



KENYA



NDC PRIVATE SECTOR ENGAGEMENT PROJECT

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

October 2020

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# ACRONYMS

<b>BAU</b>	Business as usual	<b>Mtoe</b>	Million tonnes of oil equivalent
<b>CAPEX</b>	Capital expenditure	<b>MTPs</b>	Medium-Term Plans
<b>CBK</b>	Central Bank of Kenya	<b>NAMA</b>	Nationally Appropriate Mitigation Action
<b>C&amp;I</b>	Commercial and industrial	<b>NAP</b>	National Adaptation Plan
<b>CO<sub>2</sub>e</b>	Carbon dioxide equivalent	<b>NCCAP</b>	National Climate Change Action Plan
<b>CVC</b>	Corporate venture capital	<b>NCC</b>	Nairobi City Council
<b>EPC</b>	Engineering, procurement and construction	<b>NCCC</b>	National Climate Change Council
<b>ERC</b>	Energy Regulatory Commission	<b>NCCRS</b>	National Climate Change Response Strategy
<b>EPRA</b>	Energy and Petroleum Regulatory Authority	<b>NCCS</b>	National Climate Change Secretariat
<b>FDI</b>	Foreign direct investment	<b>NDC</b>	Nationally Determined Contribution
<b>GDP</b>	Gross domestic product	<b>PPA</b>	Power purchase agreement
<b>GESIP</b>	Green Economy Strategy and Implementation Plan	<b>PV</b>	Photovoltaic
<b>Gg</b>	Gigagrams	<b>REA</b>	Rural Electrification Authority
<b>GHG</b>	Greenhouse gas	<b>REREC</b>	Rural Electrification and Renewable Energy Corporation
<b>GVEP</b>	Global Village Energy Partnerships	<b>SACCO</b>	Savings and credit cooperative organization
<b>GWh</b>	Gigawatt hours	<b>SDGs</b>	Sustainable Development Goals
<b>INDC</b>	Intended Nationally Determined Contribution	<b>SE4ALL</b>	Sustainable Energy for All
<b>IPCC</b>	International Panel on Climate Change	<b>SHS</b>	Solar home systems
<b>IPPs</b>	Independent power producers	<b>SMEs</b>	Small and medium-sized enterprises
<b>KCF</b>	Kenya Climate Fund	<b>SNC</b>	Second National Communication
<b>KCJ</b>	Kenyan Ceramic Jiko	<b>TOE</b>	Tonne of oil equivalent
<b>KCSAS</b>	Kenya Climate Smart Agriculture Strategy	<b>UNFCCC</b>	United Nations Framework Convention of Climate Change
<b>KenGen</b>	Kenya Electricity Generation Company PLC	<b>UN</b>	United Nations
<b>KES</b>	Kenyan shilling	<b>US\$</b>	US dollar
<b>KPLC</b>	Kenya Power and Lighting Company	<b>VAT</b>	Value-added tax
<b>kW</b>	Kilowatt	<b>VC</b>	Venture capital
<b>LCPDPs</b>	Least Cost Power Development Plans		
<b>LPG</b>	Liquefied Petroleum Gas		
<b>LTWP</b>	Lake Turkana Wind Power Plant		
<b>LULUCF</b>	Land use, land-use change and forestry		
<b>MENR</b>	Ministry of Environment and Natural Resources		
<b>MFI</b>	Microfinance institutions		
<b>MNCs</b>	Multinational corporations		
<b>MOPM</b>	Ministry of Petroleum and Mining		
<b>MtCO<sub>2</sub>e</b>	Million tonnes of carbon dioxide equivalent		

# 1. INTRODUCTION

Transforming Nationally Determined Contributions (NDCs) into tangible actions that lead to long-term, zero-carbon and climate-resilient development requires financing. Broader-scale investments are needed to achieve the objectives set in the NDCs and the Paris Agreement. For example, it is estimated that US\$23 trillion in public and private investment is needed. Given the magnitude of the need, most of that will have to come from the private sector.<sup>1</sup> Ensuring the transition to low-carbon agriculture, forestry, water and waste sectors, among others, will require additional capital. Global estimates of the cost of climate change adaptation may rise to between \$280 billion and \$500 billion per year by 2050; costs may be higher under higher emissions scenarios.<sup>2</sup> 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 synergistic approach between the private and public sector is needed to deal with the shortage of financial resources. Such an approach requires mobilizing private sector resources to fill the gap caused by a lack of public investment. The adoption of the Paris Agreement sent a strong policy signal for private sector investment in climate finance. The development of the NDCs has also offered investment opportunities for the private sector. In 2015, for example, private sector investments reached US\$299 billion, before dropping to \$242 billion in 2016, due to the combination of falling technology costs and lower capacity additions in some countries.<sup>3</sup> Project developers are by far the largest provider of climate finance, investing \$125 billion in 2016. Significant potential exists in developing countries and emerging economies for private sector players to participate in climate finance and climate actions. These players include multinational corporations (MNC) and financial institutions; small and medium enterprises (SME) may also be mobilized in these countries. However, these players face barriers such as financial, regulatory, and technical limitations, to investing and engaging in climate actions.

To attract much-needed private sector investment, it is important to identify the private sector stakeholders engaged in markets and industries and understand which financial instruments and services are available to technology providers and users and providers of capital. This information will guide the development of solutions that can improve private sector participation in climate finance and ultimately fill the current investment gap.

This report estimates the private sector investment potential for delivering NDC sectoral targets in Kenya's energy sector. It is organized into six sections. This section introduces the problem. Section 2 assesses greenhouse gas (GHG) emissions and climate targets in relation to the energy sector. It also describes the roles of the energy sector in reducing emissions in Kenya and identifies targets. Section 3 focuses on the enabling environment, providing an overview of the main policies relevant to private sector investment and the energy sector, while also assessing macroeconomic risks, the business environment and the regulatory environment related to foreign investment.

Section 4 assesses investments in the energy sector in Kenya in renewable energy, energy efficiency and clean cooking. It also provides an overview of the main challenges for private sector investment. Section 5 analyses private sector investment potential in Kenya's energy sector by subsector, using targets identified based on Kenya's policy documents. Section 6 presents the reporting framework to align business opportunities with Kenya's NDC targets in the energy sector and the Sustainable Development Goals (SDGs).

1 NDC Partnership. *Unlocking private finance to help governments achieve their climate goals*. <http://ndcpartnership.org/unlocking-private-finance-helps-governments-achieve-their-climate-goals>.

2 Sustainable Development Goals. 2016. UNEP report: *Cost of adapting to climate change could hit \$500B per year by 2050*. <https://www.un.org/sustainabledevelopment/blog/2016/05/unep-report-cost-of-adapting-to-climate-change-could-hit-500b-per-year-by-2050/>.

