Services and other activity (% of GVA): 50.7% [23]
Form of government (CIA)	Presidential republic
Credit rating (Standard and Poors (S&P): set on 13 December 2019)	B/B with a stable outlook[24]
GDP (World Bank)	US $27.461 billion (2018)[25]
Competitive Index (WEF)	115/141 countries (2019)[26]
Transparency Index (CPI)	Score: 26/100 (scale 1 (lowest)—100 (highest)) Ranking: 149/180 countries in 2018[27]
Human Development Index	0.528/1 in 2019[28] (scale 0 (lowest)—1 (highest))

[20] World Bank Data (2018) Population, Total, Uganda, Available from: https://data.worldbank.org/country/uganda [accessed 17 January 2020].
[21] Central Intelligence Agency (2018) [accessed on 17 January 2020].
[22] Ibid.
[23] Ibid.
[24] Standard and Poors (S&P) Global (2020) S&P Global Ratings, available from: https://www.standardandpoors.com/en_US/web/guest/ratings/entity/-/org-details/sectorCode/SOV/entityId/460860 [accessed 17 January 2020].
[25] World Bank Data (2018) Uganda GDP, available from: https://data.worldbank.org/country/uganda [accessed 17 January 2020].
[26] Schwab (2019).
[27] Transparency International (2018).
[28] UNDP (2019) Human Development Indicators: Uganda, available from: http://hdr.undp.org/en/countries/profiles/UGA [accessed 17 January 2020].

Currency appreciation/depreciations vs US $, last five years (World Bank)	 The graph shows the official exchange rate for UGX per US $ from 2013 to 2018. The average for 2018 is 3,727.07.[29]
Local currency interbank rate (central bank)	Seven-day interbank rate = 9%[30]
National stock market size	Ugandan Securities Exchange: 18 listed companies[31]

2.3.1 OVERVIEW AND KEY SECTORS

Uganda is endowed with substantial natural resources including oil reserves and small deposits of copper, gold, and other minerals. Fertile soil and regular rainfall create favourable conditions for agriculture. Exports are dominated by primary commodities. Agricultural products comprise the majority, with coffee being the largest single export commodity (16% of annual export revenue). Oil is expected to become a large source of government revenue, with production due to begin in the next 3–10 years.

Despite its bountiful resources, Uganda remains an LDC with a GDP per capita of US $776.[32] Economic growth in Uganda continues to be hampered by a range of challenges, including changing political will; corruption; poor economic management; insufficient investment in health, education, and job creation; weak infrastructure; and regional insecurity—recent instability in South Sudan (one of Uganda's main export markets) has led to a sharp increase of Sudanese refugees in Uganda. Uganda's refugee population has almost tripled since July 2016 and currently stands at about 1.35 million, making it the largest refugee host in Africa and the third largest in the world. While Uganda's open-door and progressive policy on refugees is commendable, the high influx has put a strain on host communities and service delivery.[33]

[29] World Bank Data (2016) Official Exchange Rate (LCU per US $, period average) Uganda, available from: https://data.worldbank.org/indicator/PA.NUS.FCRF?end=2018&locations=UG&start=2013&view=chart [accessed 17 January 2020].
[30] Central Bank of Uganda (2020), available from: https://www.bou.or.ug/bou/bouwebsite/BOU-HOME [accessed 13 February 2020].
[31] Uganda Securities Exchange, https://www.use.or.ug/content/listed-securities.
[32] World Bank Development Indicators (2018), available from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=UG [accessed 30 March 2020].
[33] World Bank, Uganda Overview.

The central bank (BoU) is working to lower the interest rates in an ongoing effort to stimulate economic growth, but experts consider this challenging.[34, 35] According to the Uganda Bankers Association, commercial bank interest rates currently average 20%.[36]

According to the IMF, Uganda nominal debt as a percentage of GDP stands at 48%, which the IMF considers a low risk for debt distress. Total debt in February 2020 stood at US $13 billion (UGX 48 trillion, of which 17.4 trillion is held domestically).[37] Government debt is largely held by multi-lateral lenders, such as the World Bank and AfDB, as well as commercial banks, such as Stanbic. According to news reports, China is Uganda's principal commercial borrower, at about 75%, followed by France, the United Kingdom, and Japan.

Since Financial Year (FY) 2008/09, the central bank has accrued over UGX 2 trillion in losses, in part as a result of the collapse of seven commercial banks. It has therefore turned to the government for recapitalisation. The impact of COVID-19 on the economy has been a slight appreciation of the currency against the dollar due to low demand for foreign currency and a significant slowing down of the economy.

Uganda has made significant gains in poverty reduction in the last few decades. The percentage of Uganda's population at or below national poverty lines has fallen from 56.4% in 1992 to 21.4% in 2016.[38]

The main driver of these gains has been improved performance of the agricultural sector. However, vulnerability to external shocks (including food insecurity and climate change) remains high and progress has stalled in recent years.[39] With Uganda needing to create 600,000 jobs per year to match annual population growth of over 3%, growth needs to become more inclusive.

Agriculture (particularly smallholder farming) remains a vital part of the economy, employing over 70% of the country's workforce. However, the contribution of the agriculture sector as a percentage of GDP has persistently declined since the NRM has been in office. In 1987, the GDP share of agriculture, forestry, and fishing was 54.7%, but this figure had declined to 24.2% by 2018.[40] This sharp decline in the share of agriculture represents a significant structural

[34] For up-to-date interest and inflation rates, see https://www.bou.or.ug/bou/bouwebsite/BOU-HOME.
[35] For the latest official statement on the state of the Uganda economy, see https://www.bou.or.ug/bou/bouwebsite/bouwebsitecontent/publications/StateofEconomy/publications/StateOfEconomyReports/2020/Sep/State-of-the-Economy-September-2020.pdf.
[36] Interview with Uganda Bankers Association by Nation Media, February 2020. For the 01 July 2020 list of licensed commercial banks, see https://www.bou.or.ug/bou/bouwebsite/bouwebsitecontent/Supervision/Supervised_Institutions/Supervision/financial_institutions/2020/Jul/BANK-OF-UGANDA-SFIs-AS-AT-JUNE-30-2020_07-10-2020-3.pdf.
[37] 'The total public debt stock stood at UGX 56,526.2 billion, 40.8% of GDP, as at end June 2020 which is an increase of 20.5% relative to June 2019. The increase between June 2019 and June 2020 was mainly due to a UGX 6,362.3 billion increase in external debt largely attributed to borrowings from the IMF, the Trade and Development Bank, and Stanbic Bank towards countering the economic distress brought about by the COVID-19 pandemic. Public external debt continued to maintain the dominant share of 66.2% of the total public debt. External and domestic debt increased by 18.0% and 19.4%, respectively in FY 2019/20.' Source: see Footnote 81.
[38] World Bank Data [accessed 05 October 2020]. The World Bank uses the concept of poverty lines to quantify the percentage of the population living in poverty in a particular country. While countries typically define their national poverty lines, the international extreme poverty line (based on the lines of a group of the poorest countries) is currently US $1.90 per day.
[39] World Bank, Uganda Overview.
[40] World Bank Data [accessed 06 June 2020].

transformation in Uganda, highlighted by a shift in economic activity to the service and industry sectors.

Despite this shift, Uganda's industrial sector remains relatively small in comparison with other neighbouring countries, with productivity hampered by a number of supply-side constraints, including insufficient infrastructure, lack of modern technology in agriculture, and corruption. Uganda depends on imported inputs such as refined oil and machinery.

While the rate of electrification has increased in recent years, levels are still relatively low: based on World Bank data from 2018, only 42.6% of Ugandans have access to electricity, with this figure dropping to 38% in rural areas. This is up from national levels of 18% and rural rates of 9% in 2015.[41]

The government has scaled up infrastructure investment in recent years, with investment reaching 8.9% of GDP in FY 2017/18.[42] Uganda's budget is dominated by energy and road infrastructure spending, but the country relies on donor support for long-term drivers of growth (including agriculture, health, and education). The largest infrastructure projects are externally financed through concessional loans but at inflated costs.

Even though public debt has grown, Uganda remains at low risk of debt distress. The main risks to economic outlook are unfavourable weather conditions, domestic and regional political tensions, and further delays in the start of oil production (although there is no clarity on why this delay is occurring, nor is there a clear way to address the challenge).

2.3.2 COVID-19

Uganda's economy had continued to recover in the last few years, driven by a rebound in agriculture and a strong services sector. The IMF predicted an increase of 6% for FY 2019/20.[43]

However, the impact of the COVID-19 pandemic is expected to hit the Ugandan economy severely and through a number channels, with detrimental effects on economic activity and social indicators. The sectors likely to be most hard-hit are services (tourism), transport, construction, manufacturing, and agriculture. The pandemic has also exacerbated the challenges posed by heavy rains early in 2020 and the locust invasion, both of which have severely impacted agricultural production.

In the energy sector, COVID-19 is likely to have a negative impact on the growth that the off-grid sector has attained over the past decade. Mini-grid projects and pilots of PUTs and solar home systems (SHS) have been delayed or put on hold due to restrictions on movement. Declines in sales and delays in customer payments are likely, with the closure of some businesses also a possibility.

Businesses will require short-term, interest-free debt with extended grace periods and technical assistance with adapting business models to deal with the impact from the pandemic and to better manage cash flows.

[41] World Bank Data [accessed 05 October 2020].
[42] IMF (May 2019).
[43] IMF (03 February 2020).

The pandemic has resulted in a reduction of funding, with many investors being sceptical of making new investments and sticking to existing portfolios or financing already committed. A number of development partners are considering the use of relief funds to support businesses, with funding likely to be repurposed for use in such funds. For example, the Energy Access Relief Fund has been launched to support business survival and to bridge funding gaps. [44]

To contain the impact of the pandemic, Ugandan authorities have increased health spending, strengthened social protection to the most vulnerable, and enhanced their support to the private sector. BoU has appropriately reduced interest rates and provided liquidity to safeguard financial stability, while maintaining exchange rate flexibility. However, Uganda's external and fiscal accounts are expected to deteriorate, creating urgent external and fiscal financing needs. To address these urgent balance of payment and fiscal gaps, the IMF has provided emergency funding of US $491.5 million to Uganda under the Rapid Credit Facility.[45]

2.3.3 ECONOMIC POLICIES AND STRATEGIES

Uganda's Vision 2040 strategy was launched in 2013 with the goal of a 'transformed Ugandan society from a peasant to a modern prosperous country within 30 years'. Vision 2040 builds on progress that has been made in addressing strategic bottlenecks that have constrained Uganda's socioeconomic development since independence, including ideological disorientation, a weak private sector, underdeveloped human resources, inadequate infrastructure, a small market, lack of industrialisation, an underdeveloped services sector, underdevelopment of agriculture, and poor democracy.

It is conceptualised around strengthening the fundamentals of the economy to harness the abundant opportunities around the country. The opportunities include oil and gas, tourism, minerals, ICT business, an abundant labour force, geographical location and trade, water resources, industrialisation, and agriculture. The fundamentals include infrastructure for energy, transport, water, oil and gas.

Implementation of Vision 2040 is to be achieved through a series of five-year National Development Plans. The second National Development Plan is currently being implemented, with the third due to commence in 2021.

[44] Uganda Off-Grid Energy Market Accelerator (2020).
[45] IMF (06 May 2020).

3. CLIMATE CHANGE PROFILE, STRATEGIES, AND INSTITUTIONS

Photo Credit: Harvey Sapir

3.1 CLIMATE CHANGE VULNERABILITY AND IMPACTS

Situated on the equator, Uganda has a tropical climate. Temperatures and rainfall vary throughout the country. Average temperatures range between 18°C and 28°C. Most of the country receives 100 centimetres of rain each year, except for the north of the country, which is drier.

Uganda is one of the lowest GHG emitters in the world, with per capita emissions of 1.39 tons of carbon dioxide (compared with a global average of 7.99 tons). Despite its comparatively low emission levels, Uganda is at high risk of the negative impacts of climate change. Since 1960 average temperatures have risen by 1.3°C and seasonal rainfall has decreased significantly. Extreme weather events such as droughts, floods, and landslides are increasing in frequency and intensity.

Climate projections for Uganda (developed using models in the Intergovernmental Panel on Climate Change Fifth Assessment Report) indicate an increase in near-surface temperature for the country in the order of +2°C in the next 50 years, and in the order of +2.5°C in the next 80 years under Representative Concentration Pathway (RCP) 4.5; in the order of +2.5°C in the next 50 years; and in the order of +4.5°C in the next 80 years under RCP 8.5. They also predict a slight decrease in total annual rainfall in most of the country, with slightly wetter conditions over the west and northwest under both RCP 4.5 and RCP 8.5. Rainfall totals may drop significantly over Lake Victoria (-20% from present).

Climate change is predicted to have a significant economic impact on Uganda, with the sectors most affected being agriculture, water, energy, and transport. National-level studies indicate that, if no adaptive action is taken, annual costs could be in the range of US $3.2–US $5.9 billion by 2025—approximately 10% of GDP. The cost of inaction in the decades up to 2050 are estimated to be between US $273 billion and US $437 billion.[46]

[46] Ministry of Water and Environment (2015).

Climate change and weather variability is already affecting the country, with the rural poor and those living in slums being the most vulnerable as they have limited capacity to cope with and adapt to the impacts of climate change. The protection of vulnerable groups, including women, is a cross-cutting priority within Uganda's NDC.

3.2 CLIMATE CHANGE POLICIES AND STRATEGIES

Management of the environment and sustainable development is enshrined in Uganda's constitution. Article 39 of the constitution states that 'every Ugandan has a right to a clean and healthy environment'. Article 245 states that 'Parliament shall, by law, provide for measures intended: (a) to protect and preserve the environment from abuse, pollution and degradation; (b) to manage the environment for sustainable development; and (c) to promote environmental awareness'.

Through signing and ratifying both the UNFCCC and the Kyoto Protocol, Uganda has committed to the adoption and implementation of policies and measures designed to mitigate climate change and adapt to its impact. Uganda ratified the Paris Agreement on 21 September 2016.

Both Vision 2040 and Uganda's five-year National Development Plan (2016–2021) recognise that addressing the challenges of climate change is crucial to achieving sustainable economic and social development.

The Ugandan MoWE (with support from the governments of Belgium, Denmark, and the United Kingdom) has developed the Uganda NCCP, which is intended to guide all climate change activities and interventions in the country.

3.2.1 NCCP

Uganda's NCCP was approved on 01 April 2015. The NCCP and its accompanying costed implementation strategy are intended to guide all climate change activities and interventions in the country. The goal of the policy is to ensure a harmonised and coordinated approach towards a climate-resilient and low-carbon development path for sustainable development in Uganda.

The policy provides direction to all sectors that are affected by climate change in facilitating adaptation and mitigation and to strengthen coordination of efforts across sectors to build an overarching national development process that is more resilient. Specifically, the policy aims to:

- Reduce the country's vulnerability to climate change impacts by adjusting to and managing the projected impacts of climate change on the nation
- Address the challenges brought about by extreme weather events such as increased warming, droughts, unpredictable rainfall patterns, floods, and storms
- Increase the resilience of the economy and allow the economy to benefit from opportunities brought about by climate change
- Provide guidance for how Uganda can develop sustainably, while also producing less GHG; and
- Set up an institutional arrangement to ensure Uganda can adequately respond to climate change[47]

[47] Ibid.

3.3 UGANDA'S NDC

Uganda's Initial NDC (2015 NDC) focuses on promoting a low-carbon development pathway while at the same time reducing the vulnerability of its population, environment, and economy by implementing measures and policies that build resilience.

3.3.1 ADAPTATION

Given its comparatively low levels of GHG emissions, Uganda's NDC prioritises adaptation. The country focuses on reducing vulnerability and addressing adaptation in agriculture and livestock, forestry, infrastructure, water, energy, and health. Disaster risk management is a cross-cutting issue. Sustainable land management and CSA will be scaled up to increase resilience at a grassroots level.

