

UGANDA



NDC Private Sector Engagement Project

# Engaging private sector in NDC implementation - Assessment of private sector investment potential in the energy sector

EXECUTIVE SUMMARY

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UNDP's work on climate change spans more than 140 countries and USD \$3.7 billion in investments in climate change adaptation and mitigation measures since 2008. With the goal to foster ambitious progress towards resilient, zero-carbon development, UNDP has also supported the implementation of the Paris Agreement on Climate Change by working with countries on achieving their climate commitments or Nationally Determined Contributions (NDCs).

## THE UNDP NDC SUPPORT PROGRAMME

The NDC Support Programme provides technical support for countries to pursue a “whole-of-society”, integrated approach that strengthens national systems, facilitates climate action and increases access to finance for transformative sustainable development. The programme helps countries address these financial barriers by deploying a structured approach for scaling up sectoral investments and putting in place a transparent, enabling investment environment. Beyond direct country support, UNDP facilitates exchanges and learning opportunities on NDC implementation at the global and regional level by capitalizing on our close collaboration with the UNFCCC and other strategic partners. The Programme, which works in contribution to the NDC Partnership, is generously supported by the German Federal Minister for the Environment, Nature Conservation, and Nuclear Safety (BMU), the German Federal Ministry of Economic Cooperation and Development (BMZ), the European Union and the Government of Spain.

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# EXECUTIVE SUMMARY

Transforming Nationally Determined Contributions (NDCs) into tangible actions that lead to long-term zero-carbon and climate-resilient development requires financing. Access to finance is fundamental to realize the objectives set by the NDCs. However, countries continue to face challenges in securing the financial resources needed to achieve their NDC targets. A significant share of the financing required is expected to be provided by the private sector.

To increase private investment in NDC targets, it is important that the private sector stakeholders engaged in markets and industries understand the business environment, current market and investment potential in specific sectors.

This report estimates the private sector investment potential for delivering NDC sectoral targets for the energy sector in Uganda through assessments of the NDC targets, the enabling environment, current market and Uganda's investment potential.

## GREENHOUSE GAS EMISSIONS AND CLIMATE TARGETS

Uganda is a relatively low emitter of greenhouse gases (GHG). Its GHG emissions account for only 0.099 percent of total GHG emissions globally. At 1.39 tons of carbon dioxide equivalent (tCO<sub>2</sub>e) per capita, its GHG emissions are among the lowest per capita in the world. (The global average is approximately 7.99 tCO<sub>2</sub>e per capita.) The country's 2015 GHG emissions totalled 77.381 million tCO<sub>2</sub>e.

In sectoral terms, the agriculture, forestry and other land use (AFOLU) sector represents the most significant source of GHG emissions, totalling 66.829 million tCO<sub>2</sub>e, or 86.4 percent of total 2015 emissions. The energy sector follows, with 8.452 million tCO<sub>2</sub>e (10.9 percent of total emissions), waste at 1.610 million tCO<sub>2</sub>e (2.1 percent), and industrial processes and product use (IPPU) at 0.378 million tCO<sub>2</sub>e (0.6 percent). Uganda's emissions across all sectors are trending upward overall. Its projected business-as-usual (BAU) GHG emissions for 2030, including the land use, land use change and forestry sector, are estimated at 77.3 million tCO<sub>2</sub>e.

Although it is a low GHG emitter, the country is experiencing significant adverse impacts of climate change, including changing weather patterns, rising water levels of water bodies and increased frequency of extreme weather events. In response to this challenge, Uganda has taken steps to ensure the resilience of its people to the effects of climate change and contribute to mitigating global warming.

Uganda's NDC emphasizes that it gives priority to reducing the vulnerability of its population, environment and economy by implementing adaptation actions. This involves the agriculture and livestock, forestry, infrastructure (with an emphasis on human settlements, social infrastructure and transport), water, energy, health and disaster risk management sectors. Nonetheless, Uganda has presented its contribution to mitigation: it seeks to reduce national GHG emissions by about 22 percent by 2030, compared to BAU levels.