3 Climate Policy Initiative. October 2017. *Global Landscape of Climate Finance 2017*.

## 2. GREENHOUSE GAS EMISSIONS AND CLIMATE TARGETS

Kenya is a commercial, transportation and communications hub for eastern Africa. Over the past five years, it has experienced moderate economic growth. In 2016, Kenya was the ninth-largest economy in Africa, becoming a lower middle-income country with gross national income per capita of \$1,380.<sup>4</sup> The agriculture and forestry sectors are the largest contributors to its economy, accounting for over 30 percent in 2018.<sup>5</sup> However, these sectors are vulnerable to climate change impacts. As such, Kenya is committed to addressing climate change and submitted its NDC, which incorporates both adaptation and mitigation targets. Rising GHG emissions cause climate change and the energy sector is a significant contributor to those increases, making it one of the key sectors that will help Kenya achieve its NDC target in 2030, while also supporting its economic growth.

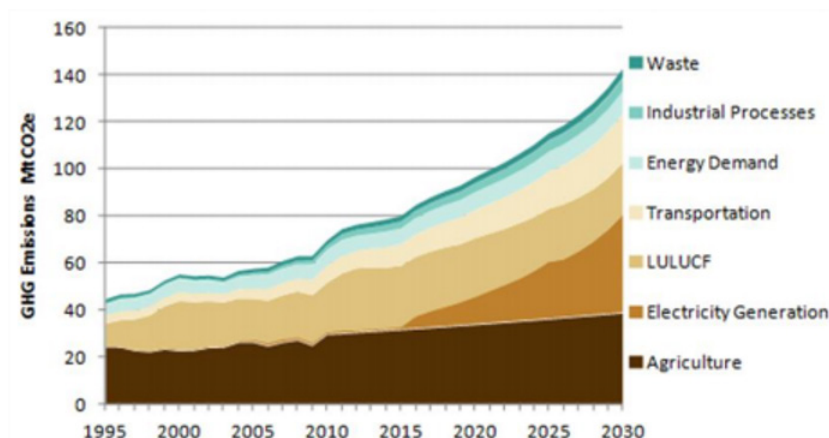
### 2.1 OVERVIEW OF KENYA'S GHG EMISSION PROFILE

Kenya's contribution to global climate change is relatively low, with GHG emissions representing less than 1 percent of total global emissions.<sup>6</sup> However, the country's vulnerability to the effects of climate change is highly relative to its contribution to emissions. While adaptation is the priority, mitigation actions are required to reduce GHG emissions that are projected to increase as a result of population and economic growth. These increases are expected to be driven by Kenya's aim to transform into an industrialized middle-income country by 2030 under Vision 2030, the country's long-term development plan.<sup>7</sup>

Kenya's priority climate mitigation actions fall in the six mitigation sectors set out in the United Nations Framework Convention on Climate Change (UNFCCC): agriculture, energy, forestry, industry, transport and waste.<sup>8</sup> In 2010, GHG emissions from these sectors totalled approximately 69.6 million tonnes of carbon dioxide equivalent (MtCO<sub>2</sub>e), including land use, land-use change and forestry (LULUCF).

In 2010, the agriculture sector had the most GHG emissions, accounting for over 60 percent of the total. Energy sector emissions were the second highest, accounting for over 30 percent of total emissions. According to the National Climate Change Action Plan (NCCAP) 2018 – 2022, the combined total GHG emissions from all sectors is expected to rise to 100 and 143 MtCO<sub>2</sub>e by 2022 and 2030, respectively.<sup>9</sup> By 2030, the energy sector is expected to produce the most emissions, specifically from electricity generation, followed by the agriculture and LULUCF sectors. The energy sector is thus an important player in climate mitigation. Figure 1 presents the projected baseline emissions from these sectors.

**Figure 1: Kenya's baseline emission projections (MtCO<sub>2</sub>e per year)**



Source: Government of Kenya. 2018. NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report. Ministry of Environment and Forestry.

<sup>4</sup> Government of Kenya. 2018. *National Climate Change Action Plan (NCCAP) 2018 – 2022 Volume 1*. Ministry of Environment and Forestry.

<sup>5</sup> Kenya National Bureau of Statistics. 2019. *Economic Survey 2019*.

<sup>6</sup> Government of Kenya. 2018. *National Climate Change Action Plan (NCCAP) 2018 – 2022 Volume 1*. Ministry of Environment and Forestry.

<sup>7</sup> Government of Kenya. 2013. *NCCAP 2013 – 2017*.

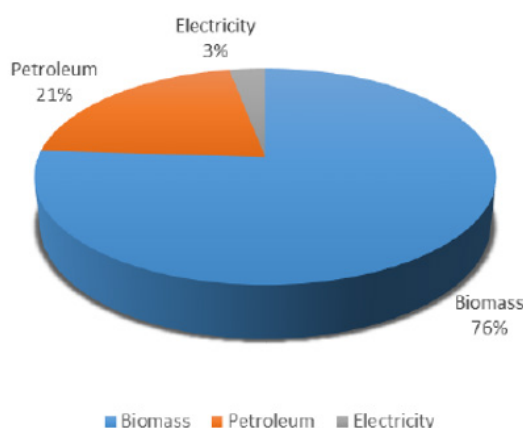
<sup>8</sup> Government of Kenya. 2018. *National Climate Change Action Plan (NCCAP) 2018 – 2022 Volume 1*. Ministry of Environment and Forestry.

<sup>9</sup> Government of Kenya. 2018. *NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report*, Ministry of Environment and Forestry.

## 2.2 KENYA'S ENERGY SECTOR AND ITS GHG EMISSIONS

The country's main energy sources are biomass, petroleum and electricity. Biomass, which includes wood fuel, charcoal and agricultural waste, is a basic source for cooking and heating for rural communities, the urban poor and the informal sector and accounts for 76 percent of total primary energy.<sup>10</sup> The balance is supplied by electricity and petroleum, accounting for 21 percent and 3 percent of the total energy source, respectively.<sup>11</sup> Petroleum is imported and used mainly in the transport and commercial and industrial (C&I) sectors. In the future, oil is expected to also play an important role in the energy mix, given the recent discovery of oil reserves in Kenya. Figure 2 presents the breakdown of Kenya's energy sources.

**Figure 2: Kenya's energy sources**



Source: Government of Kenya. 2015. SNC to UNFCCC. National Environment Management Authority

### 2.2.1 ENERGY SUPPLY (ELECTRICITY GENERATION)

Electricity in Kenya is generated from three main sources: hydro, geothermal and thermal. Together, they account for 98 percent of the electricity sent to the national grid.<sup>12</sup> In 2018, the energy mix was composed of 47 percent geothermal, 30.1 percent hydro and 20.6 percent thermal.<sup>13</sup> The remaining 2.3 percent was provided by bagasse, wind, solar and imports. Kenya's grid emission factor of 0.3498 tCO<sub>2</sub>e/MWh reflects the country's energy mix.<sup>14</sup> Previously, Kenya depended heavily on hydro sources for electricity generation. However, the potential of hydropower has declined drastically over the past 20 years, due to the destruction of water catchment areas, which are further stressed by the impacts of climate change, such as severe weather events and soil erosion. Geothermal power has thus played a major role in generating electricity in Kenya in recent years and is likely to continue to do so. Other renewable energy sources, such as wind, solar and biomass (cogeneration), are also becoming important alternative sources of electricity. In the long term, Kenya is expected to develop its domestic coal, oil and gas reserves, which will play an important role in its electricity generation. Nuclear power generation is also expected to be part of the energy mix in 2030.<sup>15</sup>

### 2.2.2 ENERGY DEMAND

The demand side of the energy sector refers to uses of the energy supplied for different activities, which include both thermal and electrical applications. Fossil fuels and biomass are used to produce heat for productive purposes in the C&I sectors and for domestic energy demand, such as cooking and heating at the household level.<sup>16</sup>

<sup>10</sup> Government of Kenya. 2015. *Second National Communication (SNC) to the UNFCCC*. National Environment Management Authority.