Adaptation policy priorities highlighted within the NDC are summarised in Table 2.

Table 2 Adaptation priorities in NDC

AGRICULTURE
PRIORITIES
• Expanding extension services • Expanding climate information and early warning systems • Expanding CSA • Expanding diversification of crops and livestock • Expanding value addition, post-harvest handling and storage, and access to markets, including microfinances • Expanding rangeland management • Expanding small-scale water infrastructure • Expanding research on climate-resilient crops and animal breeds • Extend electricity to rural areas or expanding the use of off-grid solar system to support value addition and irrigation

FORESTRY
PRIORITIES
• Promoting intensified and sustained forest restoration efforts (afforestation and reforestation programmes, including in urban areas) • Promoting biodiversity and watershed conservation (including the re-establishment of wildlife corridors) • Encouraging agro-forestry • Encouraging efficient biomass energy production and utilisation technologies

WATER

PRIORITIES

- Improving water efficiency
- Ensuring water supply to key economic sectors, especially agriculture, and domestic use, including water harvesting and storage
- Managing water resource systems, including wetlands, particularly in cities, in such a way that floods are prevented and existing resources conserved (through the establishment of an Integrated Water Resources Management system)
- Extending electricity or expanding use of off-grid solar system to support water supply

INFRASTRUCTURE
INCLUDING HUMAN SETTLEMENTS, SOCIAL INFRASTRUCTURE, AND TRANSPORT)

PRIORITIES

- Ensuring that land use plans and building codes reflect the need to make public and private buildings more climate-resilient
- Investing in making existing and new buildings more resilient
- Updating transport codes and regulations and implementing measures to ensure compliance with them
- Updating of risk assessment guidelines
- Improving water catchment protection

ENERGY

PRIORITIES

- Increasing the efficiency in the use of biomass in the traditional energy sector
- Promoting renewable energy and other energy sources
- Increasing the energy efficiency in the modern energy sector, mainly of electricity
- Ensuring the best use of hydropower by careful management of the water resources
- Climate proofing investments in the electricity power sector

HEALTH
PRIORITIES
• Conducting vulnerability assessments of the health sector to climate change impacts • Assessing the impacts of climate change on human health and wellbeing • Improving early warning systems for disease outbreaks • Putting in place contingency plans to develop climate change-resilient health systems • Strengthening public health systems by building hospitals (including regional referral hospitals) and supplying them with medicine, equipment, and well-trained personnel • Making provision for a safe water chain and sanitation facilities to limit outbreaks of water-borne diseases and implement strong public awareness programmes to promote better hygiene

RISK MANAGEMENT PARTICULARLY IN URBAN AREAS
PRIORITIES
• Mainstreaming climate resilience in all sectors • Developing vulnerability risk mapping based on better data on climate change impacts at sectoral and regional level • Identifying better drainage plans • Building more effective early warning systems • Improving emergency-related institutions and establishing a contingency fund to take care of emergency needs following an extreme climate event

Source: Uganda NDC (2016)

3.3.2 MITIGATION

Uganda's NDC targets an emissions reduction of 22% from BAU estimates by 2030. Projected emissions for 2030 under a BAU scenario would be 77.3 million tons CO_2 per year. Mitigation policy priorities highlighted in the NDC are presented in

Table 3.

Table 3 Mitigation priorities in NDC

ENERGY
PRIORITIES
• Construction of enabling infrastructure for electricity sector development, including power lines, substations, and transmission facilities (Development of the electricity sector holds great mitigation potential for Uganda due to the potential offsetting of wood and charcoal burning and the consequential deforestation) • Achieve a total of at least 3,200 MW renewable electricity generation capacity by 2030, up from 729 MW in 2013

WETLANDS
PRIORITIES

• Development of enabling environment for wetland management, including:
  ○ Creation of national information database through re-inventory and assessment of all wetlands
  ○ Design and implementation of 11 RAMSAR site wetland research, eco-tourism, and education centres. The RAMSAR convention is an intergovernmental treaty adopted in the Iranian city of Ramsar, and which provides the framework for wise use of wetland and other resources
  ○ Design and implementation of 111 district wetland action plans, with carbon sink potential
  ○ Design and implementation of 15 RAMSAR sites and framework wetland management plans
  ○ Demarcation and gazettement of 20 critical and vital wetland systems and their maintenance country wide as carbon sink
  ○ Wetlands law enforcement and governance
  ○ Strengthening wetland management institutions responsible for wetlands management and conservation
• Increase wetland coverage to 12% by 2030 from approximately 10.9% in 2014, through demarcation, gazettement, and restoration of degraded wetlands

FORESTRY
PRIORITIES

• Development of enabling environment forestry management, including:
  ○ Community forest management groups
  ○ Forest law enforcement and governance
  ○ Strengthening forest institutions responsible for forest management and development
• Reverse deforestation trend to increase forest cover to 21% in 2030 from approximately 14% in 2013, through forest protection, afforestation, and sustainable biomass production measures

Source: Uganda NDC (2016)

3.3.3 UGANDA'S NDC PARTNERSHIP PLAN

Uganda was one of the first African countries to join the NDC Partnership. In June 2018, the Government of Uganda released the Uganda NDC Partnership Plan to complement existing climate plans and policies and the country's NDC under the Paris Agreement. The Partnership Plan focuses on five priority areas set by the government for the implementation of its NDC:

- Strengthened operational and gender-responsive policy and institutional frameworks for effective climate governance
- Increased climate financing
- Effective and institutionalised monitoring, reporting, and verification systems to monitor emissions and gender-responsive adaptation measures
- Strengthened capacity of stakeholders to integrate NDC and Sustainable Development Goal commitments with a gender perspective into programmes; and
- Accelerated project financing for NDC implementation

To achieve these priorities, the plan identifies 49 activities to be implemented in the three years following June 2018 (when the NDC Partnership Plan was announced). The 49 activities include enacting a legal framework for climate action; developing a pipeline of investment-ready projects for funding; establishing and strengthening climate funding mechanisms; modelling national temperature, precipitation, and extreme event scenarios; and developing a national GHG inventory system.[48]

3.4 INSTITUTIONS RESPONSIBLE FOR IMPLEMENTATION OF UGANDA'S NCCP AND NDC

The NCCP indicates that a number of institutions are tasked with its implementation. The responsibilities of these institutions are summarised below.

[48] NDC Partnership (26 June 2018).

CCD IN MOWE

CCD was established within MoWE following approval of the NCCP.

Given the cross-sectoral nature of climate change interventions and the broad functions and tasks under the mandate of CCD, strategic frameworks have been created as follows.

a) The Climate Change Policy Committee (CCPC)
The CCPC, chaired by the Permanent Secretary of MoWE, has 14 members from various public and private institutions. The CCD Commissioner is the secretary to the committee. The main functions of the CCPC are:

- To offer policy guidance to the Ministers of Water and Environment on matters related to Climate Change
- To assist the Minister of Water and Environment to take decisions on carbon finance activities in her capacity as the CDM Designated National Authority for Uganda; and
- To re-constitute themselves into a Project Steering Committee to guide implementation of climate change projects in the ministry

b) The Inter-institutional Climate Change Technical Committee (ICCTC)
The ICCTC is constituted of Climate Change Desk Officers from various public and private institutions. It is designed to bridge the gap between CCD and other relevant institutions by facilitating the exchange of information.

It also assists with technical activities including climate change project development and reviews. Current priorities are:

- Increasing the technical capacity of the CCD, including through increased numbers and skills of personnel, as well as equipping the office and scaled-up facilitation of operations
- Development of a climate change policy and mainstreaming guidelines to facilitate harmonised national action
- Development of climate change awareness-raising materials and the associated strategic awareness creation at all levels (centre, local governments, and community levels)
- Piloting and rolling out National Adaptation Plan of Action (NAPA) implementation; and
- Climate change-related research

MOFPED

- Ensure that national, sectoral, and district budgets and indicative planning figures integrate climate change through appropriate provisions for the implementation of the policy and its strategy
- Review quarterly and semi-annual reports from ministries, departments, and agencies (MDAs) to ensure that resource use is in line with expected and actual progress in implementing policy; and
- Facilitate the introduction of relevant financial mechanisms and tools to the relevant stakeholders to support financial resource mobilisation and investment for the implementation of the policy

NATIONAL PLANNING AUTHORITY

- Ensure that MDAs integrate climate change into their annual work plans; and

- Ensure that the work plans are implemented through a review of quarterly and semi-annual reporting by the MDAs concerned and follow-up actions by the National Planning Authority as needed

MINISTRY OF LOCAL GOVERNMENT

- Provide guidance to the districts to translate the policy priorities and the implementation strategy into coherent plans at the district level
- Ensure that districts make adequate provisions in their development plans, annual plans, and budgets for the implementation of the NCCP; and
- Ensure that districts' plans are acted upon through a review of relevant reports from the districts and with appropriate follow-up actions as required

LOCAL GOVERNMENTS

- While the climate change focal point is anchored within the Natural Resources Department of the District Local Government, all departments will ensure that climate change issues in their sectors are integrated into the District Development Plans. The existing Environment Committee structure at the district level will act as a mechanism to ensure cross-sectoral coordination

4. CLIMATE FINANCE LANDSCAPE IN UGANDA

Photo Credit: Miss Helena

There is currently a significant shortfall between available financing and that which is required to meet Uganda's climate policy objectives.

According to the Strategic Investment Plan for the Water and Environment Sector Uganda (2018–2030), current funding is about UGX 800 billion. The investment plan estimates that, to achieve its policy goals, Uganda will require an annual budget of approximately UGX 7.6 trillion until 2030 (approx. US $1.6 billion)—about nine times the current funding levels.[49]

Additionally, a recent report by Sustainable Energy for All (SE4ALL) found that, to close the energy access gap by 2030, a further US $2.3 billion was required for off-grid electricity (including both mini-grids and standalone systems) and improved cooking solutions (ICS).[50]

4.1 INTERNATIONAL SOURCES OF FINANCE

4.1.1 CLIMATE FUNDS

According to the Overseas Development Institute's Climate Funds Update, the amount of committed funding (as of February 2020) is US $109.81 million, of which US $48.36 million has been disbursed. Of the approved funding, US $89.21 million has been for adaptation projects (with US $35.09 million disbursed).[51]

[49] Industrial Economics and Ministry of Water and Environment (2018).
[50] SE4ALL (October 2019).
[51] Climate Funds Update, https://climatefundsupdate.org. Note: this figure is indicative, as Climate Funds Update do not always cover all the international funding channelled to countries and the database is not updated in real time.

4.1.1.1 GCF

To date, Uganda has benefited from funding for six projects. Of these, one is specific to Uganda:[52]

- Building Resilient Communities, Wetland Ecosystems, and Associated Catchments in Uganda (total US $44.3 million, UNDP)

The multi-country ones include:

- Transforming Financial Systems for Climate (US $766.4 million, AFD)
- Climate Investor One (US $821.5 million, FMO)
- Acumen Resilient Agriculture Fund (ARAF) (US $56 million, Acumen)
- UGEAP (US $301.6 million, Deutsche Bank); and
- Arbaro Fund—Sustainable Forestry Fund (total US $200 million, MUFG)

4.1.1.2 GLOBAL ENVIRONMENT FACILITY (GEF)

The GEF has approved funding of more than US $130 million across 37 national projects (many more multi-country ones), including:[53]

- ERT III
- Integrating Climate Resilience into Agricultural and Pastoral Production in Uganda, through a Farmer/Agro-Pastoralist Field School Approach; and
- Building Resilience to Climate Change in the Water and Sanitation Sectors

4.1.1.3 ADAPTATION FUND

Projects funded include:

- Enhancing resilience of communities to climate change through catchment-based integrated management of water and related resources in Uganda (US $7.5 million); and
- Djibouti, Kenya, Sudan, and Uganda: Strengthening Drought Resilience for Small Holder Farmers and Pastoralists in the IGAD Region (US $13 million)

4.1.2 MULTI-LATERAL INSTITUTIONS

4.1.2.1 EADB

EADB is headquartered in Kampala and its mission is 'to promote sustainable socioeconomic development in East Africa by providing development finance, support and advisory services'. It does so through:

- Financing of projects in all productive sectors of the Member States' economies
- Supplementing the activities of National Development Agencies of the Member States by joint financing operations, technical assistance, and the use of such agencies as channels for financing specific projects; and
- Supporting both public and private sector projects that are professionally run, technically feasible, and financially viable in all the productive sectors of the Member States' economies

To enhance its regional development objective, EADB places emphasis on:

- Projects that have regional orientation (cross-border projects)
- Projects with a comparative advantage in the utilisation of local raw materials in the production of goods for local consumption in the region or for export; and
- Projects that utilise resources common to the Member States

[52] https://www.greenclimate.fund/countries/uganda.
[53] https://www.thegef.org/country/uganda.

Climate change is one of EADB's focus areas, and the bank supports programmes, policies, projects, and technologies towards an LCE.

4.1.2.2 THE WORLD BANK

The World Bank has several active programmes in Uganda, including the following.

- **ERT III**: Implementation of Phase III of the project is currently in progress. Phase III aims to increase access to electricity in rural areas of Uganda. There are three components to the project:
  1. On-grid energy access
  2. Off-grid energy access; and
  3. Institutional strengthening and impact monitoring

The World Bank has a guarantee facility for ERT III, with funding being distributed through UECCC. These guarantees are being used to incentivise commercial banks to lend to businesses operating in the sector. Initially, the guarantees covered both technology and commercial risk, but the commercial risk has been gradually phased out as banks have become more familiar with the sector.

- **ICRP**: The objective of the project is to provide farmers in the project areas with access to irrigation and other agricultural services and to establish management arrangements for irrigation service delivery; and

- **GERP**: The development objective of the project is to increase availability and efficiency of bulk electricity supply in the project areas

4.1.2.3 AFDB

AfDB is active in Uganda in both the energy and agriculture sectors.

In the energy sector, the Bank has provided support on a number of projects (both hydro and other forms of renewable energy). The most significant project to date has been Bujugali.

AfDB has also provided funding for a power interconnection project to connect the Ugandan network with Kenya and Rwanda, as well as US $112 million for off-grid renewable projects.

The Bank develops five-year Country Strategy Papers for each country in which it operates. Uganda's will expire in 2021. The next Country Strategy Paper will run from 2022 to 2026 and will focus on the following three areas:

- Technical assistance and capacity building
- Support for the second phase of the rural electrification programme; and
- Demand-side—management and investment from both the public and private sector

4.1.2.4 GGGI

GGGI's objective in Uganda is to 'support the development of the Uganda Green Growth Development Strategy (UGGDS) and UGGDS Implementation Roadmap, develop a National Green

City Implementation Roadmap and strengthen the capacity of policy makers and stakeholders for green growth planning and implementation'.[54]

Of particular interest is Readiness Support (to strengthen Uganda's engagement with the GCF) and the Uganda Green Investment Facility.