In terms of specific mitigation actions in the energy sector, the NDC emphasizes Uganda's commitment to policies and measures in the power supply subsector to support its low-carbon development. It also includes additional mitigation policies and measures that Uganda intends to undertake if it receives sufficient international support in the form of finance, technology and capacity building, including support accessed through climate finance instruments and international market mechanisms. In the energy sector, these policies and measures fall under the energy demand and transport subsectors. The following are mitigation actions identified in Uganda's NDC:

- Build enabling infrastructure for electricity sector development, including power lines, substations and transmission facilities:
  - The NDC notes that the development of the electricity sector holds great mitigation potential for Uganda based on the potential offsetting of wood and charcoal burning and resulting deforestation.
- Achieve a total of at least 3,200 MW renewable electricity generation capacity by 2030, up from 729 MW in 2013;

- Adopt sustainable energy solutions in public buildings:
  - Energy efficiency in hospitals;
  - National Appropriate Mitigation Action for Integrated Sustainable Energy Solutions for Schools in off-grid areas.
- Promote and increase the uptake of energy efficient cooking stoves or induction cookers;
- Promote and increase the uptake of solar energy systems;
- Develop and enforce building codes for energy efficient construction and renovation;
- Develop and implement a long-term transport policy accounting for climate change mitigation concerns; and,
- Adopt Fuel Efficiency Initiative National Appropriate Mitigation Action: Policies and regulations to promote cleaner fuels and more fuel-efficient vehicle technology.

Uganda's energy sector is the main driver of its economic development. The energy sector is the second-largest source of GHG emissions, following the AFOLU sector. Those emissions are expected to continue rising as the population and economy grow. The Government of Uganda has emphasized the importance of the energy sector in achieving the country's mitigation target and the importance of private sector participation in achieving its targets in the sector.

## **ENABLING ENVIRONMENT**

The existence of an enabling environment, including related legislation, laws, programmes and plans, is crucial to achieve the sustainable development targets in any country. Uganda has developed a wide range of policies related to climate change and the energy sector, emphasizing the need to involve the private sector in the process.

### **OVERALL POLICY ENVIRONMENT**

The Government of Uganda recognizes the importance of integrating climate change considerations into its policies, strategies and plans. The Uganda Vision 2040 is the country's economic development driver for the period 2013-2040. It aims to transform Ugandan society from a predominantly low-income country into a competitive, upper middle-income one by 2040. The National Development Plan is a series of five-year development plans aimed at achieving the objectives of Uganda Vision 2040. These documents highlight the importance of the private sector to achieve the country's development goals.

### **CLIMATE-CHANGE RELATED POLICIES**

Uganda's policies, strategies and plans incorporate climate change into its development planning framework to ensure that the country is resilient to the adverse effects of climate change and can mitigate their impacts, while aiming to transform Uganda into a competitive, upper middle-income country. Uganda's climate policies and climate action documents include its NDC, National Climate Change Policy (NCCP) and Uganda Green Growth Development Strategy (UGGDS).

Both the NCCP and UGGDS are aligned with the NDC and recognize the role of the private sector in addressing climate change. The NCCP provides opportunities to enhance private sector participation in implementing climate change-related activities. It identifies specific mitigation measures in the energy sector and promotes private sector investment by providing incentives and introducing codes and standards. A long-term low-carbon and climate resilient development strategy is currently being developed for Uganda that builds on the development goals of the NCCP, NDC and other relevant strategies. The long-term strategy should help the country identify bold and concrete actions that will help deliver sustainable economic transformation. The UGGDS also includes incentives and green innovations as part of its private investment mobilization strategy.

### **ENERGY-RELATED POLICIES**

Uganda has developed several policies that guide the development of the country's energy sector. The Energy Policy for Uganda (2002) is the primary guiding document for the sector. It highlights the sector's direct linkage with other

economic sectors and its role as a major contributor to national development and government revenues, with its performance directly impacting the performance of other sectors. The Electricity Act (1999) provides the regulatory framework for the electricity subsector, which liberalized and introduced competition into the electricity sector.