<sup>11</sup> Ibid.

<sup>12</sup> Government of Kenya. 2018. *NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report*, Ministry of Environment and Forestry.

<sup>13</sup> Kenya Power and Lighting Company Limited. 2018. *Annual Report and Financial Statements for the Year Ended 30th June 2018*.

<sup>14</sup> CDM. 2020. Standardized baselines: Grid Emission Factor for the Republic of Kenya.

<sup>15</sup> Government of Kenya. 2018. *NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report*, Ministry of Environment and Forestry.

<sup>16</sup> Government of Kenya. 2015. *Second National Communication (SNC) to the UNFCCC*. National Environment Management Authority.



## 2.2.3 ENERGY SECTOR GHG EMISSIONS

A significant portion of Kenya's GHG emissions from the energy sector is related to the heavy use of biomass in meeting energy demand. This reliance on biomass is also responsible for deforestation and forest degradation in Kenya, which increases vulnerability to the impacts of climate change further. GHG emissions from the energy sector, excluding transport, are expected to increase significantly between 2015 and 2030, from 8 MtCO<sub>2</sub>e to 51 MtCO<sub>2</sub>e, accounting for 10 percent of total emissions to 35.7 percent of the total, respectively.<sup>17</sup> This will be caused primarily by GHG emissions from increased electricity generation to help Kenya achieve goals of Vision 2030. Therefore, Kenya should seek to mitigate emissions from the energy sector by adopting necessary measures, while also supporting its socioeconomic growth. The country will thus be required to generate more energy at a lower cost, increase efficiency in energy consumption, consider new renewable energy sources and connect to energy surplus countries in the region.<sup>18</sup> The private sector will play an important role in implementing these actions.

## 2.3 NDC AND SECTORAL TARGETS

Kenya originally submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC as its first NDC in July 2015 and resubmitted it on 28 December 2016, when the country ratified the Paris Agreement.<sup>19</sup> Kenya's NDC contains both adaptation and mitigation components, while recognizing that adaptation is the priority. The mitigation analysis of the Second National Communication (SNC) to the UNFCCC determined that Kenya has the potential to reduce overall projected GHG emissions by 85.79 MtCO<sub>2</sub>e, or 60 percent below the projected business-as-usual (BAU) scenario.<sup>20</sup> However, this was based on a best-case scenario, in which Kenya successfully takes up technology advances, introduces appropriate and enabling policies and regulations, and implements all potential mitigation actions. Instead, Kenya chose a conservative approach to determine its NDC target based on feasibility. The result was a target of a 30 percent reduction in GHG emissions, or a net reduction of 42.9 MtCO<sub>2</sub>e by 2030 relative to the BAU scenario of 143 MtCO<sub>2</sub>e. This is half of the total mitigation potential originally identified.<sup>21</sup> Achievement of Kenya's NDC depends on international support in the form of finance, investment, technology development and transfer, and capacity building. Table 1 lists mitigation measures that Kenya identified in its NDC.

**Table 1: Mitigation measures identified in Kenya's NDC**

### MITIGATION MEASURES IN KENYA'S NDC

- Expansion of geothermal, solar and wind energy production, other renewables and clean energy options
- Enhancement of energy and resource efficiency across sectors
- Progress towards achieving a tree cover of at least 10 percent of its land area
- Clean energy technologies to reduce overreliance on wood fuels
- Low-carbon and efficient transportation systems
- Climate-smart agriculture (CSA) in line with the National CSA Framework
- Sustainable waste management systems.

In 2017, the Ministry of Environment and Forestry released updated emission projections for Kenya based on updated inventory data, new forecasts and new economic growth projections.<sup>22</sup> This baseline projected overall 2030 emissions of 124 MtCO<sub>2</sub>e, revising the scenario downward and bringing Kenya already 43 percent of the way to meeting its target. However, the government clarified that the NDC target will remain referenced to the original BAU emissions of 143 MtCO<sub>2</sub>e in 2030.<sup>23</sup> Table 2 summarizes the emission reduction potential in the six mitigation sectors: energy (including electricity generation and energy demand), transportation, industry, waste, forestry, and agriculture.

<sup>17</sup> Government of Kenya. 2018. *NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report*, Ministry of Environment and Forestry.

<sup>18</sup> Oxford University Press. 2018. *Ending Africa's Energy Deficit and the Law*, New York.

<sup>19</sup> Government of Kenya. 2017. *Nationally Determined Contributions (NDC) Sector Analysis Report: The Evidence Base for Updating Kenya's National Climate Change Action Plan (NCCAP)*. Nairobi. Ministry of Environment and Natural Resources.

<sup>20</sup> Ibid.

<sup>21</sup> Government of Kenya. 2015. *Kenya's Intended Nationally Determined Contribution (INDC)*. Ministry of Environment and Natural Resources.

<sup>22</sup> Government of Kenya. 2017. *Kenya's NDC: Update of Kenya's Emission Baseline Projections and Impact on NDC Target*. Ministry of Environment and Natural Resources.

<sup>23</sup> Ibid.

**Table 2: GHG emission reduction potential for six priority sectors**

SECTOR	GHG EMISSION REDUCTION POTENTIAL (MtCO <sub>2</sub> e)				NDC TARGET (MtCO <sub>2</sub> e)
	2015	2020	2025	2030	2030
FORESTRY	2.71	16.24	29.76	40.2	20.10
ELECTRICITY GENERATION	0.28	2.24	8.61	18.63	9.32
ENERGY DEMAND	2.74	5.16	7.92	12.17	6.09
TRANSPORTATION	1.54	3.52	5.13	6.92	3.46
AGRICULTURE	0.63	2.57	4.41	5.53	2.77
INDUSTRY	0.26	0.69	1.03	1.56	0.78
WASTE	0.05	0.33	0.5	0.78	0.39
<b>TOTAL EMISSION REDUCTION POTENTIAL</b>				<b>85.79</b>	<b>42.90</b>
<b>TOTAL 2030 BASELINE EMISSIONS</b>				<b>143</b>	<b>143</b>
<b>PERCENT OF TOTAL 2030 EMISSIONS</b>				<b>60 percent</b>	<b>30 percent</b>

Source: Government of Kenya. 2018. NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report. Ministry of Environment and Forestry

The Government of Kenya prepared and published a sectoral analysis of the NDC that guided the development of the NDC implementation plan, also known as the National Climate Change Action Plan (NCCAP) 2018–2022. The Sector Analysis Report sets a range of emission reductions for the sector. The low target signifies the minimum contribution needed to ensure that the overall target is achieved if all other sectors also meet their low target reductions. The high target guides responsible ministries and agencies to plan and prepare additional emission reductions.<sup>24</sup> For the energy sector, the range of emission reductions is set at between 7.5 MtCO<sub>2</sub>e and 12.6 MtCO<sub>2</sub>e.<sup>25</sup> The forestry sector is expected to make the largest contributions to meeting Kenya's NDC target, followed by the energy sector.