Specifically, GGGI is supporting the Government of Uganda through the following actions:

- Strengthening the coordination of actors in the climate action space, particularly those in MoFPED
- Enhancing stakeholder engagement, also through the updating of Uganda's country programme in alignment with NDCs and government priority areas
- Strengthening MoFPED's relationship with the GCF in addition to seeking GCF accreditation for the Kampala Capital City Authority and UDBL to enable direct access to funding. The government is also considering the establishment of a localised GCF institute (via UDBL) and seeking more access to private sector funding for projects
- Private sector support, including an assessment of private sector climate actors to map challenges and opportunities
- Engaging with local financial institutions to help them develop knowledge and interest in new sectors. For example, GGGI is working with Centenary Bank to try and increase its customer base in the SHS market; and
- GGGI's Green Investment Services team is supporting institutions in mobilising finance for projects (both from the GCF and other sources). In particular, it is providing assistance in developing proposals and financial models. In 2019, the Green Investment Services team developed feasibility studies for two companies involved in solar irrigation, which have gained interest from several DFIs

4.1.2.5 UNDP

Under its NDC Support Programme, UNDP is assisting Uganda in:

- Developing an NDC implementation plan
- Increasing cooperation between MDAs
- Strengthening capacities to access climate finance; and
- Enhancing private sector engagement

4.1.2.6 UNCDF

UNCDF is very active in Uganda engaging both public institutions and SMEs in the agriculture, energy, education, and healthcare sectors. UNCDF's work includes:

- Creating a pipeline of bankable projects for UDBL. UNCDF put out a call for proposals, reviewed these, and then carried out a needs assessment. Once it was confident the opportunity was investment-ready, it was submitted to UDBL
- Through the 'Start and the Clean Start Programmes', UNCDF provides risk capital (performance-based grants) and technical assistance for business readiness to agricultural and renewable energy businesses. In the agriculture sector, it is partnering with UDBL, which provides debt for projects. UNCDF has run multiple Challenge funds since 2015, targeting renewable energy companies with grants and,

[54] https://gggi.org/country/uganda/.

as they grow, graduating them to more sophisticated financing options and debt using its LDC Investment Platform facility; and
- UNCDF is also working on setting up a fund to provide bigger-ticket investments in the form of commercial debt to the supported SMEs as they graduate

4.1.3 BILATERAL DEVELOPMENT PARTNERS

4.1.3.1 UNITED STATES OF AMERICA

The United States Agency for International Development (USAID) Power Africa is supporting a master planning effort for 13 distribution company concessions, identifying opportunities for over 800,000 new on-grid connections and over 400 mini-grid sites. Power Africa is working with financial institutions and concessionaires to mobilise finance, enabling financing across the value chain. It is also helping pilot and roll out new and innovative off-grid product designs and payment platforms, especially those that tap into digital financial services, with the aim of reaching thousands of rural Ugandans with cleaner and productive electricity. To maintain momentum and scale up off-grid solutions, Power Africa and its partners are working to improve and/or create a supporting ecosystem for the off-grid market by launching a market accelerator to spur a vibrant marketplace of enterprises.[55]

The market accelerator focuses on four high-impact initiatives:
1. Scaling access to finance for pay-as-you-go (PAYG) solar, unlocking local debt
2. Assessing unserved populations and analysing opportunities to serve them
3. Evaluating and promoting the ability of PUTs; and
4. Providing support for communication and coordination

Additionally, Power Africa provides support on power sector planning and transaction advisory services to enable power generation projects to reach financial close.

4.1.3.2 UNITED KINGDOM

FCDO (formerly the UK Department for International Development (DFID)) works to increase investment in off-grid energy firms, overcome regulatory barriers, and foster innovation.

TEA is a DFID/FCDO project worth up to £65 million over five years to support early-stage testing and scale up of innovate technologies and business models that will accelerate access to affordable, clean energy services for poor households and enterprises in Africa.

In Uganda, FCDO partnered with USAID and the Shell Foundation to create the Uganda Off-Grid Energy Market Accelerator (UOMA). UOMA activities are implemented by Open Capital Advisors, a management consultancy headquartered in Nairobi, with extensive experience of working with enterprises in the off-grid sector and building markets.

4.1.3.3 GERMANY

GIZ has provided support to both the government and private sector to further advance access and support clean energy. GIZ has provided assistance on a number of projects, including:
- The Promotion of Renewable Energy and Energy Efficiency Programme, including a variety of clean energy technologies and carbon market development support

[55] USAID (updated 16 April 2020) Power Africa Factsheet: Uganda.

- Promotion of Mini-Grids for Rural Electrification in Uganda, improving framework conditions for scaling up private sector investment in renewable energy mini-grid electricity distribution; and
- The programme for climate-smart livestock systems, to improve the resilience of the sub-sector

4.1.3.4 SWEDEN

SIDA supports increased cooperation with the private sector in Uganda, among other priorities. It provides financial guarantees to local banks to increase funding opportunities for private actors. For example, SIDA is providing guarantees of US $7.5 million to Stanbic Bank to incentivise lending in the renewable energy sector in Uganda. The guarantee covers 75% of the risk, with the remaining 25% covered by the bank.[56]

In May 2020, it was announced that BGFA (which is currently active in Zambia) would be launched in Uganda. The facility, which is managed by Nordic Environment Finance Corporation (NEFCO) and implemented by the Renewable Energy and Energy Efficiency Partnership, aims to stimulate the scale up of sustainable business models, which incentivise the private sector to offer affordable and clean off-grid energy access at scale in Uganda. The six-year SEK 130 million (EUR 11.8 million) programme, with initial funding from the Embassy of Sweden in Kampala, expects to allocate results-based capital investment into market expansion made by private sector entities selected through a competitive process in 2021. The programme will also seek to provide local institutional capacity building. BGFA in Uganda will commence with a comprehensive market scoping phase later in 2020, reaching out to interested stakeholders.[57]

4.1.4 FDI

The main contributors to FDI are Kenya, Germany, and Belgium. In 2019, FDI flows to Uganda reached a record high of US $1.3 billion (a 20% increase of US $1 billion in 2018).[58] Continued development of oil fields and an international oil pipeline, as well as infrastructure projects, manufacturing, and agriculture, were the major contributors to this boom. Additionally, regulatory improvements in financial services and privatisation in banking have led to increased levels of FDI.

4.1.5 COMMERCIAL BANKS

International and regional commercial banks operate in Uganda, including Standard Chartered Uganda, Citibank, and Cairo International Bank.

4.1.6 INSTITUTIONAL INVESTORS

4.1.6.1 PENSION FUNDS

As of the end of 2019, there were 67 licenced schemes in Uganda with total assets under management of UGX 15 trillion (approximately US $4 billion). This is a threefold increase since 2014 (when total assets under management were UGX 5 trillion). The National Social Security

[56] SIDA (2019) Guarantee Portfolio.
[57] NEFCO (May 2020)—https://www.nefco.org/news/beyond-the-grid-fund-for-africa-expands-to-uganda/.
[58] UNCTAD.

Fund is the largest scheme in the country, accounting for UGX 13 trillion. The remaining schemes are mainly occupational schemes.[59]

Most of the schemes keep over 3% of their assets in cash and demand deposits. Over 75% of the scheme assets are invested in government securities, while 15% are invested in quoted equities and 7% in immovable property.
To date, there has been little to no interest from pension funds in the clean energy. This is unlikely to change unless such companies become publicly listed—fitting the investment profile that is attractive to pension funds.

4.1.6.2 INSURANCE COMPANIES

All insurance companies in Uganda are regulated by the Insurance Regulatory Authority (IRA). According to the IRA, the gross written premiums for the industry increased from UGX 728.4 billion in 2017 to UGX 856 billion in 2018 (a 17.51% growth), out of which Non-Life Gross Written Premiums contributed UGX 570 billion in 2018 (67%); Life UGX 216.9 billion (25%); and HMOs UGX 69.1 billion (8%). This growth is commendable compared to the growth of 14.75% registered in the corresponding period of 2017.

For the financial year ending December 2018, total investments made by the insurance sector were approximately UGX 47.6 billion, of which 40.8% (about UGX 19.4 billion) was in government securities, while 54.4% (about UGX 25.9 billion) was in term deposits and 4.7% (about UGX 2.2 billion) was in Statutory Security Deposits.[60]

Uganda's insurance sector continues to present increasing amounts of available funding. However, as is the case with pension funds, insurance companies have yet to show an appetite for investing in climate-related companies and projects.

4.1.7 PRIVATE EQUITY AND VENTURE CAPITAL

Uganda has a small private equity market. The business culture in Uganda tends to favour trade finance and debt; Ugandan business people tend to be conservative and generally do not seek equity investment.

The majority of investment activity in East Africa is done from Nairobi.

Pearl Capital Partners currently manages two funds: the Yield Uganda Investment Fund (2017–2027) and the Africa Seed Investment Fund (2010–2021), both of which have a strong focus on agriculture.

In 2014, the government and the European Union launched SMADF. This is a EUR 25 million equity fund which provides support to up to 35 SMEs engaged in agribusiness in Uganda.

Agriculture currently accounts for the majority of venture capital investment in Uganda, but further venture capital and impact funds providing lower financing thresholds are required to bring SMEs into the impact investment pipeline. Investments below the US $100,000 range

[59] Uganda Retirement Benefits Regulatory Authority (August 2020).
[60] Insurance Regulatory Authority of Uganda (2018).

represent the highest financing needs for Uganda's SME sector. However, high costs and perceived risks associated with such SMEs limit the number of funds participating at this level.

4.1.8 IMPACT FUNDS

There are 12 impact investing and venture capital funds with active investments in Uganda. Of these, only three are headquartered in the country. The majority run their East African operations from Nairobi and either provide support remotely or through a smaller local office in Kampala.

Given the relatively small size of the sector, there is a collegiate feel to the ecosystem, which is an important source of pipeline and value during due diligence.[61]

The relative youth of Uganda's impact investing industry means there are few examples of successful exits. Without a successful track record, it can be difficult for fund managers to raise a second fund.

4.1.9 NGOS AND PHILANTHROPIC ORGANISATIONS

There is no official record or database of NGOs or philanthropic organisations, so it is challenging to identify those operating in the climate change sector in Uganda. Examples of these include:

- The Rockefeller Foundation, operating from its regional headquarters in Nairobi
- The Mastercard Foundation, with programmes supporting micro-enterprises and SMEs in the agriculture sector, among others
- The Children's Investment Fund Foundation, also through its support to One Acre Fund to reduce acute food security issues of smallholder farmers; and
- Oxfam Uganda, focusing on resilient livelihoods programmes

4.2 DOMESTIC SOURCES OF FINANCE

4.2.1 GOVERNMENT BUDGET

The government has committed to allocate 10% of the national budget to the agriculture sector. However, it appears that this target has not been met consistently, if at all.

The energy sector is a key focus area for the Government of Uganda. The government increased the percentage of funding allocated to the sector development from 9.4% in FY 2018/19 to 10.4% for FY 2019/20.[62] However, government spending on energy focuses mostly on generation of hydroelectricity, with less than 5% of the energy budget allocated to other alternative energy sources, such as solar. Beyond hydro, most of the funding in the clean energy space comes from private and/or non-government institutions such as development agencies, FDIs, and to a small extent commercial banks.

[61] Global Impact Investing Network (2015).
[62] Uganda Off-Grid Energy Market Accelerator (2020)

4.2.2 COMMERCIAL BANKS

By the close of 2019, there were 26 active commercial banks in Uganda with over 500 branches.[63] According to the Uganda Deposit Protection Fund, the banking industry had an estimated UGX 30.3 trillion (US $8.34 billion) in total assets and UGX 22 trillion (US $6.05 billion) in total deposits spread across 14 million deposit accounts.

Despite its recent growth, Uganda's banking sector remains small in comparison to regional and international standards. Commercial banks in Uganda depend largely on customer deposits to finance their loan book. While they are regulated by BoU, they are free to determine which sectors they want to concentrate their lending.

To date the majority of bank lending has been to the non-traded goods sectors, particularly to construction, telecommunications, and the household sector. The traded goods sectors of the economy, such as agriculture and manufacturing, receive only a small fraction of total bank credit. This is a key limitation of the financial system, given that these sectors are principal drivers of long-term economic growth in Uganda.

Only a handful of financial institutions have created products for sectors with a positive climate impact.

- DFCU is considered to be one of Uganda's most progressive commercial banks in terms of lending to SMEs and agricultural businesses. Shareholders include the United Kingdom's CDC group and Arise (an investment vehicle created by the Netherland's Rabo Development, Norway's NorFinance, and the Dutch development bank FMO)
- In 2017, Stanbic Bank led a US $55 million local currency equivalent debt facility for M-KOPA Solar's activities in Kenya and Uganda. As part of a consortium, Stanbic provided US $9 million, with the remainder provided by CDC (US $20 million), FMO (US $13 million), and Norfund (US $13 million). In the same funding round, M-Kopa secured a further US $25 million in US $ debt from ResponsAbility, Symbiotics, and Triodos Investment Management.[64] Additionally, Stanbic Bank recently set up the Stanbic incubator to provide business development services
- Centenary Bank has a large agricultural finance department with a loan portfolio of US $73 million. Its products cater to the whole agriculture value chain, with clients ranging from smallholders to large producers. Centenary Bank is also setting up an energy department within its SME business section. This will provide finance and support to energy businesses. They also provide consumer finance for solar loans and power connections and currently have a portfolio of about US $160,000
- Post Bank has launched a subsidised solar loan product, with repayment periods of 6–36 months; and
- Finance Trust Bank created renewable energy loan to catalyse investment in solar

[63] Bank of Uganda (2019)
[64] M-Kopa (October 2017).

4.2.3 MFIS AND CREDIT INSTITUTIONS

In Uganda there are both MFIs and credit institutions.

4.2.3.1 MFIS

As of June 2018, there were 117 MFIs in Uganda. Of these, five were deposit-taking institutions, with total assets of UGX 562.2 billion (approximately US $150 million).

MFIs serve rural communities at low-cost and with flexible service delivery and are an important source of finance for SMEs (which constitute over 70% of Ugandan businesses).

Despite the large number of MFIs and the increasing range of products and services, MFIs are limited in their level of financing and do not cater to the needs of SMEs when they begin to require higher levels of financing.[65]

4.2.3.2 CREDIT INSTITUTIONS

There are five credit institutions in Uganda. The total assets held in this sub-sector grew by 56% to UGX 963.0 billion (US $220 million) at the end of June 2019. This growth was partly attributed to the licensing of BRAC Uganda as Tier II financial institution.

4.2.4 UGANDAN STOCK EXCHANGE

Uganda's stock exchange presents equity financing opportunities for Ugandan businesses. Umeme, Stanbic, and Equity Group, among others, are listed, of interest to climate change and energy. However, there are a number of barriers to entry for small businesses. In particular, listing rules regarding disclosure requirements (which require companies to provide credible information to investors) make it difficult for most SMEs to participate and benefit from stock listings.

A potential solution could be the introduction of an alternative market for SMEs, which acts as an 'incubator' for these companies before they list on the main market. A number of African countries, including Rwanda, Botswana, and Ghana, are in the process of introducing measures to bring companies into the formal sector and encouraging them to list on alternative exchanges. This long-term approach would however require significant education and training to companies about financial markets and the benefits of listing.

4.2.5 CARBON MARKETS

Carbon markets are emerging as an additional source of revenue in Uganda. Examples include the following.

- Mandulis Energy sell forward carbon credits (at US $16/ton CO_2) to US-based WREN (a Y-combinator project) into the voluntary offset market to secure early cash flow; and
- UpEnergy have created product subsidies by monetising the reduced carbon output of their fuel-efficient stoves (which is estimated to be approximately three tons of CO_2 per stove per year when compared to traditional cooking methods). At a price of US $4/ton

[65] Musiime, Stanley and Baasha, Davis, Mapping the Impact Investment Space in Uganda, Oxfam Novib Impact Investments.

CO_2 and with a lifespan of five years, US $60 of carbon revenues can be applied to subsidise the cost of a stove that would otherwise retail for between US $30–US $100

There are likely to be further opportunities that have not been exploited because of the level of sophistication needed for transactions. Impact Carbon provides intermediary services linking local producers of cook stoves and household solar products with carbon markets, thereby ultimately helping reduce the cost of such products for consumers.

5. BARRIERS AND ENABLERS FOR CLIMATE FINANCE MOBILISATION

Photo Credit: sweggs

Critical barriers to the access and mobilisation of finance persist. This section contains an overview of the main barriers and enablers, while sector-specific ones are considered in Section 6 of this report.