The Renewable Energy Policy for Uganda (REP, 2007) aims to increase the use of modern renewable energy so that it constitutes a substantial share of national energy consumption. It sets out the details of strategies and actions to be undertaken to realize its objectives. The policy actions include programmes in the areas of power generation for large and small hydropower, rural and urban poor electricity access, modern energy services, biofuels, energy efficiency and waste for energy. The REP is currently under review and is being integrated into the draft national energy policy being developed.

Uganda also introduced feed-in-tariff regulatory mechanisms through its Renewable Energy Feed-in Tariff (REFiT) and Global Energy Transfer Feed-in Tariff (GETFiT) Programme to encourage and support greater private sector participation in power generation from renewable energy technologies.

Although no policies specifically related to energy efficiency have been issued, strategies and plans do exist that address energy efficiency issues under existing policies, such as the energy efficiency programme under the REP. The Energy Efficiency Roadmap for Uganda also provides priority recommendations for implementing energy efficiency and maximizing benefits to meet the goals and priorities established in Uganda's 2015 Sustainable Energy for All Initiative Action Agenda. The Energy Efficiency and Conservation Act is currently being developed. When enacted, it will provide the legal, institutional and regulatory framework for energy efficiency and conservation in Uganda.

The Biomass Energy Strategy for Uganda (2013) proposes rational and implementable approaches to manage the biomass energy sector.

## **PRIVATE SECTOR ENGAGEMENT AND INVESTMENT-RELATED POLICIES**

Uganda's policies that are relevant to sustainable economic development and that address the adverse effects of climate change and low-carbon development of the energy sector acknowledge the critical role of private sector engagement in achieving the country's development goals. Uganda's Public-Private Partnership (PPP) Programme further supports development of the country's private sector.

The Government of Uganda provides import-based incentives that exempt equipment imported into the country from duty and all taxes as part of the East African Community's General Exemption Regime. Specific to the energy sector, this includes specialized solar and wind energy equipment, and energy-saving lighting, among others.

## **OVERALL BUSINESS ENVIRONMENT**

The overall enabling environment for private investment in the energy sector in Uganda is relatively strong. Uganda's economy has been growing in recent years, albeit at a slower pace. However, the pandemic is severely affecting growth, with economic activity decreasing due to the policy measures implemented to contain the spread of the virus. Consequently, the level of economic growth is expected to fall well below the forecast prior to the pandemic.

Nonetheless, the outlook over the medium term is positive even amid uncertainty. The government remains committed to pursuing sound macroeconomic policies to restore macroeconomic stability, ensure fiscal and debt stability, and bolster inclusive growth once the crisis fades.

Although the economic outlook has weakened because of the pandemic, in recent years Uganda developed policies and strategies supporting the development of private investment in the energy sector to achieve low-carbon development. Policies such as feed-in tariffs, tax incentives and exemptions and a PPP framework are encouraging for private sector engagement in the energy sector and its subsectors. The regulatory framework also supports investment in the energy sector, as it provides favourable conditions for foreign direct investment and cross-border investment.

# CHALLENGES, RECOMMENDATIONS AND POTENTIAL FOR PRIVATE SECTOR INVESTMENTS IN THE ENERGY SECTOR

Uganda's energy sector presents a policy environment that encourages private sector participation in investments to attain low-carbon sustainable development and achieve its NDC and national targets. Given the country's projected economic growth and, with it, greater energy needs resulting in increased GHG emissions, this presents even more opportunities for private sector involvement. However, the energy sector is constrained by barriers and challenges to scaling up private sector investment in the country. These existing barriers and gaps need to be addressed to support private sector participation in Uganda's energy sector.

## RENEWABLE ENERGY

Uganda's target is to achieve renewable energy power generation capacity of 3,200 MW by 2030. This will require developing solar PV, hydro, geothermal, wind and biomass cogeneration for on-grid, mini-grid and off-grid applications.