### 2.3.1 SECTORAL TARGETS IN THE ENERGY SECTOR

Based on the NDC Sector Analysis Report 2017 and the baseline emissions established, the energy sector's share of emissions reduction to meet the NDC target is 15.4 MtCO<sub>2</sub>e (9.32 MtCO<sub>2</sub>e from electricity generation and 6.09 MtCO<sub>2</sub>e from energy demand).<sup>26</sup> Table 3 summarizes the GHG emission reduction potential for the energy sector.

**Table 3: GHG emission reduction potential for the energy sector**

SECTOR	GHG EMISSION REDUCTION POTENTIAL (MtCO <sub>2</sub> e)				NDC TARGET (MtCO <sub>2</sub> e)
	2015	2020	2025	2030	2030
ELECTRICITY GENERATION	0.28	2.24	8.61	18.63	9.32
ENERGY DEMAND	2.74	5.16	7.92	12.17	6.09
<b>TOTAL</b>	<b>3.02</b>	<b>7.40</b>	<b>16.92</b>	<b>30.80</b>	<b>15.41</b>
<b>PERCENT OF TOTAL 2030 EMISSIONS</b>				<b>60 percent</b>	<b>30 percent</b>

Source: Government of Kenya. 2018. NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report, Ministry of Environment and Forestry.

Kenya's NDC Sector Analysis Report identified 12 mitigation options for the energy sector, specifically for the electricity generation and energy demand subsectors. The approach is flexible, as it is not necessary to implement all the options to achieve the NDC energy sector target. Rather, a range of scenarios may be considered. Table 4 lists the options. (The cogeneration in agriculture option is considered under the waste sector.)

<sup>24</sup> Government of Kenya. 2017. *Nationally Determined Contributions (NDC) Sector Analysis Report: The Evidence Base for Updating Kenya's National Climate Change Action Plan (NCCAP)*. Nairobi. Ministry of Environment and Natural Resources.

<sup>25</sup> Government of Kenya. 2018. *NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report*, Ministry of Environment and Forestry.

<sup>26</sup> Government of Kenya. (2018). *National Climate Change Action Plan 2018 – 2022, Volume 3: Mitigation Technical Analysis Report*, Ministry of Environment and Forestry.

**Table 4: Energy sector mitigation options**

SUBSECTOR	MITIGATION OPTION
ELECTRICITY GENERATION	Expanded geothermal power
	Expanded wind power
	Expanded hydro power
	Distributed solar PV
	Landfill gas generation
	Clean coal
ENERGY DEMAND	Improved cookstoves
	LPG for cooking
	Distributed solar lanterns
	Solar thermal water heating
	Energy efficient lightbulbs
	Energy efficient appliances
	Cogeneration in agriculture (considered under the waste sector)

Kenya identified priority actions for the energy sector based on the 12 mitigation options, which are reported in the NCCAP 2018–2022. When completed in 2022, these actions are expected to contribute to achieving the NDC target for the energy sector, thus achieving the sector's overall reduction target. Energy efficiency measures cover mitigation actions that improve industrial energy efficiency, such as fuel combustion and electrical energy, and implementation of these actions is mandated under the industry sector. These have been included as part of energy sector actions, as the mitigation benefits from these efficiency measures will be accounted for in the energy sector. For off-grid and mini-grid, as mentioned in the NCCAP 2018-2022, specific mitigation actions include distribution of 30 MW of off-grid solar and mini-grids. Table 5 provides a list of prioritized actions.

**Table 5: Energy sector priority actions (2022)**

SUBSECTOR	ACTION	EMISSION REDUCTION (tCO <sub>2</sub> e)	
		Action to 2022	Action to 2030
ENERGY SUPPLY/ ELECTRICITY GENERATION	Develop 2,405 MW of grid-connected renewable electricity generation and retire three thermal plants by 2022; distribute 30MW of off-grid and mini-grid by 2022	9.2	9.2
ENERGY DEMAND	Develop and distribute 4 million improved biomass stoves (charcoal and biomass) by 2022	6.3	6.3
	Develop and distribute 1 million clean energy stoves (LPG, biogas, and ethanol) by 2022	0.8	0.8
	Promote sustainable energy sources for industrial heating processes	--	--
	Increase the number of companies participating in energy efficiency initiatives by 1,000 and increase the number of energy audits by 1,000 by 2022	--	--
	Develop Minimum Energy Performance Standards (MEPS) for five more appliances and upscale the existing testing facilities to include these five appliances	--	--
<b>TOTAL SECTOR EMISSION REDUCTION POTENTIAL</b>		<b>16.3</b>	<b>16.3</b>

Source: Government of Kenya. 2018. NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report, Ministry of Environment and Forestry.

In addition to its NDC, Kenya also set ambitious targets for the energy sector as part of the Sustainable Energy for All (SE4ALL) initiative launched by the United Nations in 2011. These targets include achieving universal access to electricity and clean cooking energy by 2030, increasing the share of renewable energy in its energy mix to 80 percent, and doubling the rate of improvement in energy efficiency by 2030.<sup>27</sup> According to the Economic Survey 2019, Kenya has achieved its target related to renewable energy in its energy mix, as electricity from renewable sources totalled 86 percent in 2018.<sup>28</sup> While these targets are not specifically related to implementation of the NDC for the energy sector, they provide opportunities or entry points for private sector investment. These opportunities thus contribute to further sector development

27 Government of Kenya and Sustainable Energy for All (SE4All). 2015. Kenya Action Agenda and Investment Prospectus, Ministry of Energy and Petroleum.  
28 Kenya National Bureau of Statistics. 2019. *Economic Survey 2019*.

and are important considerations for private sector involvement in the sector. Table 6 summarizes Kenya's commitment under the SE4ALL.

**Table 6: Kenya's SE4ALL goal**

UNIVERSAL ACCESS TO MODERN ENERGY SERVICES		DOUBLE THE GLOBAL RATE OF IMPROVEMENT OF ENERGY EFFICIENCY	DOUBLE THE SHARE OF RENEWABLE ENERGY IN GLOBAL ENERGY MIX	
Percentage of population with electricity access	Percentage of population with access to modern cooking solutions	Rate of improvement in energy intensity	Renewable energy (RE) share of total final energy consumption	
100 percent	100 percent	-2.785 percent/year	Power	Heat
			80 percent	80 percent

Source: Government of Kenya and Sustainable Energy for All (SE4ALL). 2015. Kenya Action Agenda and Investment Prospectus. Ministry of Energy and Petroleum.