Under the CFP approach, the analysis of barriers and enablers is subdivided into five categories:

- Policy and regulatory
- Finance and economics
- Technology and markets
- Information and capacity; and
- Social, cultural, and behavioural

5.1 POLICY AND REGULATORY

5.1.1 POLICY

At the broader political level, Uganda has been largely free of armed conflict for the last decade, following the expulsion of the Lord's Resistance Army in 2006. However, there are still occasional incidents of instability at its borders due to ongoing conflicts in neighbouring South Sudan and the Democratic Republic of the Congo.

While the country has remained politically stable for the last few decades, there are lingering questions over who will succeed President Musenvi, who is 75 years old and standing for re-election in 2021 elections and has led the country since 1986.

Several of Uganda's key policies and pieces of legislation recognise the importance of addressing climate change. As a starting point, Uganda's constitution recognises the right of every citizen to a clean and healthy environment and acknowledges the government's legal responsibility to protect and preserve the environment.

The Government of Uganda affirmed this commitment by signing and ratifying UNFCCC, the Kyoto Protocol, and the Paris Agreement.

Both Vision 2040 and Uganda's five-year National Development Plans recognise the importance of addressing climate change to the country's sustainable development.
Frameworks including the NCCP and NDC Partnership Plan have been developed to mainstream climate change activities and interventions in the country.

Despite the consistently strong commitment to addressing climate change displayed in Uganda's policies, a number of policy-related issues have been highlighted in the course of researching this report.

Firstly, the development and approval of policies is a lengthy and arduous process due to high degrees of bureaucracy. For example, the approval of both the draft Energy and Energy Efficiency Bills have been severely delayed.

Secondly, lack of clarity from the government has been cited as a key challenge. For example, the government have been slow to renew the Umeme (energy distribution company) concession, which has caused uncertainty for investors and led to delays in extending and improving the electricity grid.

In terms of policies, some sub-sectors have no policies (such as for mini-grids) or, as with the clean cook stoves sub-sector, have no quality standards, as further illustrated in Section 6.2.5. When such gaps are recognised, policy reviews have been instituted, but the studies take a long time to be developed and published. Even when policies are available, implementation is challenging for a number of capacity and finance reasons.

Thirdly and finally, several interviewees indicated that climate action on its own is not a top government priority, for a number of reasons. There are limited budgetary allocations and the decline in economic growth due to COVID-19 is likely to make funding constraints a more acute issue. Also, climate action is often not part of the key performance indicators of departments or officials, so they are not held accountable for progress.

5.1.2 REGULATIONS

Despite recent improvements, Uganda remains a challenging place to do business, as reflected in its low ranking (116th out of 190 countries) in the World Bank's Doing Business Report 2020. In comparison, regional neighbours Kenya and Rwanda ranked 56th and 38th respectively.[66]

Uganda's regulatory landscape has generally been welcoming to foreign investors, who are able to own local companies, repatriate profits, and access foreign currency easily. Uganda's foreign exchange market is relatively active, with an annual turnover of more than US $10 billion.[67]

[66] World Bank (2020) Doing Business 2020, Washington DC, World Bank. Note: on 27 August 2020, the World Bank announced that it will pause publication of its Doing Business report and conduct an internal audit of data integrity. This was in response to findings of 'irregularities' in the treatment of the basic data in the reports published in 2017 and 2019.
[67] OMFIF (2019).

BoU is the national financial services regulator and has been instrumental in creating a more business-friendly environment. Under BoU's guidance, Uganda has continued to improve its compliance with international standards on AML and CFT and is in the process of implementing Basel III requirements.

Tax is an area in need of urgent reform. Uganda has one of the lowest tax-to-GDP ratios in the region (12.7%, compared to a regional average in sub-Saharan Africa of 15.6%).[68] Raising the rate would however involve implementing a new tax system and widening the tax net to largely untaxed informal sector.

The limitations of the current framework discourage market growth and development. Interacting with the Ugandan state to pay taxes and applying for licences can be complicated and inefficient due to high levels of bureaucracy.[69]

There are also issues pertaining to the interpretation of tax policies, especially related to import duties. The amount of taxes may generally be standard on some merchandise but can be interpreted differently depending on the customs office. For example, a business may be taxed on bulbs and batteries if they are imported as general merchandise, but could receive a tax exemption if they were imported as part of solar systems. This loophole may create opportunities for corruption and frustration due to taxation inconsistencies.

In July 2018, the government introduced a 1% levy on sending, receiving, and depositing funds through mobile money.

The introduction of the mobile money tax had a negative impact on payments within a number of sectors, including both agriculture and energy as highlighted below.

i. **Impact on payments in the agriculture sector**
In July 2018 (the first month following the introduction of the mobile money tax), Yo! Uganda (a payment aggregator that had been facilitating mobile payments to coffee, seed oil, and dairy farmers since 2015) saw reductions of 33% in value and 39% in volume in bulk payments to farmers and decreases of 60% in value and 64% in volume in face-to-face merchant payments through its platform

ii. **Impact on payments in the energy sector**
The introduction of the 1% mobile money tax contributed to a reduction in the number of renewable energy and energy-efficient products purchased on a PAYG basis. For example, the number of high-quality standalone solar systems purchased in 2018 was around 370,000 (with 61% bought through a PAYG plan): this was a reduction of 20% on the total volume of standalone products sold in 2017.[70]
Mobile money has been a major driver of PAYG financing of SHS. However, following the introduction of the tax, PAYG solar providers saw an average reduction of between 10%–15% in mobile money transactions per customer. Customers requested to pay in cash or

[68] GSMA (2020).
[69] OMFIF (2019).
[70] SE4ALL (October 2019).

> demanded that the system be returned, putting the sustainability of the PAYG business at risk and potentially affecting repayment rates and sales volume[71]

Following public outcry over the tax, the law was amended in November 2018 and the tax was reduced to 0.5% and applicable only to withdrawals.

While the introduction of the tax initially enabled URA to exceed their tax target, this was offset by an overall fall in tax receipts from the telecoms sector (largely a result of decreased activity in mobile money). This, combined with the negative impacts on mobile money payments highlighted above, shows the need for more careful and considered research and formulation of policies in future.[72]

5.2 FINANCE AND ECONOMICS

5.2.1 FINANCIAL MARKETS

The financial sector remains healthy. The regulatory framework and BoU's supervision have been instrumental in this regard. As mentioned above, Uganda has continued to improve on compliance with AML/CFT standards and is in the process of implementing Basel III.

Uganda has a relatively active foreign exchange market, with an annual turnover of more than US $10 billion. Monetary policy remains accommodative. The current account deficit widened to 9.7% of GDP in FY 2018/19, largely due to private sector-related imports financed by FDI. In their most recent visit to the country, the IMF reported that overall, Uganda's banking sector remains healthy, with sound supervision and regulation. Businesses conditions and sentiment are strong and credit to the private sector is improving.[73]

While Uganda remains at low risk of debt distress, vulnerabilities are increasing. One in every five UGX collected in revenue will be spent on debt repayments in FY 2019/20. To note, Uganda has a buffer against external shocks, with international reserves of US $3.4 billion. It remains to be seen whether and how the impact of the Coronavirus pandemic will impact Uganda's debt vulnerability. As mentioned above, the IMF and World Bank are assisting with emergency funding for balance of payments support.

5.2.2 ACCESS TO FINANCE

In 1990, the government embarked on a programme to liberalise the financial sector with the intention of improving efficiency in resource allocation, lowering the cost of credit, increasing the general public's access to banking services, and mobilising savings, all targeting financial and economic development. These reforms were intended to remove controls and allow market forces to determine the various prices in the banking/financial sector.

Despite this, capital markets in Uganda remain a relatively new phenomenon and a number of constraints continue to limit access to finance for individuals and SMEs. These are both demand-side and supply-side specific.

[71] UNCDF (29 August 2018).
[72] GSMA (2020).
[73] IMF (03 February 2020).

5.2.2.1 LENDING APPETITE OF FINANCIAL INSTITUTIONS

Commercial banks lack the appetite to lend to sectors such as agriculture and forestry due to limited knowledge and high perceived risk. Consequently, interest rates and repayment periods on loans are prohibitive towards individuals and small businesses. Additionally, a single lender limit of US $2 million in Uganda limits the potential for local banks to adequately serve businesses with greater funding needs.[74] Where banks may have been willing to take on the lending risk, they are often required by the central bank to adhere to some requirements that may limit their ability to take on the risk even if they were willing to. For instance, a bank may want to lend, but if the client does not have the required level of collateral coverage, it may be difficult to complete the transaction.

5.2.2.2 AVAILABLE FINANCIAL STRUCTURES DO NOT SERVE THE NEEDS OF THE MAJORITY OF MARKET PARTICIPANTS

Larger companies that are able to access loans make up only 10% of the market (by number of businesses), leaving the majority of smaller businesses unable to meet their requirements for finance.

To be able to fund different segments of the market, it will be necessary for financiers to give greater consideration to the needs of different segments of the market, perhaps in terms of new asset classes or blended finance. Different sectors and sub-sectors in fact require different amounts of money and financial products: for example hydropower projects, which have received large amounts of funding, are very capital-intensive compared to solar photovoltaic (PV) projects.

Efforts are being made to increase banks' understanding of these sectors and consequently their appetite to lend. For example, using funding from the Clean Technology Fund, the World Bank has been providing guarantees (using UECCC as an on-lending channel) to incentivise commercial banks to take an interest in renewable energy. Initially, the guarantees covered both technology and commercial risk, but as the banks began to understand the sector and take an interest in it they were able to take on the commercial risk themselves. The World Bank now only provides guarantees to cover technology risks.

5.2.2.3 LACK OF CLIMATE FINANCE-SPECIFIC FUNDS

Uganda does not currently have a domestic climate or green investment fund. MoFPED is accredited to the GCF, but so far limited funding has come through. As indicated above, GGGI is supporting MoFPED in strengthening its relationship with the GCF and is seeking direct access accreditation for UDBL and Kampala Capital City Authority.

In addition, UNDP is in the initial stages of developing a financing facility for climate action. The facility will mobilise finance from both the public and private sectors and provide funding via a number of different instruments. It will be initially hosted by UNDP and then handed over to MoFPED when ready.

5.2.2.4 INABILITY TO MEET COLLATERAL REQUIREMENTS

Due both to requirements set by the central bank and to internal policies originating from perceived risks in unknown and untested markets, banks often set high collateral requirements

[74] Uganda Off-Grid Market Accelerator (2019).

on loans. Many individuals and small businesses in Uganda struggle to meet these collateral requirements, thus limiting their access to available finance.

5.2.2.5 LACK OF ADEQUATE ACCOUNTING RECORDS

Many small businesses do not have the information or capacity to maintain adequate accounting records, which are a prerequisite for banks when assessing their creditworthiness and the business finance requirements.

5.2.2.6 INSTITUTIONAL CAPACITY ISSUES FOR FUND MOBILISATION

There may be severe capacity constraints in financial institutions if and when funding comes through. Once funding is accessed, it may remain for some time in the bank before being deployed because of capacity issues (there are no or limited staff with the right skills to understand risks in the new sectors to be financed), or due to fund design issues (the funds and instruments are not properly designed for appropriate on-lending). The UECCC has faced such challenges recently.

5.2.3 FINANCIAL INCLUSION

Financial inclusion in Uganda has seen improvements in recent years. Findings from the 2018 FinScope survey indicate that overall financial inclusion (formal and informal services) in Uganda stood at 78%. Almost six out of every 10 Ugandan adults are accessing formal financial services.

Recent increases in financial inclusion have been largely driven by policy developments and by the uptake of mobile money services.

Uganda's National Financial Inclusion Strategy 2017–2022 aims to lower barriers to financial services and build the infrastructure needed to support the mobile banking market. Provision of financial services in Uganda is growing, driven by increasing penetration of banking services, MFIs, SACCOs and community savings groups, and mobile money services.

Mobile money has transformed the financial services sector in Uganda, enabling access to payments, money transfers, and savings to millions of Ugandans who were previously excluded from formal financial services. More than four in 10 adults (43%) have mobile money accounts.[75] Mobile money platforms offer opportunities for further expansion, particularly through broadening the type of services available to customers and SMEs.

Figures for 'bricks-and-mortar' bank customers, however, are much lower: only 11% of adults used bank services, with 9% holding accounts. Figures in rural areas (7% of the population) are significantly lower than urban areas (24%), indicating that access is a constraint. Almost all Ugandans who own accounts use an additional financial service, indicating that services offered by traditional banks are insufficient.[76] Most Ugandan banks have now integrated (or are in the process of integrating) mobile money and traditional banking services, allowing customers to use their phones to transact on their bank accounts.
Widening the scope of banking services to capture as many individuals and SMEs as possible, especially women and the rural population, is critical to improving financial inclusion. Better

[75] Finclusion, http://finclusion.org/country/africa/uganda.html.
[76] Finscope (2018).

financial education may direct greater savings towards a country's capital market, supporting market development.

5.3 TECHNOLOGY AND MARKET

Representation of the private sector is improving across several sectors. In the energy sector, UNREEEA coordinates six industry associations (for energy efficiency, biomass, biogas, solar, hydropower, and wind power) and engages with the government on their behalf.

UNACC works to enhance coordination and synergies among stakeholders in Uganda's clean cooking market to enable universal access to clean cooking solutions. The alliance is currently lobbying the Ugandan government to eliminate the tax on cook stoves and components used to make them. It has also been working with UNBS and MEMD to improve consumer awareness and stove quality.

USEA has been key in promoting solar PV expansion in the country, also through financing from the TEA programme illustrated above.

In addition, PSFU has been supporting the government on NDC implementation. They have also supported with skills development in the energy sector, including training technicians and getting them certified by ERA.

Despite the emergence of these associations, the private sector remains fragmented. Outside the solar sub-sector, it has been challenging for private businesses to engage the government effectively. In addition, these associations are umbrella bodies driven by membership. Their effectiveness is often a function of funding (or the lack thereof): when they do not receive enough funding or payments of member fees, they are not able to carry out their duties effectively.

Interviewees highlighted the need for a more structured dialogue in the future between the private sector and government to build the right incentive structures and to strengthen the capacity of existing associations.

5.4 INFORMATION AND CAPACITY

5.4.1 INFORMATION

Insufficient and inadequate data pose challenges in accessing finance and implementing projects in Uganda.

There is a lack of adequate data to track climate finance, thereby leading to limited clarity on investment in climate-relevant programmes. Notably, the World Bank has been supporting MoFPED with the development of a climate budgeting and tagging programme, but this is yet to be finalised.

There is also a lack of clarity on key performance and development indicators, with examples including electrification rates and the number of standalone solar systems and ICS stoves sold in Uganda to date. Such data are not fully available and SMEs are often unwilling to share it. The lack of such micro-data often puts off prospective investors. In the future, greater market

intelligence (including reliable data) is required to help the private sector effectively scale and encourage commercial investment.

5.4.2 CAPACITY

5.4.2.1 GOVERNMENT

At the government level, capacity within implementing agencies has been highlighted as a challenge. Agencies are often overstretched and struggle to handle a large number of projects due to limited staff. It was noted, for example, that REA does not have capacity to absorb large amounts of financing coming from its development partners.

It was recommended that the government should address capacity and project management issues in REA and other agencies. Henceforward, agencies should be structured with the flexibility to increase and reduce the number of staff according to the number of projects on hand.

Additionally, greater coordination of activities is required between government ministries: there are many different actors but clearer targets and responsibilities are required.

5.4.2.2 DEVELOPMENT PARTNERS

Coordination among development partners and aid agencies is generally good. There is a donor coordination group which sits every couple of months and has a rotating chair. This model is considered relatively effective, providing updates on who is working on what and identifying gaps and opportunities.

5.4.2.3 FINANCIAL SERVICES

The limited capacity of financial institutions was cited as a challenge. Banks and MFIs lack personnel with the technical knowledge to understand business models and trends in new and untested markets (such as renewable energy). This limits the ability of local banks to accurately evaluate investment risk in these sectors and reduces their appetite to lend.