The renewable energies ecosystem focuses on on-grid utility-scale power generation, commercial and industrial (C&I) and household off-grid applications.

Independent power producers (IPPs) are at the centre of the on-grid renewable energy value chain in Uganda, producing electricity that is fed to the national grid through power purchase agreements with the Uganda Electricity Transmission Company Limited. Uganda has attracted private sector investments in new renewable energy capacities. However, further private investment is severely constrained by the current electricity supply not fully evacuated, lack of grid infrastructure leading to a low electrification rate, and limited capacities of electricity transmission and distribution infrastructure.

In the off-grid applications of renewable energy power generation, the C&I and household markets are served by technology providers and small-scale project developers, including asset-based lending providers.

The lack of business models for developing mini-grids represents the primary constraint to the development of the off-grid and mini-grid market.

Several mini-grid projects have been implemented in Uganda; their success is attributed to subsidies provided by the Rural Electrification Agency (REA) through the national Rural Electrification Fund and support from international donors throughout the project planning and development stages. However, the lack of cost-reflective tariffs that do not depend on government subsidies to incentivize further development of renewable energy in mini-grids remains a key barrier.

### RECOMMENDATION AND POINT OF ENTRY 1

#### **Developing innovative business models for mini-grid development**

Developing innovative business models will be critical to achieving renewable energy-based rural electrification. Given the initial cost of mini-grids and the current lack of cost-reflective tariffs that would convince developers that such projects are viable, business models could be considered that decrease operational costs and increase connection coverage. This would enable developers to recover their initial investments by decreasing running costs and scaling-up revenues.

Investments in mini-grid renewable energy development could be further supported by developing incentive schemes to reduce initial investment costs. This could be through grants, subsidies, minimum revenue guarantees and result-based financing.

## POTENTIAL FOR PRIVATE SECTOR INVESTMENT IN RENEWABLE ENERGY

The Government of Uganda has provided a suitable enabling environment to engage the private sector in developing renewable energy in the country. Under its NDC, Uganda aims to achieve renewable energy power generation capacity of 3,200 MW by 2030. Taking into account current renewable energy capacities and those being developed, this represents about 630 MW in generation capacity of renewable energy investment potential for private sector participation and is estimated at between \$882 million and \$2,268 million.

The development of renewable energy-based mini-grids and off-grid applications for rural electrification presents significant opportunities for private sector investment. Innovative business models will be crucial to development in this space. This could be further supported by developing incentive schemes, such as grants, subsidies, minimum revenue guarantees and result-based financing. Investment potential also exists in the growing SHS market, estimated at between \$1.08 million and \$4.17 million annually.

## ENERGY EFFICIENCY, INCLUDING CLEAN COOKING

### ENERGY EFFICIENCY

Uganda's energy efficiency targets focus on sustainable energy efficient solutions in public buildings and on developing and enforcing building codes for energy efficient construction and renovation.

Uganda recognizes the multiple benefits of energy efficiency, beyond its contribution to mitigating GHG emissions. Those benefits include saving on electricity costs, improving supply reliability, reducing peak demand and deferring the need for additional generation capacity. Several energy efficiency efforts have been achieved at various levels in Uganda. These focus mainly on the distribution of energy efficient equipment, such as CFL lighting, solar water heaters and other such equipment for industrial applications.

However, gaps and challenges in energy efficiency exist. These include the lack of policies and regulations that would prioritize energy efficiency, lack of confidence in energy efficiency investment, and the high costs associated with energy efficient technologies.

#### RECOMMENDATION AND POINT OF ENTRY 2

##### **Establish an enabling environment for energy efficiency**

**Policies and regulations** – The importance of establishing an enabling environment is paramount for the development of the energy efficiency subsector in Uganda. The Energy Efficiency and Conservation Bill should be adopted. It would pave the way for other policies and regulations, including energy efficiency standards, labelling and certification of appliances, and development of programmes and incentives for energy efficiency.