Climate change presents a challenge in Kenya as it threatens key economic sectors vulnerable to its impacts. Kenya is also on its journey to achieve its Vision 2030 objective, seeking to transform into a newly industrialized middle-income country with a high quality of life for its citizens by 2030. The Vision is driving exponential economic growth in Kenya, thus requiring energy. According to projections, additional energy supply will be required to achieve the Vision. If additional supply comes from non-renewable sources, this will result in higher GHG emissions, requiring efficient mitigation measures to reduce Kenya's vulnerability to climate change impacts. By 2030, the highest emissions are expected to come from the energy sector, particularly from electricity generation that would support this growth. While climate adaptation remains a priority for Kenya in addressing climate change, the energy sector is key in terms of requiring climate mitigation actions to realize low-carbon economic growth. As indicated in Kenya's NDC, private sector participation is critical to reach the investment required to meet the country's mitigation goal.



## 3. ENABLING ENVIRONMENT

The private sector plays a critical role in meeting the climate mitigation goals in Kenya's NDC, especially in the energy sector. Over the years, Kenya has undergone considerable political, structural, and economic reforms to attract much-needed private sector investment that can complement limited public sector investment. It has introduced new policies, strategies and plans to create an enabling environment to attract private sector participation, including in advancing climate mitigation and adaptation efforts and investment. These strategies and plans include the Economic Recovery Strategy, the Investment Promotion Act, the Privatization Act, the Constitution of Kenya and the Vision 2030. Similarly, the energy sector offers a strong enabling environment. New policies were developed to ensure that the country maintains a stable investment environment for private investors. The Government of Kenya has introduced feed-in tariffs for renewable energy and power purchase agreements (PPAs) to ensure returns on investment and facilitate borrowing by private sector investors. Reforms were also introduced to improve the business environment in Kenya. The following section highlights key policies that significantly shaped its private sector in the energy sector, followed by an overview of its current business environment, including investment risks. This section also assesses regulations related to foreign investment in Kenya.

### 3.1 OVERALL POLICY ENVIRONMENT

Overall, Kenya has a strong enabling environment that supports private sector investment. That environment is supported by attractive taxation arrangements, including easy repatriation of profits, protection for investors, dispute resolution, insurance cover, letters of support, and risk guarantees.<sup>29</sup> Today, Kenya has a strong, large and diverse private sector, which is a result of these reforms. In addition, its long-term development plan focuses on private sector investment.

#### 3.1.1 KENYA VISION 2030

POLICY OBJECTIVE	POLICY RELEVANCE TO THE PRIVATE SECTOR	POLICY IMPLICATIONS FOR THE PRIVATE SECTOR
To transform Kenya into an industrialized, middle-income country that provides a high quality of life to all its citizens by 2030.	Kenya's long-term development plan depends on the private sector to lead its economic development.	Further contribution to the development of a thriving enabling environment achieved through governance and public service reforms and investments.

Launched in October 2007, Vision 2030 is Kenya's long-term development blueprint aiming to transform Kenya into a newly industrialized middle-income country providing a high quality of life to all its citizens by 2030.<sup>30</sup> It is the overarching strategy guiding every action plan in Kenya, under which flagship projects and other priority programmes are implemented. The Vision is based on three pillars: economic, social and political. Overall, the Vision calls for and initiates wide-scale reforms and investments in Kenya to ensure macroeconomic stability to drive private sector investment. It was developed based on the recognition that a large share of the financing and investment required will come from the private sector. Therefore, implementation of the Vision has led to and will continue to drive reforms to support market entry for the private sector.

#### 3.1.2 MEDIUM-TERM PLANS

POLICY OBJECTIVE	POLICY RELEVANCE TO THE PRIVATE SECTOR	POLICY IMPLICATIONS FOR THE PRIVATE SECTOR
To implement Kenya Vision 2030.	Key programmes and flagship projects are financed or supported by the private sector.	Identifies and promotes private sector opportunities in key development projects and programmes.

<sup>29</sup> Government of Kenya and Sustainable Energy for All (SE4All). 2015. Kenya Action Agenda and Investment Prospectus, Ministry of Energy and Petroleum.

<sup>30</sup> Government of Kenya. 2007. *Kenya Vision 2030: The Popular Version*.

The Kenya Vision 2030 is operationalized through a series of five-year Medium-Term Plans (MTP). Each plan outlines policies, programmes and projects to be implemented during each five-year period. To date, three MTPs have been released for the years up to 2022. The first MTP (2008–2012) implemented flagship projects and other key policies and programmes identified under Vision 2030, in which the majority of financing and investment came from the private sector through public-private partnerships. The second MTP focused on prioritizing policies, programmes and projects to reduce poverty and inequality, including meeting the remaining Millennium Development Goal (MDG) targets. The third MTP (2018–2022) focuses on the main policy, legal and institutional reforms required to build on the achievements of the first and second. The Plan also prioritizes implementation of the “Big Four” initiatives, which include increasing the manufacturing share, providing affordable housing, enhancing food and nutrition security, and achieving 100 percent universal health coverage.

## 3.2 POLICY ENVIRONMENT RELATED TO CLIMATE CHANGE

As indicated in Vision 2030, the impacts of climate change on Kenya’s long-term development are recognized and integrated in the overall economic and sustainable development plan that promotes private sector participation and investment. Private sector financing is critical to achieve climate mitigation measures and sustainable economic development.

### 3.2.1 THE CLIMATE CHANGE ACT, 2016

POLICY OBJECTIVE	POLICY RELEVANCE TO THE PRIVATE SECTOR	POLICY IMPLICATIONS FOR THE PRIVATE SECTOR
To provide a regulatory framework for an enhanced response to climate change and to provide mechanisms and measures to improve resilience to climate change and promote low-carbon development.	Climate change obligations are imposed on private entities.	Private sector participation in achieving Kenya’s climate change mitigation and adaptation efforts.

The Climate Change Act, 2016 is the key legislation and regulatory framework guiding Kenya’s climate change response.<sup>31</sup> This overarching law mainstreams climate change considerations and actions across sectors. It established the Kenya Climate Fund (KCF), a financing mechanism for priority climate change actions and interventions. In addition, the Act requires the review and update of Kenya’s NCCAP, which is the basis for implementing climate change activities. Most importantly, the Act requires private sector participation and contribution to achieving low-carbon, climate-resilient development.

### 3.2.2 NATIONAL CLIMATE CHANGE ACTION PLAN, 2013

POLICY OBJECTIVE	POLICY RELEVANCE TO THE PRIVATE SECTOR	POLICY IMPLICATIONS FOR THE PRIVATE SECTOR
To guide the country’s transition towards a low-carbon, climate-resilient development pathway.	Private investment to tackle climate change and support green economic growth in Kenya.	Investment opportunities identified in priority climate mitigation actions.