5.4.2.4 PRIVATE SECTOR

Many businesses struggle with organisation and development due to a lack of skilled management. More focus should be given to developing business soft skills (including developing business plans, financial models, and accounting). There is currently a large gap in the capacity of businesses in putting together proposals and financial information required for accessing finance.

A need for technical advisory and business support to assist with capacity building was highlighted. A number of intermediaries offer support, but early-stage businesses generally cannot afford these services.

Lack of fundraising expertise is also an issue.

5.5 SOCIAL, CULTURAL, AND BEHAVIOURAL

As mentioned above, the business culture in Uganda is generally conservative and companies seeking funding tend to prioritise debt over equity. They often consider equity as being too

sophisticated and/or may not want to relinquish ownership of their business to attract equity. In addition, Uganda has a broadly consensus-based business culture, making it less likely to find the more aggressive venture capital businesses. Similarly to other developing countries, entrepreneurs are more comfortable drawing from personal relationships to obtain capital, which is usually in small amounts. These characteristics therefore impact on the scalability and replicability of business models.

6. SECTORAL ANALYSIS

This section of the report is a deep dive into two sectors, energy and agriculture, which are a priority for Uganda's economy and climate change strategy. Additional information on energy sub-sectors is contained in Annex 1.

6.1 AGRICULTURE

Photo Credit: Heidi Erickson

6.1.1 OVERVIEW AND SECTOR PRIORITIES

Uganda exhibits several characteristics favourable to agricultural productivity, including (as described below) adequate land and water resources for production; high potential for the improvement of productivity; high export potential for agricultural products both regionally and globally; and international support from the renewed focus on agriculture as a critical mechanism for sustainable social and economic development.

Agriculture contributes over 20% of overall GDP and employs over 70% of the population. The sector is a driver of inclusive growth and has been growing by between 1% and 3% since 2010, keeping pace with population growth.

Despite this, a number of challenges persist and growth has not been smooth, and Uganda has therefore been prioritising food security and reduction of climate vulnerability.

6.1.1.1 INCREASE IN PRODUCTIVITY FOR FOOD SECURITY

Yield gaps range between 50% and 75% for many commodities and the uptake of improved seeds and fertilisers remains low. Average total factor productivity growth in Ugandan agriculture has been negative for the last two decades, which indicates that the country is now getting less for equal or greater effort. Additionally, the recent growth in agricultural output is below the rate of population growth (3.3%) and fertility rate (5.9%) which is one of the highest in sub-Saharan Africa.[77] Consequently, 83% of the population is said to be minimally food secure.

[77] World Bank (19 June 2018).

6.1.1.2 REDUCTION IN CLIMATE VULNERABILITY

As the country is heavily dependent on rain-fed agriculture, the sector is strongly prone to climate risks, particularly drought. Agricultural performance in Uganda fluctuates with changes in climate; consequently, GDP growth and inflation rates often correspond with seasonal rainfall. For example, in FY 2005/06, growth in the sector dropped to 0.4% from 1.5% the previous year as a consequence of prolonged drought conditions experienced in most parts of the country.

6.1.2 KEY INSTITUTIONS

The key institutions in the agriculture sector are presented below.

MAAIF

MAAIF, commonly known as the Ministry of Agriculture, is the government ministry charged with creating an enabling environment for Uganda's agricultural sector. Its directorates include:

- Animal resources
- Crop resources
- Fisheries resources; and
- Agricultural extension services

The ministry is mandated to:

- Formulate, review, and implement national policies, plans, strategies, regulations and standards and enforce laws, regulations and standards along the value chain of crops, livestock, and fisheries
- Control and manage epidemics and disasters and support the control of sporadic and endemic diseases, pests, and vectors
- Regulate the use of agricultural chemicals, veterinary drugs, biological, planting, and stocking materials, as well as other inputs
- Support the development of infrastructure and use of water for agricultural production along livestock, crop, and fisheries value chains
- Establish sustainable systems to collect, process, maintain, and disseminate agricultural statistics and information
- Support provision of planting and stocking materials and other inputs to increase production and commercialisation of agriculture for food security and household income
- Develop public infrastructure to support production, quality/safety assurance, and value addition along the livestock, crop, and fisheries commodity chains
- Monitor, inspect, evaluate, and harmonise activities in the agricultural sector, including local governments
- Strengthen human and institutional capacity and mobilise financial and technical resources for delivery of agricultural services; and
- Develop and promote collaborative mechanisms nationally, regionally, and internationally on issues pertaining to the sector

The ministry has specialised units and agencies through which it implements its strategy. These are:

- The National Agricultural Advisory Services
- The National Agricultural Research Organisation

- The National Animal Genetic Resource Centre and Data Bank
- The Coordinating Office for the Control of Trypanosomiasis in Uganda
- The Dairy Development Authority
- The Uganda Coffee Development Authority; and
- The Cotton Development Organisation[78]

ACF

The government established the ACF in partnership with UDBL and various commercial banks, MFIs, and credit institutions. Under the ACF, loans are disbursed to farmers and agro-processors through participating financial institutions at more favourable terms than those available on conventional loans.

Loans are disbursed in UGX. An individual can borrow up to a maximum of UGX 2.1 billion (US $560,000). Loan tenures are between six months and eight years and the maximum interest rate for the end user is 12%. The government contributes 50% of the funding, which is disbursed to participating financial institutions at 0% interest.

6.1.3 POLICIES AND LEGISLATION

Uganda's Vision 2040 and the National Development Plan II both prioritise agriculture as a key sector through which to spur the growth required to transform Uganda to a middle-income country by 2040. Priorities for the sector are outlined in ASSP 2015–2020 (AGRA, 2020).

ASSP 2015–2020

ASSP is the flagship plan for investment and development of the agricultural sector, in line with the National Development Plan to be implemented through a multi-sector wide approach involving the Government of Uganda, government MDAs, district local governments, development partners, civil society organisations, and the private sector.
The interventions are mainly focused on 12 priority commodities (bananas, beans, maize, rice, cassava, tea, coffee, fruits, vegetables, dairy, fish, and livestock (meat)) and four strategic commodities (cocoa, cotton, oil seeds, and oil palm).

Over the medium term, investments in the sector are channelled to the specified priority and strategic commodities across their entire value chains focusing on research; extension; pest, vector, and disease control; provision of inputs; promoting sustainable land use and soil management; post-harvest handling; improving markets access; and value addition. The investment strategy targets four objectives:

1. Increasing agricultural production and productivity
2. Increasing access to critical farm inputs
3. Improving agricultural markets and value addition; and
4. Improving service delivery through strengthening the institutional capacity of MAAIF and its agencies

The total cost of implementing the five-year ASSP is estimated at UGX 4,626.4 billion.[79] The government has committed to allocating 10% of Uganda's national budget to development of the

[78] Ministry of Agriculture, Animal Industry, and Fisheries (2020).
[79] Ministry of Agriculture, Animal Industry, and Fisheries (April 2016).

agriculture sector. In addition to this, however, full implementation of ASSP will ongoing support from Uganda's development partners and mobilisation of finance from the private sector.

6.1.4 BARRIERS AND ENABLERS

Commercialisation of smallholder agriculture will require access to financial products and services (such as loans, savings, and insurance). Finance for smallholders to invest in better equipment and practices is critical, but financial inclusion of smallholders remains limited. Further along commodity value chains, there is demand for short-term working capital and medium-term to longer-term finance for productivity and quality-enhancing investments in marketing and processing.

6.1.4.1 HIGH RISK–LOW RETURN PROFILE

Most small-scale farming ventures are unprofitable due to lack of economies of scale in land use and outdated practices. Farmers are also seen to face unfavourable, weather-dependent risks. Interest rates for commercial debt in the agriculture sector are prohibitively high at around 20%. Financial institutions are often hesitant to extend credit to the agricultural sector as it exhibits characteristics which make it a less viable investment opportunity.

The central bank (BoU) is working to lower the interest rates in an ongoing effort to stimulate economic growth, but experts consider this challenging.[80, 81] The impact on green finance of the debt and interest status is that even targeted funds, for example for sustainable agriculture, are charged loan rates similar to those for other sectors. Each commercial bank sets its own rate; these can differ significantly and the portfolio size is small. Banks are considered highly risk averse, often rejecting loan applications.
In our view, the central bank could exert some influence over the capital market to align lending with NDC priorities better, both through the guidelines and sector limits.

6.1.4.2 SMALL TRANSACTION SIZES

Small projects increase transaction costs, including the share of costs of loan origination, monitoring, and the collection of financial institutions relative to other sectors with higher average transaction sizes.

6.1.4.3 'LUMPY' CASH FLOWS

In agriculture, typical cash flows consist of one large outflow (loan) followed by a large inflow several months later following harvest. Because the ease of monitoring the creditworthiness of individual customers increases for financial institutions with the frequency of repayments (since each individual repayment provides a monitoring opportunity), agricultural customers are more difficult to monitor compared with businesses with multiple cash inflows and outflows. Apart from monitoring problems, 'lumpy' cash flow patterns also complicate financial intermediation for financial institutions where agriculture is the primary economic activity. In this case, the savings and investment patterns of customers match and savers are likely to withdraw their savings at the time of greatest demand from borrowers, often when inputs (such as fertilisers) need to be purchased.

[80] For up-to-date interest and inflation rates, see https://www.bou.or.ug/bou/bouwebsite/BOU-HOME.
[81] For the latest official statement on the state of the Uganda economy, see https://www.bou.or.ug/bou/bouwebsite/bouwebsitecontent/publications/StateofEconomy/publications/StateOfEconomyReports/2020/Sep/State-of-the-Economy-September-2020.pdf.

6.1.4.4 HIGH COVARIANCE ACROSS BORROWERS

All borrowers are similarly affected by the same macro-risks, especially climatic shocks, which increases the individual and portfolio risk of lenders. This issue is particularly problematic in Uganda, where the majority of agriculture is rain-fed.

6.1.4.5 DIVERSE SUB-BUSINESSES WITH DISTINCT DYNAMICS

Agriculture consists of many different sub-industries, with significantly varying investment and risk patterns. This increases the cost and complexity of monitoring activity within the sector.

6.1.4.6 LACK OF APPROPRIATE COLLATERAL

To manage risks, financiers often request collateral from smallholder farmers and SMEs. The most common form of collateral requirement is land title; however, many smallholders do not possess the required certificates. While recent initiatives to register land have progressed, this remains a significant challenge.

6.1.4.7 DISPERSED POPULATION

Over 75% of Uganda's population live in rural areas, many of these remote and sparsely populated. This makes value chain development and outreach hard. In recent years, the uptake of digital financial services has provided a partial solution to this problem.

6.1.4.8 LIMITED ACCESS TO AND USE OF INSURANCE SCHEMES

Smallholder farmers still access most of their money from credit unions and cooperative unions, which provide small-sized loans and limited group insurance schemes. Agricultural insurance remains limited, the few local schemes that have been developed remaining at pilot level or at a relatively small scale. Expanding insurance services to smallholder crop and livestock farmers could be an opportunity to encourage private sector involvement while building resilience of farmers.

Additional risks affecting the sector include animal disease outbreaks; poor seed quality; lack of skilled agronomists; limited irrigation; and weak infrastructure (particularly roads), which increases transportation duration and therefore costs.

The following are existing or proposed methods of leveraging more capital into agriculture.

6.1.4.9 CREDIT GUARANTEES

Credit guarantees have been used successfully in Uganda since the mid-2000s to cover default risks, ensuring more secure repayment of all or part of formal sector agribusiness loans in case of default. An example is the Agribusiness Loan Guarantee Company, which started in 2006 as an offshoot of the Agribusiness Initiative Trust, a wider multi-national venture supported by development partner funding in Uganda with the objective of promoting agribusiness development.[82]

AGRA has successfully used loan guarantees to leverage commercial bank lending to the sector. AGRA used US $17 million to leverage US $150 million from commercial banks in East Africa. This indicates that there is scope for financial innovation and alternative finance[83].

[82] FAO (2013).
[83] IFAD (October 2014).

6.1.4.10 WRS

WRS are a proposed solution to the lack of land titles that can be used as collateral for loans. A WRS can potentially be used to unlock the collateral value of inventories that farmers, traders and processors manage through warehouse receipt financing and help relieve part of the existing access to credit constraints.

WRS have been promoted for some time in Uganda, notably with a pilot involving coffee and cotton since 2004, with mixed results. The government has more recently been promoting improvements to product grading and information technology in the system and has extended it to maize in the north, with seemingly more promising results.[84]

6.1.4.11 MOBILE PAYMENTS AND DIGITISATION OF LAND TITLES

Mobile money transfers and the digitisation of land titles are also promising approaches to de-risking the sector and overcoming the lack of collateralisable land titles for loans and increasing farmers' access to finance.

6.1.4.12 RECRUITING AND TRAINING STAFF TO DEVELOP SPECIALISED KNOWLEDGE OF THE SECTOR

The biggest challenge in agricultural financing is operational risk. Centenary Bank has managed to overcome this challenge by building a strong agricultural finance department with a loan portfolio of US $73 million and products catering to the whole agricultural value chain. This was achieved by recruiting people with an agricultural background, who understand the nuances of the sector.

At the initial launch of the agricultural finance team, support was provided by FCDO for training staff and cost-sharing, but the bank has since taken over and the department is now self-sustaining.

[84] Katunze et al. (2017).

6.2 ENERGY

Photo Credit: Drew Wilson

6.2.1 OVERVIEW AND SECTOR PRIORITIES

Uganda is endowed with a variety of energy resources that are distributed throughout the country. These include hydropower, biomass, solar, geothermal, peat, and fossil fuels. The overall renewable energy power generation potential is estimated to be 5,300 MW. This includes an estimated 2,000 MW of hydro power, 450 MW of geothermal and an average of 5.1 kWh/m^2 of solar energy.[85]

As of April 2020, Uganda has an installed generation capacity of 947 MW, of which 645 MW was hydro and 101.5 MW is thermal. The largest distribution company, Umeme, is privately owned and has a 20-year concession for distribution and retail. Uganda is divided into 13 rural service areas, six of which are managed by smaller distribution companies. Independent power producers currently account for 60% of generation capacity.[86]

With a favourable enabling environment and the broad presence of private sector investment, Uganda has strong potential for power sector development. Uganda is one of the only African countries to have a fully liberalised and financially viable energy market, with generation, transmission, and supply segments unbundled since 2001. The sector also has an independent regulator, ERA, which is responsible for sector oversight and regulation.

6.2.1.1 ENERGY ACCESS

Uganda has one of the lowest electrification rates in Africa: the national access rate is estimated at only 26% of the population in 2016 (World Bank), well below the regional sub-Saharan Africa average of 45% and 68% in Kenya.[87] Additionally, there is a significant gap in the access rate between urban areas (nearly 60%) and rural areas (18%).[88] The majority of Uganda's population

[85] UNREEEA (2020).
[86] USAID (April 2020).
[87] Uganda Off-Grid Market Accelerator (2019).
[88] SE4ALL (October 2019).

live in rural areas and depend predominantly on biomass (fuel wood and charcoal) to meet their energy needs.