**Awareness campaigns** – Ugandans lack confidence in energy efficiency investment, among both smallholder end users, such as households, and larger end users, such as commercial and industrial facilities. Awareness should be enhanced to highlight cost savings and the associated environmental and social benefits of investing in energy efficiency measures and technologies. This effort should be designed to convince key stakeholders of the long-term financial gains and net cost reductions resulting from energy efficiency investments, with the aim of shifting consumer behaviour towards better and more sustainable preferences in electricity use.

**Appliance labelling** – The energy efficiency labelling of appliances is an effective way to raise public awareness of appliance energy savings. Under such a scheme, energy efficient appliances are labelled with information about the product's electricity consumption and energy efficiency. This allows end users to consider energy efficiency performance factors when they purchase an appliance.

#### RECOMMENDATION AND POINT OF ENTRY 3

##### **Providing energy service company (ESCO) services to C&I**

The Energy Efficiency Roadmap for Uganda identified incentivized audits as an opportunity to address lack of information and knowledge on the benefits of energy efficiency. The Ministry of Energy and Mineral Development (MEMD) has conducted preliminary energy audits in industries and commercial buildings. However, the implementation of energy efficiency recommendations following these audits remains limited. This presents opportunities for private sector investment through private sector-led mechanisms such as ESCOs, which provide both technical and financial services, simplifying the approach for end users. ESCOs would take on the responsibility of proposing appropriate energy efficiency measures adapted to the client's needs, finance the purchase and installation of equipment, and, in some cases, operate and maintain it. The client would then be billed based on the energy savings achieved. ESCOs can provide energy efficiency measures based on energy audits conducted by MEMD, as well as conduct its own energy audits for clients that have not yet been audited.

#### RECOMMENDATION AND POINT OF ENTRY 4

##### **Providing affordable energy efficient appliances to households and SMEs**

Providing affordable energy efficient appliances will encourage households to replace appliances with more energy efficient equipment. Developing asset-based lending for appliances such as refrigerators and air-conditioning could reduce the initial cost of investment. One option is for technology providers offering SHS to operate on a distributed energy service company (DESCO) model. SHS providers then become the distributors of energy efficient appliances.

In the longer term, affordability can be achieved by developing a manufacturing plant for energy efficient appliances in Uganda. This would address a major challenge for distributors of efficient appliances, which must find international suppliers and manufacturers that can produce high-quality products.

## CLEAN COOKING

Uganda targets the promotion and wider uptake of energy efficient cooking stoves as part of its mitigation actions on efficient use of energy resources. Stakeholders involved in Uganda's clean cooking ecosystem and value chain include cookstove manufacturers, fuel producers, distributors, retailers and end users.

The high cost of technologies associated with higher quality cookstoves and fuels is a significant challenge to the sector's development. Although the use of more efficient cookstoves and fuels generate greater cost savings in the long term, customers continue to see them as unaffordable because of their high initial cost. Better business models are needed to scale up the dissemination of these technologies, including providing efficient cookstoves and appropriate efficient fuel as part of a financing package option and enhancing public awareness of the economic and health benefits.

#### RECOMMENDATION AND POINT OF ENTRY 5

##### **Developing business models that focus on achieving scale**

Private sector investment in clean cooking solutions focuses on providing efficient cookstoves and efficient fuel. The costs of efficient and clean cooking technologies in Uganda is significantly greater than their traditional counterparts. Those high investment costs thus limit opportunities to scale up their implementation. Banks and other investors also have limited interest in small investments, which offer low margins. Creating innovative business models that would decrease initial investment costs and build on running costs could help enterprises scale up their production and become commercially viable.

Achieving scale is crucial if investors are to become more interested in projects and enterprises in the clean cooking ecosystem. The private sector therefore needs to consider models that will generate greater revenues by increasing the customer base or increasing affordability.

Some models to be explored include those that integrate stoves and associated fuels (tool and fuel models). They have a stronger revenue stream from fuel sales and could take advantage of the linkages between the stove and improved fuel to reduce the upfront cost of stoves.