The NCCAP, which is anchored in the Climate Change Act 2016, supports efforts that will lead to attaining Vision 2030, which ensures that climate change actions help the country move towards long-term development goals. The private sector plays a significant role in addressing climate change and ensuring that the country pursues sustainable green growth. The Action Plan thus sets out enabling actions and recommendations to create the environment required to attract private sector investment. NCCAPs are prepared every five years, with the most recent NCAAP covering the period 2018–2022. NCCAP 2018- 2022 is also the implementation plan for Kenya’s NDC. The NCCAP proposed creating the KCF, which was established under the Climate Change Act, 2016, to promote access to finance for the private sector in supporting the transition to a low-carbon development pathway. Overall, the NCCAP is Kenya’s Action Plan to increase private sector investment in climate change mitigation and adaptation measures to lead long-term sustainable growth.

31 Government of Kenya. 2016. *The Climate Change Act*.

## 3.3 ENERGY SECTOR POLICY ENVIRONMENT

### 3.3.1 THE ENERGY ACT, 2019

POLICY OBJECTIVE	POLICY RELEVANCE TO THE PRIVATE SECTOR	POLICY IMPLICATIONS FOR THE PRIVATE SECTOR
To consolidate the laws relating to energy; provide for national and county government energy-related functions; and, provide for the establishment, powers and functions of the energy sector entities, promotion of renewable energy, exploration, recovery and commercial utilization of geothermal energy, regulation of midstream and downstream petroleum and coal activities, regulation, production, supply and use of electricity and other energy forms.	Creation of a stable investment climate for private sector participation.	<ul style="list-style-type: none"> <li>Private sector participation in electricity generation via Independent Power Producers (IPPs) through PPAs.</li> <li>Investment opportunity to provide and sell off-grid electricity directly to consumers.</li> </ul>

The energy sector has evolved through a series of reforms, which created a stable investment climate for private sector participation. A significant change was made in 2006 under the previous Energy Act, which unbundled electricity generation from transmission and distribution. This change allowed private sector investment in power generation via IPPs. Recently, the Energy Act, 2019, which repealed the Energy Act, 2006, introduced a more significant change related to the distribution and supply of electricity to consumers. The new Act introduced net metering in Kenya. This will attract investment from the private sector, bringing new players into the market, and will contribute to significant growth and confidence in the sector. The new Act also incorporated feed-in tariff (FIT) policy, strengthening support for electricity generation from renewable sources. It also allows private entities to access or use the existing transmission infrastructure for electricity distribution based on wheeling charges.

### 3.3.2 FEED-IN TARIFF POLICY, 2008

POLICY OBJECTIVE	POLICY RELEVANCE TO THE PRIVATE SECTOR	POLICY IMPLICATIONS FOR THE PRIVATE SECTOR
<ul style="list-style-type: none"> <li>Facilitate resource mobilization by providing investment security and market stability for investors in electricity generation from renewable energy sources;</li> <li>Reduce transaction and administrative cost and delays associated with the conventional procurement processes; and,</li> <li>Encourage private investors to operate their power plants prudently and efficiently so as to maximize returns.</li> </ul>	IPPs with plants connected to the grid for electricity generation from renewable resources eligible for tariffs.	Provision of cost-reflective tariffs for renewable energy.

Introduced in 2008, the Feed-in Tariff Policy provides investment security to renewable electricity generators, reduces administrative and transaction costs, and encourages private investors to establish IPPs.<sup>32</sup> Under the policy, tariffs are applied to grid-connected plants and are valid for 20 years from the start of the PPA. The policy covers wind, biomass, small hydro, geothermal, biogas and solar sources and guarantees electricity purchases by the main power utility, Kenya Power and Lighting Company (KPLC). Thanks to a number of reform efforts that began in 2005, such as revisions to reflect long-run marginal costs, Kenya's current electricity tariffs are cost-reflective and the price is adjusted for domestic inflation every six months. As a result of these measures, the hidden costs of the power sector decreased significantly in the 2000s. The Government of Kenya recently proposed a new renewable energy auction scheme, which will replace the current system. Under the proposed programme, the government will award energy contracts to companies offering the lowest electricity tariff through a competitive bidding process.

<sup>32</sup> United Nations Development Programme (UNDP). 2018. *Derisking Renewable Energy Investment: Off-Grid Electrification*. New York, NY and ETH Zurich, Energy Politics Group, Zurich, Switzerland.

## 3.4 POLICY ENVIRONMENT FOR THE PRIVATE SECTOR

### 3.4.1 PUBLIC-PRIVATE PARTNERSHIPS ACT, 2013

POLICY OBJECTIVE	POLICY RELEVANCE TO THE PRIVATE SECTOR	POLICY IMPLICATIONS FOR THE PRIVATE SECTOR
To provide for private sector participation in the financing, construction, development, operation, or maintenance of government infrastructure or development projects through concession or other contractual arrangements.	Development of an environment promoting private sector participation.	Private sector participation in the energy sector, such as transmission.

The Public-Private Partnerships Act was introduced in 2013 to support private sector participation in the financing, construction, development, operation or maintenance of government infrastructure and development projects. The Act also established the Public-Private Partnerships Unit under the National Treasury to explore ways for the government and the private sector to cooperate in various sectors of the economy, including the energy sector. However, the Act has not been effective in most sectors because of limitations on waivers to private sector players, lack of identification of applicable financing models, lack of balance between private and public sector contribution related to finance, and lack of involvement by county-level government. As such, the government is reviewing the Act. Promoting private sector participation in government and development projects is a priority for the country, as Kenya is now considered a low middle-income country, which creates challenges to accessing concessional loans with preferential terms, such as rates.

## 3.5 ENERGY SECTOR INSTITUTIONS AND INSTITUTIONAL FRAMEWORK

Table 7 presents a summary of the key government institutions in this sector that shape its overall direction.

**Table 7: Key institutions in Kenya's energy sector**

INSTITUTION	DESCRIPTION
<b>Ministry of Energy</b>	The Ministry is responsible to develop and implement policies that create an enabling environment for the energy sector. It sets strategic directions to facilitate the sector's growth, while providing a long-term vision for all sector players.
<b>Kenya Electricity Generating Company (KenGen)</b>	KenGen is Kenya's leading electricity power-generating company. It is 70 percent state-owned and 30 percent privately owned by public shareholders.
<b>Kenya Electricity Transmission Company (KETRACO)</b>	KETRACO is a state-owned corporation responsible for planning, designing, building, operating and maintaining the high-voltage electricity grid.
<b>Kenya Power and Lighting Company (KPLC)</b>	KPLC is a state-owned enterprise responsible for electricity transmission, distribution and retail sales. It is a sole taker of electricity generated and signs energy purchase agreements with KenGen and the IPPs.
<b>Energy and Petroleum Regulatory Authority (EPRA)</b>	EPRA is responsible for the legal, technical, and economic regulation of electricity, renewable energy, upstream and downstream petroleum sectors.
<b>Rural Electrification and Renewable Energy Corporation (REREC)</b>	REREC is a state-owned corporation responsible for implementing the Rural Electrification Programme and projects to scale up the process of providing electricity access to the entire population.
<b>Geothermal Development Company (GDC)</b>	GDC is a state-owned company responsible for geothermal resource assessments, including exploration, appraisal and steam production. It explores and develops steam fields and sells geo-thermal steam to KenGen and IPPs for electricity generation.
<b>Energy Tribunal</b>	The Tribunal is responsible for arbitrating disputes between the ERPA and other stakeholders in the sector.