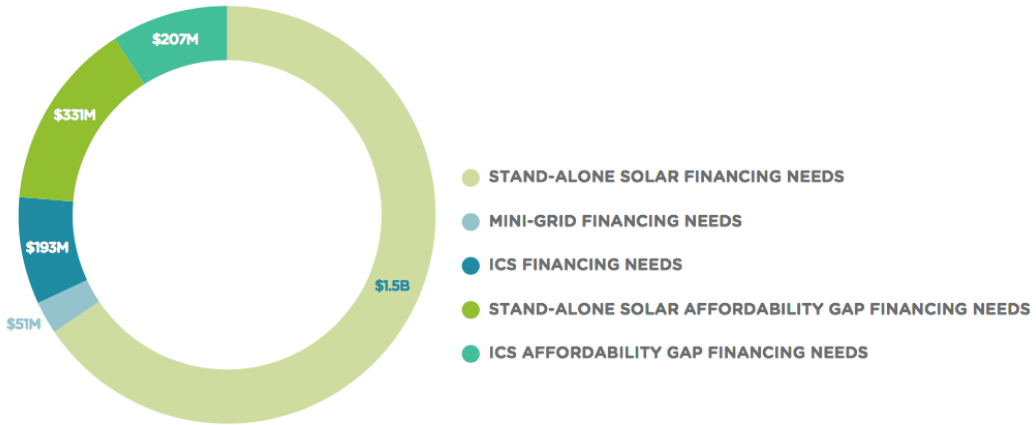
The Government of Uganda has set an ambitious target of achieving universal energy access by 2030. Periodical energy access targets for meeting this goal are laid out by Uganda's MEMD in RESPs. RESP II (the second and current plan) runs from 2013 to 2022. It is expected that RESP will achieve universal electrification by 2030, which is consistent with Uganda's SE4ALL Action Agenda, which sets the goal of having more than 99% of the population with access to electricity by 2030, while achieving more than 90% of renewable electricity production.

While Uganda is on track to achieve near-term targets for energy access set under RESP II (26% rural access and 42% grid access by 2022), achieving universal access by 2030 will require increased support of off-grid solutions.

USAID are working with REA to develop a least-cost expansion plan. This will determine which areas of the countries will be electrified via grid and mini-grid systems. The plan considers the areas in which consumers live and how much electricity they consume and is likely to be completed in 2021.

According to a recent report by SE4ALL, closing the energy access gap in Uganda will require a further US $2.3 billion in funding. This figure includes requirements for off-grid electricity (both standalone solar systems and mini-grids) and ICS, the breakdown in funding required is shown displayed in Figure 2.[89]

Figure 2 Closing the access gap in Uganda: US $2.3 billion required for off-grid electricity and ICS



Source: SE4ALL (October 2019)

[89] SE4ALL (October 2019)

6.2.2 KEY INSTITUTIONS

The key institutions in the energy sector are presented below.

- **MEMD** is the government body responsible for developing and implementing policies related to electricity, minerals, petroleum, and petroleum products
- **MoFPED** is responsible for tax policy development
- **URA** is responsible for implementing subsidies that increase product affordability (e.g. tax subsidies on components in solar products)
- **ERA** is an independent body responsible for regulation and oversight of the sector
- **REA** was established to promote on-grid and off-grid private sector-led rural electrification. REA develops and implements strategies to introduce modern and safer energy sources in rural areas
- **UECCC** was established in 2011 (with support from the World Bank) to pool resources into small-scale renewable energy projects. It works with different financiers to facilitate consumer and supplier financing through affordable credit. Additionally, it provides technical assistance to domestic financial institutions to develop their capacity in assessing business models for renewable energy projects
- **UNBS** is responsible for establishing and implementing stringent standard requirements to ensure the quality of products and services available in the sector; and
- **Umeme** is the largest distribution company (distributing 97% of all electricity used in the country). It is privately owned and has a 20-year concession for distribution and retail. The current concession is due to expire in 2025, but discussions are underway over terms to extend Umeme's concession[90]

6.2.3 POLICIES AND LEGISLATION

In the last two decades, Uganda has undertaken an extensive power sector reform programme with the goals of reducing the burden of subsidies, improving the quality of service, improving collection rates, reducing network losses, and attracting private capital in generation and distribution networks. As part of this reform process, the state-owned Uganda Electricity Board was unbundled into a number of different private business entities responsible for generation, transmission and distribution (this process was completed by 2001). As effect, ERA was established as an independent body responsible for regulation and oversight of the sector.[91]

In 2019, MEMD developed a New Energy Policy. The new policy gives particular focus to off-grid energy development strategies in Uganda. The policy is still in draft format and awaiting approval following its review by parliament. Approval of the policy, which has already taken a long time, is likely to be further delayed as a result of COVID-19.

[90] UMEME (2020).
[91] Overseas Development Institute (2014).

RESP 2013–2022 is a 10-year plan to expand access to electricity in 13 energy service territories outside the concession area controlled by Umeme.

The **Off-Grid Strategy** was created by REA to complement the Rural Electrification Strategy. It is currently awaiting approval from the Ugandan Council of Ministers.

Other upcoming policies and regulations include the Isolated Grid Systems Regulations, the National Electrification Strategy, and the development of an energy efficiency bill.

6.2.4 FINANCING IN THE ENERGY SECTOR

As previously mentioned, the government has increased percentage of the national budget that is allocated to funding development of the energy sector. The majority of this budget is currently focused on generation of hydroelectricity, with less than 5% of the allocated budget being spent on other alternative energy sources.

The majority of funding for renewable energy technologies comes from international investors offering grants, equity, and debt financing of various sizes. Types of investor and associated investments include:

- Grants of between US $1 million to more than US $5 million from development partners and foundations
- Commercial debt under US $5 million is available from domestic and regional banks, but access to local currency denominated debt remains limited
- Debt investments above US $5 million are generally made by DFIs and larger private equity funds. These are mainly in foreign currency. Between 2013 and 2019 international investors accounted for approximately 88% debt invested in the sector; and
- Small ticket size equity investments (averaging US $3 million) from private equity funds and impact investors

Larger equity investments in the sector have generally been strategic investments from multi-national conglomerates. An example is ENGIE's investment in Fenix International. Through such investments, investors are able to utilise existing locally based teams and business models to reach unserved customers. The target company is able to benefit from access to finance, long-term investments, and supply chain expertise from the multi-national company.

6.2.5 BARRIERS AND ENABLERS

Uganda is one of the only sub-Saharan African countries to have a liberalised and financially viable energy market, with generation, transmission and supply segments unbundled since 2001.[92] Regulation of the sector is effective, with ERA viewed as one of the best regulators in the region.

In addition to the cross-cutting issues outlined in Section 5, however, there are a number of issues that are unique to the energy sector, as detailed below.

[92] USAID (April 2016).

6.2.5.1 GENERATION OVERCAPACITY

A major issue for Uganda's power sector is that demand is not increasing as fast as generation. Currently, there is excess generated capacity which undermines the financial sustainability of projects. Excess energy needs to be sold to pay for the project loans.
Because supply must be paid for regardless of whether or not it is used, surplus can be expensive; for example, a US $0.10/kWh take-or-pay power purchase agreement can manifest as US $0.20/kWh if only half the power is used. In Uganda, the mismatch between supply and demand could increase total electricity costs by over US $950 million per year and increase the cost of service to more than US $0.30/kWh.[93]

Some of the generated capacity is projected to be exported to Kenya and Rwanda, but progress on interconnection projects has been mixed. The Uganda and Rwanda connection was completed in 2019, but power trade between the countries has not materialised due to political issues. The connection between Uganda and Kenya has taken years to complete due to a number of political and economic issues. As a result of this, AfDB decided to withdraw funding for the project.

6.2.5.2 OUTDATED ELECTRICITY TARIFFS

The cost per kWh to consumers is UGX 700 (about US $0.19), which is almost cost-reflective but high compared to tariffs in other countries in the region.

Feed-in tariffs need to be updated. The current feed-in tariff was designed when the cost of solar was considerably higher; it has not been reduced to reflect the cheaper price of solar.
Out of date tariffs are one factor behind low demand as they deter people from using electricity.

6.2.5.3 HIGH GRID COSTS AND UNCERTAINTY OVER CONCESSIONS RENEWAL

The cost of grid infrastructure expansion is high.[94] Concurrently, the government has been slow to renew the concession of Umeme, the largest energy distributor (which is due to expire in 2025). This delay creates uncertainty and disincentives for Umeme to invest to improve its distribution network. Renewal of the concession will give lenders (both local and international) confidence to extend more credit facilities to Umeme. In particular, the International Finance Corporation (IFC) has earmarked a US $70 million loan for Umeme to invest in expanding and improving the grid.[95]

Promisingly, the government has begun the negotiation process to extend the concession past 2025.[96] AfDB has provided a legal adviser to the government to negotiate terms with Umeme.

6.2.5.4 UNCLEAR AND INCONSISTENT TAX POLICY ON SOLAR IMPORTS

While the Government of Uganda has waived taxes on solar panels, the current policy makes no mention of other solar equipment (including solar inverters, batteries, and solar-powered appliances such as fridges and bulbs). Consequently, a large proportion of solar equipment is still being taxed, making the full development of the solar industry, and therefore uptake, more challenging.

[93] Akena (2020).
[94] USAID (April 2016).
[95] Umeme (2020).
[96] Umeme (2020).

Furthermore, and linked to the above, this tax policy is felt to be unfairly implemented as only USEA members are able to benefit. USEA members have to pay a membership fee, which deters smaller businesses from joining. Many of the members are based in Kampala; there is limited representation from regional players.

The government insists on USEA membership as it enables the collection of data on companies importing technologies and to what effect these are being uses. There is leeway to push for further implementation of duty exemptions if they are able to justify the benefit to the government.

GOGLA is advocating for greater clarity on taxation of products within the solar ecosystem. The government is, however, resisting pressure to provide tax incentives on imported technologies, as they believe it will be detrimental to local producers in the market.

Solar vendors in Uganda have also called on the government to establish a revolving fund to reduce the costs of solar equipment.[97]

6.2.5.5 PRODUCT STANDARDS

A further issue cited is the standardisation of products and services, particularly for clean cook stoves and household solar systems. Ensuring that products on the market are of a high standard is in fact essential for building consumer confidence.

Standards for cook stoves are being developed, but the process has been slow due to the low commitment of market players. Many local producers feel that product standards are not in the interest of their business. Imported products are generally of better quality and more energy-efficient.

UNREEEA is working with UNBS to develop quality standards across different sub-sectors.

6.2.5.6 LACK OF FOCUS ON ENERGY DEMAND

Increased uptake of energy-efficient products and PUTs would create greater demand for energy, in turn making the sector more attractive to investors. The lack of focus on demand in fact limits the growth of the market for energy-efficient technologies and PUTs.

6.2.5.7 UNDEFINED POLICY AND REGULATORY FRAMEWORK IN THE MINI-GRID SECTOR

The absence of clear policies for mini-grids undermines the confidence of developers and investors. Issues that limit mini-grid investment include:

- Fears over grid intrusion in mini-grid service areas
- Lack of transparency around licensing and permitting
- Issues with technical and quality standards
- A uniform tariff policy that requires regulatory approval to enact cost-reflective tariffs; and
- A shortage of grants to reduce the cost of mini-grid electricity and make it more affordable for poorer households[98]

[97] East Africa Business Week (22 March 2019).
[98] SE4ALL (October 2019).

The government is working to publish a mini-grid regulation, but this is unlikely to happen before the January 2021 elections. REA is in the process of amending RESP to provide greater clarity on the role of mini-grids within the overall strategy for rural electrification. This will involve the identification of strategic locations for mini-grid development.

REA anticipates running a competitive tender and providing concessions of the identified sites to selected developers, potentially as part of broader concessions to provide distribution service to a region. ERA would oversee the tender and concession process.[99]

Concerns from mini-grid operators over lease lengths are due to be addressed in the New Energy Policy (which is still in draft format). Currently, a bifurcated approach to licensing is being adopted: projects under 2 MW do not require a licence, whereas projects above 2 MW do.[100]

6.2.5.8 LOW ACCESS TO FINANCE FOR MINI-GRIDS

While financing is generally available for capital expenditure costs, developers lack the funds to scale their operations and serve hard-to-reach customers. The majority of mini-grid developers (71%) have access to grant financing. Most equity finance is used to fund the initial stages of development. Debt finance remains hard to access as providers remain sceptical due to unproven businesses models.[101]

Fiscal support for mini-grids is offered through the Rural Electrification Fund, which provides significant financial support. Additionally, UECCC has also provided financial support and technical assistance to mini-grid developers and is currently working with the ORIO Infrastructure Fund (Government of the Netherlands) to support the development of 10 mini-hydro projects.

6.2.5.9 LIMITED ACCESS TO FINANCE FOR RURAL COMMUNITIES

There are currently a number of factors holding back the market expansion to rural areas, including: high upfront costs, low payment capacity of potential clients, and insufficient financing.[102]

[99] National Association of Regulatory Utility Commissioners (November 2017).
[100] Ibid.
[101] Uganda Off-Grid Market Accelerator (2019).
[102] Ibid.

7. CONCLUSIONS AND RECOMMENDATIONS

Photo Credit: Andrew Sit

In this section, we identify the main conclusions and recommendations and suggest immediate next steps for support, as derived from the report.

7.1 SUPPLY CHAIN SUPPORT

CONCLUSION

There is a limited sustainable, structured, and systematic approach to identify project pipelines and support project developers and entrepreneurs across the climate finance supply chain.

RECOMMENDATIONS

We recommend support for the establishment of a dedicated unit or facility assisting project developers and entrepreneurs to originate projects or business ideas and take them successfully through the climate finance supply chain (given the working title hereafter of the 'Climate Finance Supply Chain Unit' or 'Supply Chain Unit').

The unit might do the following, among other activities:

- Work with financiers to increase their technical capacity to understand climate-related projects, the risks associated with them, and the financing techniques available to mitigate them
- Support projects proponents in developing concept notes and proposals for a variety of funders in coordination with GGGI and others
- Create business model ideas and templates for entrepreneurs including, for example, how to develop cash flow estimation
- Support the preparation for presentation of bankable projects to funders, with a focus on investment committees
- Identification for soft skills improvement relating to organisation and development, such as training of middle management
- Provide feedback to relevant stakeholders, such as the Government of Uganda and DFIs, on suggested changes in regulation, the enabling environment, and de-risking interventions
- Suggest ways to address barriers found in other key areas, such as information and capacity or technology and culture; and

- Provide demand-led support through calls for proposals, running of workshops, and training

Coordination with other entities providing similar support, such as GGGI, UNCDF, and UNDP will be necessary to identify the exact gaps to support.

SUGGESTED IMMEDIATE NEXT STEPS

Develop a concept note to outline the parameters for a pilot of the Climate Finance Supply Chain Unit. The aim of the pilot would be to explore possible options for supply chain support, including governance structure, long-term funding sources, and relevant stakeholders.

The pilot should also explore the options for a specialist fund related to the Supply Chain Unit's ongoing operation, potentially providing investment finance alongside public or private investors. The size, sector focus, governance, and management of the potential fund should be investigated.

FUNDING

A pilot project could be funded by philanthropic, multi-lateral, or bilateral donors, or a combination of these.

7.2 FINANCE GAPS

CONCLUSION

An indicative mapping of the status of climate finance in Uganda, presented below, highlights gaps in the availability of necessary finance types across the entire supply chain. Interviewees in fact highlighted that financing is not sufficient to address the needs of entrepreneurs and project developers.

Green dots indicate that a particular type of finance is relevant to the respective stage and is available to at least some degree, while red dots indicate gaps in what is required, or where there may be limited cases to use such finance at the moment (such as refinance or primary finance from international investors). Amber indicates there is still significant room to increase levels of finance/support from current levels or that there are pipeline issues meaning a shortage of suitable projects for the relevant type of finance. Where a cell is empty, the type of finance is not considered relevant to the stage in the supply chain.

Mapping of finance sources and project supply chain

CATEGORIES			PROJECT SUPPLY CHAIN			
			Identification	Development	Primary finance	Refinance
Sources	Climate funds	International	●	●	●	
	Multilateral institutions		●	●	●	
	Bilateral development partners		●	●	●	
	FDI				●	
	Commercial banks			●	●	
	Institutional investors				●	●
	Private equity and venture capital			●	●	
	Impact funds			●	●	
	NGOs and philanthropic organisations		●	●	●	
	Government budget	Domestic			●	
	Commercial Banks		●	●	●	●
	Microfinance and credit institutions			●	●	

CATEGORIES		PROJECT SUPPLY CHAIN			
		Identification	Development	Primary finance	Refinance
Instruments	Company balance sheets		●	●	
	Bank loans/project finance		●	●	●
	Structured finance			●	●
	Bonds/green bonds			●	●
	Institutional investments			●	●
	Specialist sector finance		●	●	●
	De-risking products		●	●	
	Microfinance		●	●	
	Concessional finance		●	●	
	Grants	●	●	● (co-finance)	

Source: CFP team analysis

- ● = Relevant, available
- ● = Relevant, partially available
- ● = Relevant, significant gap

From the point of view of barriers, these gaps will need to be addressed if the supply chain is to work efficiently. From the point of view of opportunities, and given the substantial financing requirements to implement Uganda's NDC vision, there is significant potential for financing and investment across all sectors and stages of the supply chain.