These models can also be paired with SHS solutions. Clean cooking solutions would then become part of an overall "green model" for rural homes, which can be based on a pay-as-you-go (PayGo) basis.

In Uganda, Fenix International, a major SHS provider, has already started offering efficient stoves from another company, EcoZomm, through a DESCO model. Other SHS providers could replicate this innovative business model.

## POTENTIAL FOR PRIVATE SECTOR INVESTMENT IN ENERGY EFFICIENCY, INCLUDING CLEAN COOKING

Private sector actors are expected to play an important role in achieving demand-side energy efficiency. The roadmap indicates a technical potential of 2,224 gigawatt hours (GWh) of energy savings by 2030. These potential savings are distributed across demand-side subsectors, with the greatest opportunities in industrial (948 GWh), residential (784 GWh) and commercial (491 GWh). Measures that offer the most cost-effective opportunities include industrial motor improvements, on-grid residential lighting and commercial water heating. Implementing energy audits and installing energy management systems in the industrial sector was also identified as the opportunity with the greatest potential savings.



Uganda's BUR identifies energy efficient cooking stoves as one of the strategic action areas for the implementation of its national REDD+ interventions. Although it does not provide specific targets in terms of the number of cooking stoves, it highlighted the more efficient use of fuelwood and charcoal to reduce pressure on natural forests. The BUR estimates that \$62.7 million of financial support is needed to address financial, technical and capacity-building needs. Thus, it does not provide the expected amount to be leveraged from the private sector.

## TRANSPORT

The private sector is not currently investing in the transport subsector in ways that are relevant to achieving Uganda's NDC targets. However, the BUR notes mitigation actions under the subsector that have been undertaken and registered under the UNFCCC, including the Nationally Appropriate Mitigation Action (NAMA) on Vehicle Fuel Efficiency Initiative in Uganda and the NAMA on Bus Rapid Transit for Greater Kampala. Both involve catalysing investments and private sector participation in their implementation design.

### POTENTIAL FOR PRIVATE SECTOR INVESTMENT IN TRANSPORT

Transport sector mitigation actions identified in the NDC include implementation of the NAMA on Vehicle Fuel Efficiency Initiative in Uganda. The estimated private sector investment that could be leveraged totals \$301.0 million, which includes opportunities to establish a vehicle recycling and vehicle assembly industry in the country. The BUR also supplements mitigation actions in the transport sector and includes implementation of the NAMA on Bus Rapid Transit for Greater Kampala. The investment required for its implementation is estimated at \$612.06 million. Public sector financing will likely be used for the project's infrastructure components and private sector participation will follow a PPP approach. However, the estimated amount to be leveraged from the private sector is not provided. This would depend on the PPP arrangements for the different BRT components.

Opportunities for private sector investment in Uganda's energy sector can be leveraged mainly from renewable energy generation, with potential investments in large hydro, small hydro, solar, biomass and other renewable energy technologies. Significant private sector opportunities also exist in the transport subsector and, to a certain extent, in energy efficiency and other demand-side renewable energy technologies. The estimate of investment costs represents direct investment in these energy subsector technology solutions and measures. It is important to note that the extent of private sector involvement potential extends well beyond these direct investments and involves participation throughout the value chain of the energy subsectors.

## ACCESS TO FINANCE

Investments in low-carbon technologies, such as those for the renewable energy generation, energy efficiency and transport subsectors, face significant barriers from the financial sector due to the perceived risks associated with these types of investments. This limits the private sector's capacity to invest in projects, as well as for households to invest in the technologies. The lack of long-term financing, such as long-term debt and equity, is another important limiting factor, specifically for infrastructure projects such as on-grid utility scale projects.

Uganda currently benefits from increased access to finance in the form of climate financing from the Green Climate Fund (GCF). It has been a benefactor country of several multi-country programmes under the GCF and has implemented a GCF adaptation programme. Uganda also has a direct access accredited entity of the GCF through the Ministry of Water and Environment. Climate financing through the GCF is a potential option for addressing this barrier.