## 3.6 OVERALL BUSINESS ENVIRONMENT

### 3.6.1 MACROECONOMIC ENVIRONMENT

Kenya has experienced strong economic growth in recent years, supported by a stable macroeconomic environment. Increased public investment in infrastructure, strong consumer demand, increased interest among foreign investors, lower transaction costs from improved information technology and prudent monetary policy have driven this performance.<sup>33</sup> However, the COVID-19 crisis is projected to interrupt this trend and result in a sharp negative outlook.

Kenya's inflation averaged 6.6 percent in 2014–2016 and rose to 7.7 percent in 2017 due to a drought-induced increase in food prices.<sup>34</sup> Inflation was expected to rise in 2020, from an estimated 5.4 percent in 2019 to 5.7 percent in 2020 as the Kenyan shilling (KSH) depreciates. Before the COVID-19 crisis, inflation was expected to ease to an average of 6 percent in 2024 as oil exports begin and the KSH stabilizes, with inflation remaining within the target band ( $5 \pm 2.5$  percent).<sup>35</sup> However, inflation is now projected to increase again to an average of 6.2 percent annually from 2021 to 2024 as global oil prices increase from their current low price point.<sup>36</sup>

On the fiscal front, Kenya's rapid expansion in government spending in recent years increased the deficit.<sup>37</sup> This shifted lending from the private sector to the government, which ultimately decreased private investment in Kenya. However, in 2017, the account deficit narrowed to 6.7 percent of GDP in 2017 from 10.4 percent of GDP in 2014. Earlier forecasts projected that it would continue to narrow to 4.1 percent in 2019, but would rise to an average of 4.3 percent of GDP in 2020–2023 as imports rise. However, given the economic impact of the COVID-19 crisis, the budget deficit is now expected to increase to 9.2 percent of GDP in 2020–2021.<sup>38</sup>

In monetary terms, the cap on bank lending rates at 400 basis points above the benchmark rate, introduced in September 2016, compromised Kenya's growth in recent years.<sup>39</sup> While this cap benefitted some borrowers, such as the government and large corporations, it constrained private sector lending for SMEs because of the higher risk premium associated with them.<sup>40</sup> Recognizing the impact on SMEs, the government removed the restriction in early 2020 to increase loan approvals and credit extension enhancement to support SMEs.<sup>41</sup> To address the impacts of the COVID-19 crisis, the Central Bank of Kenya (CBK) reduced the benchmark interest rate to 7 percent in 2020. Lower rates are likely to continue into 2021, when the rate is expected to increase in 2022–2024 as the economy recovers and inflation edges higher.

Kenya's GDP had been trending upward in recent years. Growth was projected to remain healthy, at an average 6 percent year in 2022–2024.<sup>42</sup> However, with the COVID-19 crisis, Kenya is expected to enter a recession in 2020, the first since 1992, caused by disruption to trade and commerce, decline in tourism and investment, and falling consumption resulting from high unemployment.<sup>43</sup> In the short term, measures such as interest rate and tax cuts will minimize impacts on firms and households, supported by assistance from IMF and the World Bank. However, in the medium to long term, such measures will not be sufficient to avoid economic decline. GDP is expected to grow 2 percent in 2021 and an average of 4.5 percent in 2022–2024.

Prior to the COVID-19 crisis, Kenya had shown strong and positive economic performance overall, which was recognized as among the strongest in Africa, contributing to continued stability in its macroeconomic environment. The energy sector had already offered opportunities for private sector investment. However, post-coronavirus impacts are expected to damage the economy. To achieve both economic growth and

33 International Finance Corporation. 2019. *Country Private Sector Diagnostic: Creating Markets in Kenya – Unleashing Private Sector Dynamism to Achieve Full Potential*.

34 Ibid.

35 Ibid.

36 Economist Intelligence Unit Limited. 2020. *Country Report: Kenya*.

37 International Finance Corporation. 2019. *Country Private Sector Diagnostic: Creating Markets in Kenya – Unleashing Private Sector Dynamism to Achieve Full Potential*.

38 Economist Intelligence Unit Limited. 2020. *Country Report: Kenya*.

39 Ibid.

40 International Finance Corporation. 2019. *Country Private Sector Diagnostic: Creating Markets in Kenya – Unleashing Private Sector Dynamism to Achieve Full Potential*.

41 Economist Intelligence Unit Limited. 2020. *Country Report: Kenya*.

42 Ibid.

43 Ibid.

climate commitments, climate actions must be mainstreamed into fiscal policies. To guide economic recovery, the Coalition of Finance Ministers for Climate Action recently proposed a set of principles for a stimulus package that would provide the right balance between sustainability and investment strategy. Aligning national priorities and economic and fiscal policies to these principles would help Kenya attract private sector investment and achieve its climate goals in the energy sector. The following section provides details of the macroeconomic environment and projected impacts in Kenya.

### Coalition of Finance Ministers for Climate Action and principles for recovery

In April 2019, governments from over 20 countries launched the Coalition of Finance Ministers for Climate Action, which recognizes the challenges posed by climate change, the unique capacity of the world's finance ministers to address them, and the ways in which collective action could strengthen these efforts. The Helsinki Principles recognize the importance of finance to achieve climate action goals.

In July 2020, the Coalition published guidance related to climate action in the aftermath of the pandemic.<sup>44</sup> It emphasizes the importance of finance for recovery and long-term transformation, while recognizing that macro-fiscal contexts are more complex today than before the crisis. The document acknowledges the need for emerging economies to anticipate the substantial investments needed to drive the transformation to a low-carbon climate-resilient economy.

In this context, leveraging international climate finance to unlock fiscal space and leverage private finance will be crucial to achieve the goals set by the Paris Agreement and all NDCs. Efforts to shift the financial system must also continue, including on reporting (Task Force on Climate-Related Financial Disclosures), green taxonomies, risk management and returns.

## 3.6.2 COUNTRY RISK

Based on the risk assessment performed in June 2020 by the Economist Intelligence Unit (EIU), Kenya has a B rating for overall country risk. This suggests that despite the COVID-19 crisis, Kenya remains broadly resilient, though its long-term economic recovery may be challenging.

**Table 8: Kenya's risk profile**

	SOVEREIGN RISK	CURRENCY RISK	BANKING SECTOR RISK	POLITICAL RISK	ECONOMIC STRUCTURE RISK	COUNTRY RISK
JUNE 2020	CCC	B	CCC	CC	CCC	B

### 3.6.2.1 SOVEREIGN RISK

Kenya's sovereign risk remains CCC-rated, though the underlying score has deteriorated by four points. Kenya enjoys reasonably good access to finance in general and its consistently strong GDP growth has mitigated sovereign risk, even during the COVID-19 crisis. However, according to the June 2020 EIU Country Report, decreased external demand, a partial lockdown to contain the virus, and natural impacts on agriculture are expected to push the economy into recession in 2020.