RECOMMENDATIONS

The mapping done in this report has necessarily been preliminary and high-level given the report's scope. A better understanding of the landscape will be required to understand the priorities for stakeholders, especially in the unique cultural context of Uganda's finance market.

We therefore recommend that a fuller mapping exercise be undertaken, ideally in tandem with the Climate Finance Supply Chain Unit pilot mentioned above, since the mapping will be relevant to its design and operation. It would also be highly relevant to the recommendation on financial markets below. Coordination with other entities providing similar support, such as GGGI, UNCDF, and UNDP, will be necessary.

SUGGESTED IMMEDIATE NEXT STEPS

Development of a proposal for the revision and completion of the initial finance mapping in a multi-stakeholder setting and identification of options to ensure the mapping is updated regularly, potentially through embedding it in an existing structure.

FUNDING

The suggested full mapping could be funded by philanthropic or multi-lateral/bilateral donors and/or may be a suitable subject for an application to funding sources (such as GCF's country readiness programmes).

7.3 FURTHER DEVELOPMENT OF INTERNATIONAL AND DOMESTIC FINANCIAL MARKETS

CONCLUSION

Uganda's financial market are growing fast, but there are market development and capacity gaps to tackle, especially in climate finance investment.

RECOMMENDATIONS

With respect to climate-relevant projects, we recommend a capacity building project or programme to support Ugandan stakeholders (including the government and existing and new-entrant banks and other finance providers) to address the financial challenges identified in the enabling environment analysis in this report, both at the cross-cutting and sectoral levels.

Support could be provided through:

- Corporate knowledge sharing of best practices (for example, the development of standards and policies aligned with international requirements)
- On-the-job training (for instance to develop or strengthen domestic bank project appraisal, project finance, and refinancing capabilities)
- Development of funding instruments and asset classes (such as green bonds and structured finance, in addition to Challenge funds)
- Provision of sustainable finance credit lines
- Supporting the accreditation of the GCF for domestic banks, as well as upgrading existing accreditation for larger projects, have been specifically mentioned as priorities; and

- Financial disclosure support, as funding for on-lending is not earmarked

SUGGESTED IMMEDIATE NEXT STEPS

Revision and validation of the barriers and enablers analysis, in addition to the development of a detailed capacity building needs assessment.

FUNDING

The suggested full mapping could be co-funded by philanthropic or multi-lateral/bilateral donors and international commercial banks.

7.4 INSTITUTIONAL CAPACITY BUILDING

CONCLUSION

The interviews identified low capacity in a range of governmental and non-governmental actors, including for example business associations.

RECOMMENDATIONS

A dedicated technical assistance programme, possibly focusing on agriculture and energy as initial sectors, could address improvements in capacity required in the following ways, among others:

- Developing an adequate system to monitor and report on finance to projects to understand their effectiveness, building on the World Bank's support to date: policy provisions for climate change and financing prescribe that 1.6% of GDP should be dedicated to climate finance actions, but there is no ways to monitor this
- Tailored support to UECCC: this was established five years ago, with a specific purpose to develop the solar PV market, but would require assistance if it were to expand to other sub-sectors
- Establishing platforms and partnerships to connect different players in the market and improve coordination: note there are already working groups and committees in place, but these lack effectiveness and engagement
- Training of engineers and technical staff on climate change projects
- Demand-side support to analyse the cost-reflectiveness of tariffs
- Improvement of resource mobilisation and coordination, in particular of the Ministry of Local Government and local governments
- Support the strengthening inter-ministerial and inter-sectoral steering committees and coordination with focal entities: also through adequate reporting lines to improve accountability and reduce duplication
- GCF Accreditation support to other potential direct access entities, to increase accreditation category from smaller to larger projects, and to the Private Sector Facility
- Environmental and social safeguards mainstreaming in policies and processes, as well as appraisal and screening for risks; and
- Analysis of potential uses of the Environmental Levy: this is available, but so far has not been capitalised or operational

SUGGESTED IMMEDIATE NEXT STEPS

Carry out a detailed needs assessment related to climate finance capacity before developing a tailored programme to address the gaps identified thereby.

FUNDING
Bilateral or multi-lateral sources or climate funds (such as the GCF, potentially through multi-country support or through the Private Sector Facility).

7.5 FUND AND/OR PIPELINE DEVELOPMENT OF BLENDED FINANCE BANKABLE PROJECTS

CONCLUSION
From our understanding of government priorities and funding gaps as identified via the interview process, there are specific opportunities in the energy and agriculture sectors that would require further analysis but could be of interest to a range of finance providers.

RECOMMENDATIONS
It was highlighted that the areas prioritised in the NDC should be considered a basis for further exploration of opportunities and challenges. Areas of particular interest include the following:

- Productive energy use: given the energy over-supply challenge, there is high potential to increase demand by linking energy with productive uses, in particular in the agriculture sector. Linkages with other sectors would also help in improving creditworthiness where the clients have already passed financing due diligence requirements
- Mini-grid development at scale through project bundling or development of innovative mechanisms
- Collateral facility to address the inadequate collateral challenges limiting the ability to access finding
- Working capital for companies, especially in the renewable energy space
- Development finance for wind power assessments, such as for wind maps and masts; and
- Demonstration finance for mini-grids

These opportunities could be the focus of blended finance mechanisms, specific asset classes, or become themes/strategies for specialist funds, either in Uganda or regionally, and may therefore be the subject of initial focus by potentially interested finance providers.

SUGGESTED IMMEDIATE NEXT STEPS
It is recommended to identify a long list of topics and project ideas that can then be prioritised further into short lists through screening against agreed criteria and interest from financiers.

FUNDING
The projects can be funded by a multitude of blended finance sources and instruments, depending on the risk/reward appetite.

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ANNEX 1: ADDITIONAL DETAILS ON RENEWABLE ENERGY SUB-SECTORS

HYDRO

OVERVIEW AND SECTOR ACTIVITIES

Uganda has considerable hydro resource potential estimated to be over 2,000 MW, with the largest being along River Nile.

Large-scale power generation in Uganda is predominantly from hydro. The largest completed project is the Bujugali power station, which came online in 2012 and has a generation capacity of 250 MW.

Financing for the project came from the World Bank, European DFIs, and the private sector. Most hydro power projects are private sector-led. There have only been two exceptions in the last 20 years (Karuma and Isimba)
In 2018 a refinancing of over US $400 million was negotiated for the project, with a view to reducing electricity tariffs for Ugandans. The refinancing was led by AfDB, with other partners including the IFC, FMO, Proparco, DEG, CDC Group, and two commercial banks (ABSA and Nedbank).[103]

Hydro is expected to continue to play a large role in Uganda going forward. There are five hydro power plants under construction, the largest of which, the Karuma Power Station on the Nile river, is expected to be completed in 2020 and will have a generation capacity of 600 MW.
A further eight projects have been proposed.

Additionally, a total of 59 mini hydropower sites with a potential of about 210 MW have been identified through different studies. Some of the sites can be developed for isolated grids and others as energy supply to the grid.[104]

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

Climate change is already impacting hydropower generation due to water level volatility, so Uganda needs to explore other generation sources to reduce vulnerability and increase energy security.

SOLAR

OVERVIEW AND SECTOR ACTIVITIES

Due to its location on the equator, Uganda has high potential for solar. Average solar radiation is 5.1 kWh/m^2/day. Existing data indicates that solar energy resources in Uganda are high throughout the year with a variation (max month/min month) of only about maximum 20% (from 4.5 to 5.5 W/m^2). The highest insolation levels are in the dryer areas in the northeast and very low in the mountains in the east and southwest of the country.[105]

Solar is the most commercially viable sector and the renewable energy resource with the highest adoption rate. The government is supporting independent power producers to set up solar plants for commercial purposes and connecting them to the grid. So far about five plants have been approved.

[103] AfDB (24 July 2018) Consortium Delivers Bujagali Refinancing to Reduce Ugandan Electricity Costs.
[104] UNREEEA.
[105] UNREEEA.

In March 2020 the government reached an agreement with Amea Power (an independent power producer based in the United Arab Emirates) to develop a 10 MW solar PV power plant in the West Nile region of northwest Uganda. The solar plant will be capable of supplying 80 MWp to the Ugandan electricity grid.[106]

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

As part of the TEA programme, the government is supporting the growth of the sector through incentives (including tax exemptions on solar products).

However, these incentives are only available to members of USEA, who have to pay a membership fee. USEA has about 200 members, the majority of which are based in Kampala; consequently, many smaller and regionally based businesses are poorly represented and do not benefit from the tax exemptions.

GEOTHERMAL

OVERVIEW AND SECTOR ACTIVITIES

Estimates of geothermal resources in Uganda are as much as 450 MW.

So far, three potential areas—Katwe-Kikorongo, Buranga, and Kibiro, all situated in western Uganda, in the western branch of the East African Rift Valley—have been identified for detailed exploration. Their temperature levels vary between 150 C° and 200 C° which is considered sufficient for electricity generation and for direct use in industry and agriculture.

The remaining areas with potential for geothermal are at a preliminary levels of investigation and results will soon be available as basis for their prioritisation for detailed surface exploration.[107]

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

Barriers

- The current energy policy does not provide much guidance on geothermal. Lack of clear policies and regulations are a barrier to private investment. On this basis, development of a clear policy and regulatory framework for geothermal is considered a priority.

WIND

OVERVIEW AND SECTOR ACTIVITIES

Most wind measurements have shown an average wind speed of 3.7 m/s, indicating that the wind energy resource in Uganda is insufficient for large-scale electricity generation. However, in certain areas wind resources may be suitable for special applications, such as water pumping in remote areas and for small-scale electricity generation in mountainous areas. It is possible that some sites could have enough wind speeds to generate substantial amount of electricity. Preliminary investigations in the Karamoja region (northeast Uganda) and along the shores of Lake Victoria have shown that there could be potential for the production of electricity on a medium scale.

[106] Construction Review Online (29 March 2020) Four solar and wind farms to be developed in Uganda.
[107] UNREEEA.

Projects so far have been limited to the following examples.

- A 20 MW wind power plant is being developed at Tororo by Xsabo Power Ltd.
- In March 2020 the government reached an agreement with Amea Power (an independent power producer based in the United Arab Emirates) to develop two wind farms. The first will be a 10 MW wind farm in the West Nile region of northwest Uganda (with project implementation to begin before January 2021).

  Amea also plans to construct a wind farm with 120 MW capacity in the northeast of the country.[108]

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

MEMD has prioritised wind as an area for further development. However, to date, the lack of adequate data has hindered investment. There is currently no wind map to identify the most suitable locations to position wind turbines and limited (or no) development finance for wind masts to collect the data necessary for project feasibility.

A grant of US $2.3 million was provided by AfDB to carry out an assessment regarding installing wind masts in the north of the country. However, the funding was withdrawn, as AfDB and MEMD could not agree on the contractor.

BIOGAS AND LIQUIFIED PETROLEUM GAS (LPG)

OVERVIEW AND SECTOR ACTIVITIES

Uganda's biogas market currently focuses primarily on providing bio-digesters to households.

SNV Netherlands Development Organisation has been supporting the growth of Uganda's biogas sector since 2009. A pre-feasibility analysis found a market potential of between 250,000–300,000 household biogas installations countrywide.

Green Heat International has been successful in building larger projects, particularly for the institutional market segment.

Biogas Solutions Uganda (BSU) supports companies with training, management support, awareness-raising activities and other forms of technical assistance. Construction of biogas digesters is done by local companies, most of which are trained by BSU. There are approximately 20 bio-digester construction companies in Uganda.

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

Barriers

- Buying and regularly re-filling gas is expensive and many cannot afford it. There have been some trials with LPG on PAYG by companies like WANA energy, but the technology is still immature.
- Introduction of subsidies on LPG is a controversial issue. The government is reluctant to support this as many of the main players in the LPG market are large, established companies.
- In 2015 the government reintroduced a value-added tax on LPG. Consequently, prices of LPG in Uganda have remained relatively high (US $2.50/kg) compared to prices in neighbouring countries, such as Kenya (approximately US $1.50/kg). This has knock-on consequences for other industries, such as clean cookstoves, which use LPG as fuel.

[108] Construction Review Online (29 March 2020) Four solar and wind farms to be developed in Uganda.

- Due to the high cost of borrowing from financial institutions, much of the biogas market is based on cash sales.

Enablers

- The Government of Uganda has shown commitment to improving awareness of the benefits of LPG fuels, as well as developing regulations to harmonise distribution, transportation, storage, and marketing.
- UNBS has led the development of safety standards for cylinders and other key LPG system components. As a result, safety is becoming less of a concern among customers.
- Awareness of the potential of biogas is increasing as people become more familiar with the technology and concerns around the depletion of forest resources and rising charcoal prices persist.
- The government has provided some credit to SACCOs for biogas and has also provided tax rebates on imports of bio-digester components.
- EnDev has provided results-based financing to support the construction and maintenance of biogas systems in the country.

MINI-GRIDS

OVERVIEW AND SECTOR ACTIVITIES

As of 2019, Uganda had 11 operational mini-grids, which served approximately 4,000 households and a variety of commercial and small industrial businesses. Solar and hydro are the main generation technologies.[109]

Under REA's Master Plan, mini-grids are projected to serve an 70,000 additional households by 2030. REA has identified 320 sites for development.[110]

A number of international development partners are supporting the development of mini-grids through a wide range of programmes. Partners include the European Union, the World Bank, the United Nations, USAID, AfDB, GIZ, FMO, DFID, and the Shell Foundation.[111]

Through USAID, Power Africa is working on a number of activities, including identifying over 400 mini-grid sites.
Power Africa and its partners are also working to improve and/or create a supporting ecosystem for the off-grid market by launching a market accelerator.[112]

GIZ (through KfW) has committed US $28.5 million towards new solar-powered mini-grids in 45 sites. GIZ is also working with the GCF on an additional 25 mini-grids projects.

GIZ's thought process is that mini-grid development does not work on a project-by-project basis; rather, it is more effective to plan at scale by bundling projects and tendering out to one developer. So far GIZ's projects have been tendered out to Winch Energy and WeLight.

Mandulis Energy, with support from Power Africa, are developing an 8 MW biomass gasification plant which will convert agricultural residue into electricity for micro-grids in Northern Uganda.[113]

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

Barriers

[109] SE4ALL (October 2019).
[110] SE4ALL (2019).
[111] Ibid.
[112] USAID (April 2020).
[113] Uganda Off-Grid Market Accelerator (2020).