### RECOMMENDATION AND POINT OF ENTRY 6

#### **Providing capital at affordable conditions for blending and de-risking in commercial finance**

Commercial banks in Uganda cannot access affordable capital for projects with high overhead costs. Therefore, they provide less favourable financing conditions to the private energy sector. However, commercial banks have shown interest in partnering with international organizations to provide products at an improved interest rate.

Blended finance is therefore a potential option for the country's commercial banks. Blended finance transactions should address the risks perceived by investors as they represent a significant de-risking option for emerging

markets and developing countries through the use of instruments such as guarantees and grant funding. It is also an opportunity to increase returns on a specific investment. Blended finance mechanisms address specific risks perceived by investors, such as macroeconomic and technical risks.

The interest rates and tenors offered to loan applicants reflect the risks that commercial banks perceive. One of the main drivers of high interest rates in Uganda is the high cost of capital. Commercial banks also perceive energy-related business to be high risk. Significant drivers behind this involve credit risks associated with the probability of default by the loan recipient, as well as technical risks explained by a lack of understanding of innovative models in the energy sector.

Commercial banks could leverage the support extended by international organizations. This could be achieved by providing concessional finance or guarantees to commercial banks to cover part of the risk perceived, thereby lowering interest rates significantly compared with current conditions.

Some of the instruments that could be leveraged to achieve this include direct investments, concessional financing for lines of credit and guarantees. For example, direct investments may target significant infrastructure investments in the energy sector and increase the confidence of other investors. Credit lines may support commercial banks to target specific segments of the energy sector, such as SMEs in the SHS and clean cooking space. Finally, guarantees can provide the coverage that a loan recipient needs to improve its credit rating and decrease risks.

Blended finance programmes should be bundled with capacity-building programmes aimed at commercial banks. Commercial banks will have to assess business models with which they may not be experienced or comfortable.

#### RECOMMENDATION AND POINT OF ENTRY 7

##### **De-risking innovative social models**

To further support innovation in energy access and other energy business models, adequate financing conditions should be offered to innovative enterprises. Social ventures and enterprises require capital early on to develop their business model, proof of concept and prototypes, and to grow at scale. This requires financial and technical support.

Incubation and acceleration services need to be strengthened in Uganda to further support entrepreneurs. Capital also needs to be provided before investors become involved. Given the current status of the innovation ecosystem, pre-seed and seed funding are required to further support innovation. This can be achieved by providing grants or other concessional finance to acceleration services and/or investors (impact investors/VCs).

## **REPORTING FRAMEWORK TO ALIGN BUSINESS OPPORTUNITIES WITH NDC IMPACT TARGETS IN UGANDA'S ENERGY SECTOR**

Governments and international organizations engage the private sector to leverage stakeholder investments in the NDC. The NDC can offer the private sector additional business opportunities, but it is often unaware of those opportunities. It is therefore important to highlight and translate them into clear reporting frameworks, which the private sector can then leverage to enhance its understanding of the added value that climate investments bring.

A clear understanding of this alignment, or the extent to which the private sector can align with NDC actions, offers potential merits. It enables the private sector to clearly identify actionable actions, which can be translated into business opportunities. The NDC and SDGs have been chosen as the main reporting frameworks for this report. Business opportunities in the energy sector identified here are linked to NDC objectives and SDG targets. A summary of the business opportunities, the corresponding climate and SDG frameworks is provided below (direct benefits in **green**, co-benefits in **orange**).

BUSINESS OPPORTUNITY	NDC/NREAP TARGET	SDG FRAMEWORK
<b>RENEWABLE ENERGY</b>		
Developing on-grid renewable energy power generation plants (IPPs)	Achieve at least 3,200 MW renewable electricity generation capacity by 2030	7 – Sustainable energy 9 – Innovation and infrastructure 13 – Climate action 3 – Good health
Providing solar PV solutions to commercial, industrial, SMEs and households *	Emission reduction of about 1.5 million tCO <sub>2</sub> e by 2030	4 – Quality education
<b>Illustrative metrics</b>	<b>Reduced cost of energy (\$); reduced need for diesel generators (litres of diesel used); number and value of deals (\$); number and value of loans (\$) provided by local financing organizations; direct carbon reduction achieved by installing renewable energy capacity (tCO<sub>2</sub>e).</b>	
<b>ENERGY EFFICIENCY/APPLIANCES</b>		
Distributing efficient appliances, lighting and equipment	Energy savings of 2,224 GWh by 2030 (948 GWh from industrial, 784 GWh from residential, and 491 GWh from commercial)	7 – Sustainable energy 9 – Innovation and infrastructure 13 – Climate action
Providing energy audits and energy management systems		1 – No poverty 3 – Good health
<b>Illustrative metrics</b>	<b>Number of LEDs deployed; number of efficient refrigerators deployed; amount of energy savings realized due to the products/services provided (MWh); direct carbon reduction achieved through the use of efficient appliances (tCO<sub>2</sub>e); number and value of loans (\$) developed directly by DES-COs (households and SMEs).</b>	
<b>CLEAN COOKING</b>		
Manufacturing energy efficient cookstoves	Promotion and wider uptake of energy efficient cookstoves	7 – Sustainable energy 13 – Climate action
Manufacturing efficient fuels		15 – Life on land 1 – No poverty
Distributing clean cooking solutions		3 – Good health 5 – Gender equality 4 – Quality education
<b>Illustrative metrics</b>	<b>Number of efficient stoves deployed; number of households serviced in rural areas for efficient fuel; volume of wood fuel/inefficient charcoal used for cooking decreasing (tons); number and value of loans (\$) (asset financing) developed directly by clean cooking solution providers (households).</b>	
<b>TRANSPORT</b>		
Establishing vehicle recycling and vehicle assembly plants	Promote cleaner fuels and more fuel-efficient vehicle technology	8 – Decent work and economic growth 9 – Industry, innovation and infrastructure
Developing infrastructure for and operating BRT lines	Introduction of mass rapid transport (BRT)	11 – Sustainable cities and communities 7 – Sustainable energy 13 – Climate action 3 – Good health
<b>Illustrative metrics</b>	<b>Number of lines; kms of BRT operational; number of users; decrease in personal vehicle traffic (number of vehicles/day); direct carbon reduction achieved through installation of BRT lines (tCO<sub>2</sub>e).</b>	

\*Additional SDG targets are developed for these opportunities in the main report.

## ASSESSMENT RESULTS AND CONCLUSION

The Government of Uganda has provided an enabling environment that promotes private sector participation in achieving the country's sustainable development targets, including the energy sector. Although the ongoing COVID-19 pandemic has had a severe impact on Uganda's economic growth due to the global supply chain disruptions and the national lockdown measures imposed to control the outbreak, the economy is expected to recover slowly.

Private sector investment potential exists in the energy sector to meet the country's NDC target. In renewable energy generation, significant opportunities are present in the on-grid power generation space and mini-grid and off-grid applications for rural electrification. Investment potential also exists in the growing SHS market. Energy efficiency offers substantial potential for private sector investment in implementing energy efficiency measures across the demand-side subsectors. There is also significant potential in the efficient use of biomass for household, institutional and industrial use. Investment potential in the transport subsector primarily involves implementation of the NAMA on Vehicle Fuel Efficiency Initiative in Uganda and Bus Rapid Transit for Greater Kampala.

The financial sector should support private sector investment. Local financing is characterized by high interest rates and relatively short tenors. Venture capital and impact investing activities remain limited. Providing better financing conditions by leveraging blended finance, with instruments such as guarantees, credit lines and concessional financing, could be an option for local banks.

Finally, it is crucial that Uganda support innovation. Innovation is a main driver of investment for venture capital firms, especially in models targeting low-income customers. It will be important to drive innovative business models in the climate and energy space by providing enhanced incubation and acceleration services.



## UNDP NDC SUPPORT PROGRAMME

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