- Uganda's RESP 2013–2022 outlines a minor role for mini-grids (estimating 8,500 new service connections from mini-grids by 2022, compared with 130,000 new SHS and 1,276,500 new connections from grid extensions).[114]
- Lack of a defined policy and regulatory framework undermines the confidence of investors and constrains the development of mini-grids. In particular, fears over grid intrusion in mini-grid service areas, a lack of technical and quality standards and uncertainty in the project review and approval process have been cited as key constraints.
- Policies on tariffs are still evolving. Issues still remain, with the challenge being finding a balanced tariff which is affordable, yet cost-reflective. Currently tariffs are US $0.4/kWh; at this price level operators struggle to cover operational costs. This limits the attractiveness of projects to investors.
- The approval and licensing process is long and bureaucratic, with the process often taking up to 18 months. Additionally, when identifying project sites, developers lack information on sites under construction by competing developers, energy demand at a site and whether the site is being considered for grid extension. These factors can slow the site selection process.
- Access to finance: while most mini-grid companies have been able to access grants and equity, access to debt remains limited. To date, only 20% of the capital invested in the sector has been debt.
  While the sector is still nascent, companies have been able to rely on concessional finance from DFIs and the government to fund capital expenditure (which make up the majority of initial costs). Going forward, as the sector grows, larger and more long-term funding will be required. Debt is expected to contribute a higher percentage of projected capital required.[115]
- A lack of incentives to de-risk business models and reduce the price for end-users has hindered investment.
- Affordability to consumers: the cost of connections (which range between US $22 and US $125), in addition to monthly tariffs, service fees, and maintenance costs, are prohibitive to many Ugandans. Additionally, a lack of adequate payment options means customers often have to travel long distances to pay tariffs (incurring further expenses in the process).[116]

Enablers

- REA is in the process of amending RESP to provide greater clarity on the role of mini-grids within the overall strategy for rural electrification.
- A bifurcated approach to licensing has been adopted. Projects under 2 MW do not require a licence, whereas any projects above 2 MW do.[117] The government is working to publish a mini-grid regulation, but this is unlikely to happen before the January 2021 elections.
- Grid operators concerns about lease lengths are due to be addressed in the New Energy Policy (pending approval).
- Fiscal support for mini-grids is offered through the Rural Electrification Fund, which provides significant financial support. UECCC has also provided financial support and technical assistance to mini-grid developers and is currently working with ORIO Infrastructure Fund (Government of the Netherlands) to support the development of 10 mini-hydro projects.

CLEAN COOKING

OVERVIEW AND SECTOR ACTIVITIES

Approximately 95% of Ugandan households rely on charcoal, wood, or other forms of biomass for their household cooking needs.[118]

[114] REA (2013).
[115] Uganda Off-Grid Market Accelerator (2020).
[116] Ibid.
[117] A Practical Guide to the Regulatory Treatment of Mini-Grids.
[118] Uganda Bureau of Statistics (2017) The Uganda National Household Survey 2016/17.

Uganda's cook-stove sector emerged in the 1980s as a response to address concerns over deforestation. Since then, steady progress has been made in the sector, with support from international agencies such as GIZ.

Despite this, Uganda's cook-stove market remains fragmented and is comprised of artisanal producers and international manufacturers. There are a range of products available, varying widely in both cost and quality.

Market penetration is low, the last official estimate from the UNACC was 7% of the population/500,000 households in 2012.

A select number of firms command the majority of investment attention, including Envirofit, BioLite, and EcoZoom. The largest local manufacturer is UgaStove, which produces around 200 cookstoves per day.[119]

Fenix International started selling EcoZoom cookstoves in all their service centres in March 2018. Customers with a good credit score are eligible to purchase the stoves, increasing their monthly commitment to ReadyPay by an amount lower than what they will save on charcoal. This initiative was launched with support from UNCDF and World Bank.[120]

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

Barriers

- Manufacturers and distributors of ICS have a cumulative financing need of US $193 million for enterprises alone. An additional US $207 million in affordability gap financing will be required to help the 81% of households that cook with wood but cannot afford ICS.[121]
- A lack of regulations and product standards has allowed many counterfeit copies of well-known brands to enter the market. Prevalence of low-quality products can reduce consumer confidence in the market.
- Many producers are struggling to get the necessary finance and marketing expertise to scale up and enter new, more disparate markets.
- High costs of transportation and storage space limits the development of distribution networks outside Kampala—producers of high-quality stoves tend to be based or focus on urban areas (particularly Kampala). The high cost of distributing to rural centres reduces incentives to invest developing the rural distribution networks which are critical for driving sales and achieving the volumes required to meet policy goals.
- There is lack of consumer awareness of products and benefits—a significant challenge will be shifting the majority of Uganda households from traditional cooking technologies (three-stone fires and lower-quality semi-industrial stoves) onto high-quality industrial improved wood and charcoal stoves. Solutions include increasing understanding of what drives household (primarily women's) adoption of new cooking solutions and public awareness campaigns emphasising savings in both time and money to influence household decision making around purchase and usage.
- There is limited availability of consumer financing products; the main source of consumer finance in rural parts of Uganda is through village savings and loans schemes. These are rarely used for the purchase of ICS. No formal financial service providers have established lending schemes for ICS, although Fenix International have recently launched a payment scheme.
- Affordability is a challenge for the improved cooking sector, particularly for producers of clean fuel-based technologies, where the affordability barriers are two-fold: in addition to upfront costs of the products, recurrent costs associated with fuel purchases (which are high in Uganda) and operation and maintenance present hurdles for consumers.
- There are indications that potential financiers do not have the right capacity and do not really understand the business and its opportunities, also with regard to the possibility of receiving carbon finance.

[119] Stevens et al. (September 2019) Market mapping for improved cookstoves: barriers and opportunities in East Africa, Development in Practice.
[120] Fenix International (March 2018) Fenix Scales Up Clean Cookstove Sales Across Uganda.
[121] SE4ALL (October 2019).

- There have been arguments about UNACC effectiveness, as it does not have the right level of funding and member commitment. Whereas solar companies are required to be members of USEA to obtain the letter qualifying them for tax exemption (when importing), this not the case with the stove sector. Therefore, stove companies are under no obligation to become members of UNACC and this undermines commitment and effectiveness.

Enablers

- As part of the 2007 Renewable Energy Policy, the Government of Uganda established a target of reaching approximately 4.3 million households with clean and efficient cook stoves by 2017.
- According to a 2018 Regulatory Indicators for Sustainable Energy report, Uganda scored 63/100 on the robustness of its clean cooking policy framework. The existence of a national cooking plan and increasing availability of data were highlighted as strengths (while lack of incentives and standards were identified as weaknesses).
- UNACC works to create an enabling environment for equitable universal access to clean cooking solutions in Uganda.[122]
- UNBS and MEMD have been working with the United Nations Foundation's Clean Cooking Alliance to improve consumer awareness and stove quality through a standards and labelling process.[123]
- Carbon markets in Uganda are relatively well organised which brings down the sales price of better quality stoves—*Impact Carbon*, for example, is an intermediary linking local producers with voluntary carbon markets. Beyond this, however, there remain difficulties in enterprises accessing finance to grow their businesses.
- As fuel wood becomes more scarce, rising prices could be a driver of demand for improved clean cook stoves.

PUTs

OVERVIEW AND SECTOR ACTIVITIES

The market for electrical appliances is growing as a result of an increased ranges of products on the market (including televisions, water pumps, hair clippers, refrigerators, and solar mills).

Uptake of higher capacity appliances remains limited but is gaining traction. With over 70% of Uganda's population involved in agricultural activities, there is significant potential for Tier 3 appliances to be used. The following technologies have been identified as having particularly high-impact potential in Uganda.

- **Solar irrigation**: While solar pumps have higher initial costs, diesel pumps have ongoing, high maintenance costs (and also the possibility of fuel shortages in the area). Studies show that solar pumps are cheaper on a life cycle cost basis than diesel pumps.[124]

  Solar irrigation has recently been made a priority area for the government. Due to the increasing instances of drought across the country, the government has launched an initiative to decrease dependency on diesel pumps and enable every agricultural household to take advantage of irrigation. To make these pumps affordable to farmers, players are partnering with donor agencies that are interested in the food security agenda to subsidise products.

- **Agro-processing**: Processing of agricultural products such as grains, oil seeds and coffee present an opportunity to create value addition on Uganda's main agricultural products, benefiting farmers throughout the country.

[122] Ibid.
[123] SE4ALL.
[124] Solar Electric Light Fund 'A Cost and Reliability Comparison between Solar and Diesel Powered Pumps', available from https://www.self.org/SELF_White_Paper_-_Solar_vs_Diesel.pdf.

- **Cold storage in Uganda's dairy sector**: Between 20%–40% of milk produced in Uganda is currently wasted due to spoiling (a consequence of lack of cooling facilities during transportation).[125]

Activities by development partners include the following.

- Power Africa have made adoption of PUTs a pillar of their market accelerator.
- The World Bank is currently appraising a new project which will include a facility to support the adoption of productive use equipment and energy-efficient technologies. The project has US $500 million in committed funding.
- DFID are implementing their Transforming the Economy through the climate-smart agribusiness (NU-TEC) programme in Northern Uganda.
- An upcoming study funded by Lighting Global found that many PUTs are at a nascent stage. The study found that solar irrigation pumps and grain milling were the two technologies with greatest potential.[126]

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

Barriers

- **Development of regulations and a focused strategy for PUTs**: The sector is still at a very nascent stage. While the government has shown increasing interest in PUT (particularly solar water pumps), regulations for the sector still need to be developed. A centralised, consolidated effort must be made to assemble stakeholders in the sector and streamline activities.
- **Limited access to finance for productive use businesses**: Financiers (donors, banks, and other financial institutions) focus the majority of their efforts on access to energy (household access) rather than building energy demand.
- **Affordability and lack of consumer finance options**: Many Ugandans have limited disposable incomes for the purchase of assets. Only 10% of agricultural households have access to credit facilities. Promotion of shared investments among farmers (savings groups and cooperatives) and extending PAYG models to the purchase of PUTs can go some way towards addressing this challenge.
- There is limited consumer awareness of the benefits of productive use appliances and quality products on the market.
- There is a mismatch between consumer needs and the types of products available. The lack of appropriate product availability reduces consumer demand.
- Affordability and high maintenance costs of imported machinery: the costs of supplying and risks of repairing foreign machinery are high.

The following are required to effectively scale and promote PUTs in Uganda.

- Raising consumer awareness—particularly through the increased roll-out of more established and tested technologies such as solar irrigation and pumps—would lead to a rise in demand and in turn encourage existing and new companies to utilise PUTs.
- Running pilots and incentive programmes to encourage innovation for high-potential industries such as coffee, nuts, and oil seeds.
- Further market research is needed to help identify investment gaps, explore value creation, and provide further market information on successful business models.
- Lobbying government to consider specific tariff and trade policies to encourage investment: at present there are no specific policies that provide incentives for investment in the sector.

[125] UOMA (August 2019).
[126] Interview with Federico Querio (World Bank).

SHS

OVERVIEW AND SECTOR ACTIVITIES

In the last few years, SHS have emerged as a significant source of electricity in Uganda. The sector has grown to deliver energy access for over 19% of households.[127]

SHS is expected to play a significant role in achieving universal energy access by 2030. To meet projected targets, an additional 5.3 million households will require SHS installation. This amounts to an average of about 500,000 new households annually.

Wide scale access to SHS products has been enabled by PAYG financing options. In 2018 about 370,000 high-quality standalone solar solutions were purchased by Ugandan households—61% on a PAYG basis.[128] Going forward there is significant opportunity for market expansion, particularly in areas with high levels of mobile money penetration.

Investment in Uganda's SHS market has grown significantly in recent years and it is now one of the top five markets globally.[129]

Between 2013 and 2019, SHS businesses in Uganda disclosed US $182 million in debt financing. Of this total, US $36 million came from local and regional banks, US $72 million came from funds and intermediaries, and US $75 million came from DFIs.[130]

It should be noted that a significant portion of debt funding to date is attributed to the US $80 million investment in M-Kopa in 2017, which was the largest debt financing in the sector to date (from a syndicate of DFIs and regional banks).

While there are over 300 solar companies operating in Uganda, the largest players in Uganda's SHS market are private international companies, including Fenix International, M-Kopa, Solar Now, Village Power, Solar Today, Bright Life, and Greenlight Planet.[131] These companies have received the majority of financing to the sector.

In particular, Greenlight Planet recently secured US $90 million in investment to scale up its activities in Kenya, Nigeria, Tanzania, and Uganda. Funding secured was a combination of debt and equity and was provided by European DFIs CDC Group, FMO, and Norfund, along with impact investors ResponsAbility, SIMA Funds, Symbiotics, and Global Partnerships, as well as private equity firm ARCH Emerging Markets Partners' Africa Renewable Power Fund.[132]

A number of international development partners are supporting a wide range of programmes to advance energy access through standalone solar solutions, cultivating market growth, and stimulating capital investment. Examples include:

- European Union: scaling up rural electrification using innovative solar PV distribution models
- World Bank: Lighting Africa
- UNCDF: Clean Start
- USAID: Power Africa
- DFID: Energy Africa[133]

SUB-SECTOR-SPECIFIC BARRIERS AND ENABLERS

[127] SE4ALL.
[128] GOGLA (2018) Global Off-Grid Solar Market Report: Semi-Annual Sales and Impact Data, January–June 2018.
[129] SE4ALL (October 2019).
[130] USAID.
[131] USAID (2019).
[132] Bloomberg (22 September 2020).
[133] SE4ALL (October 2019).

Barriers

Despite increasing investment in the sector, financing is still not adequate to meet the needs of SHS businesses at different stages of growth.

A recent report by SE4ALL estimates that, to achieve an additional 5.3 million connections by 2030, standalone solar businesses will need cumulative financing of US $1.43 billion. This total is broken down into debt (US $649 million/45%), equity (US $579 million/40%), and grants (US $207 million/15%), in recognition of the varying financing needs of companies at different stages of growth.

Furthermore, Uganda will require a total of US $329 million (an average of US $29.9 million per year) in affordability gap financing to achieve universal electricity access by 2030.[134]

Financing challenges for SHS businesses include:

- Early-stage businesses can access grant funding but find it hard to access equity and debt due to unproven business models.
- Medium-sized businesses can struggle to close multiple funding rounds.
- Large businesses lack access to affordable local debt.
- In terms of funding, while equity and grants will be required to spur innovation of business models and to reach hard-to-serve customers, the majority of investment required for off-grid solar companies to scale will need to be in the form of debt to finance consumer receivables and inventory.

Enablers

Innovative financing strategies currently available to increase lending to SHS operators include:

- Concessional lending: Operators given loans with more favourable payment terms than commercial loans; concessional loans offer lower interest rates, longer payment tenors, and grace periods that reduce default risk for investors and cost of capital for operators.
- Guarantees: Local financial institutions are offered guarantees from development organisations to cover a portion of their losses in case of default from operators; usually structured according to level of risk exposure with guarantors heavily involved in due diligence.
- Off-balance sheet financing: PAYG companies are financed based on underlying receivables without recourse on the balance sheet; operators would need to improve their credit assessment capabilities to attract more commercial financing through off-balance sheet.
- Results-based financing: Financial incentives are usually disbursed to operators upon delivery of specific outputs that will in turn increase availability of credit and transfer risk to operators to deliver on key milestones.
- Special purpose vehicles: A potential source of funding to enable scaling of the PAYG model.

In addition to these financing challenges, inconsistent application of tax exemptions, a lack of enforcement of quality standards, and limited consumer awareness of the benefits of products inhibit growth of the sector.

Furthermore, due to limited distribution networks and the difficulty of accessing remote areas, the growth rate of sales has declined since 2016, with volumes expected to drop again this year due to COVID-19.

Continued growth of the SHS market will depend on greater clarity on the application of tax incentives, increased consumer awareness, a rigorous quality assurance framework, financing to help companies access hard-to-reach rural areas, and affordability gap financing to help the poorest households afford products.

[134] Ibid.

ANNEX 2: INSTITUTIONS INTERVIEWED

- AfDB
- African Institute for Energy Governance
- Centenary Bank
- Centre for Research in Energy and Energy Conservation
- East Africa Alliance on Carbon Markets and Climate Finance
- EADB—Biodiversity Financing Facility
- Frank Energy Consultants
- GGGI
- Mandulis Energy
- MEMD
- Open Capital Advisors
- PSFU
- Swedish Embassy
- Uganda Renewable Energy and Energy Efficiency Alliance (UNREEEA)
- UNCDF
- UNDP
- Village Power
- WWF Uganda
- World Bank