### 3.6.2.2 CURRENCY RISK

The currency risk rating remains at B, although there is increasing risk that it may be downgraded to CCC. Prior to the COVID-19 crisis, the KSH was predicted to weaken, dropping from an estimated average of KSH 102.5 to KSH 109.3 against the US dollar, with a gradual recovery to an average of KSH 115.1 against the dollar in 2023.<sup>45</sup> Kenya's reasonably strong access to finance for sovereign and international financial support during the COVID-19 crisis is expected to aid balance-of-payments stability during 2020.<sup>46</sup>

<sup>44</sup> The Coalition of Finance Ministers for Climate Action, 2020. *Better Recovery, Better World: Resetting climate action in the aftermath of the COVID-19 pandemic*.

<sup>45</sup> Economist Intelligence Unit Limited, 2020. *Country Report: Kenya*.

<sup>46</sup> Ibid.

### 3.6.2.3 BANKING SECTOR RISK

The Banking (Amendment) Act, 2016, which took effect in September 2016, capped interest rates charged by lending institutions to 4 percent above the prevailing Central Bank Rate (CBR) set by the CBK.<sup>47</sup> This constrained credit growth by limiting bank lending to the private sector, reducing access to loans for SMEs, and destabilized asset quality management.<sup>48</sup> Since the COVID-19 crisis, credit is still provided to the private sector at a fairly reasonable pace and the financial sector's resilience maintained the capital adequacy ratio at 18.7 percent in March, which is well above the regulatory threshold of 10 percent.<sup>49</sup> However, the economic downturn will prevent the rating from being upgraded in the near to medium term.

### 3.6.2.4 POLITICAL RISK

The political risk rating remains at CC, as risks are emerging in the context of the coronavirus. Prior to the crisis, the EIU predicted that the next election, scheduled for 2022, would likely result in uncertainty or violence, though not to the extent experienced post-election in 2007-08. Corruption remains a major issue, with increasing allegations of misappropriation of public funds.<sup>50</sup> Kenya also faces threats of terrorism, which pose risks to its overall economy. Mainstream politics in Kenya are volatile and strong divisions between the ruling party and the opposition challenge political stability.<sup>51</sup>

### 3.6.2.5 ECONOMIC STRUCTURE RISK

Structural obstacles to economic growth, such as infrastructure deficiencies, skills shortages, low incomes, and heavy dependence on the agriculture sector for food supply and exports, elevate risk related to macroeconomic instability.<sup>52</sup> Coupled with policy decisions that have resulted in higher public debt and a decline in private sector lending, the risk remains high, although strong economic growth has provided security. However, the impacts of the COVID-19 crisis are expected to have a negative impact on the economy in the short to medium term, presenting numerous challenges to full recovery.

## 3.7 EASE OF DOING BUSINESS

Kenya has made significant improvements to its business environment. In 2019, the country ranked 61<sup>st</sup> on the World Bank's Doing Business survey, which was a tremendous improvement from 2018, when it was ranked 80<sup>th</sup>.<sup>53</sup> Kenya also improved in the 2020 survey, ranking 56<sup>th</sup> overall.<sup>54</sup> These improvements demonstrate Kenya's commitment to creating a strong business environment for private sector participation. Table 9 presents the country's performance over the last five years on the Doing Business survey, which more clearly defines Kenya's efforts to improve its business environment. The subsections following summarize the relevant indicators for assessing the business environment.

**Table 9: Kenya's Doing Business survey performance (2016-2020)**

YEAR	SCORE	RANK
2020	73.2	56
2019	70.3	61
2018	65.2	80
2017	61.2	92
2016	57.5	113

47 Deloitte Touche Tohmatsu Limited. 2017. *Kenya Economic Outlook 2017: Joining the dots*.

48 Economist Intelligence Unit Limited. 2019. *Country Risk Service: Kenya*.

49 Economist Intelligence Unit Limited. 2020. *Country Report: Kenya*.

50 Deloitte Touche Tohmatsu Limited. 2017. *Kenya Economic Outlook 2017: Joining the dots*.

51 Economist Intelligence Unit Limited. 2019. *Country Risk Service: Kenya*.

52 Economist Intelligence Unit Limited. 2020. *Country Report: Kenya*.

53 The World Bank. 2019. *Doing Business 2019 Report*.

54 World Bank Group. 2020. *Doing Business 2020 Report*.

### 3.7.1 STARTING A BUSINESS

This indicator measures the number of procedures, time, cost and paid-in minimum capital requirement for a small- to medium-sized limited liability company to start up and formally operate in each economy's largest business city. According to the Doing Business 2020 report, Kenya scored 82.7 on this indicator, which is above the sub-Saharan Africa regional average. Kenya ranks 129<sup>th</sup> out of the 190 economies.<sup>55</sup>

### 3.7.2 DEALING WITH CONSTRUCTION PERMITS

This indicator tracks the procedures, time and cost to build a warehouse, including obtaining necessary licenses and permits, submitting all required notifications, requesting and receiving all necessary inspections, and obtaining utility connections. It also measures the building quality control index, evaluating the quality of building regulations, the strength of quality control and safety mechanisms, liability and insurance regimes, and professional certification requirements.

In 2020, Kenya scored 67.6 on this indicator, which is still above the regional average of 58.5, and ranks 105<sup>th</sup>. Kenya improved the transparency of the construction permit process by making permit requirements publicly available online and reducing fees.<sup>56</sup> This suggests that while it has become easier to obtain construction permits in Kenya, the process may still involve delays.

### 3.7.3 GETTING ELECTRICITY

The indicator for getting electricity measures the procedures, time and cost required for a business to obtain a permanent electricity connection for a newly constructed warehouse. In addition, the reliability of supply and transparency of tariffs index measures the reliability of supply, transparency of tariffs and the price of electricity.

Kenya scored 80.1 on this indicator, which is significantly above the regional average of 50.4, ranking 70<sup>th</sup> compared to other economies. The country improved the reliability of electricity supply by modernizing its existing infrastructure and inaugurating a new substation in Nairobi.<sup>57</sup>

### 3.7.4 REGISTERING PROPERTY

This indicator examines the steps, time and cost involved in registering property, assuming a standardized case of an entrepreneur who wants to purchase land and a building that is already registered and has clear title. The indicator also measures the quality of the land administration system in each economy across five dimensions, including reliability of infrastructure, transparency of information, geographic coverage, land dispute resolution and equal access to property rights.

Kenya scored 53.8, which is slightly above the regional average of 53.6, ranking 134<sup>th</sup> for this indicator. To speed up the registration process overall, Kenya has moved from a paper-based to an online-based system. However, the new process includes an additional step for generating payment slips, which increases the burden of completing the registration.<sup>58</sup>

### 3.7.5 GETTING CREDIT

This indicator reviews two sets of issues: the strength of credit reporting systems and the effectiveness of collateral and bankruptcy laws in facilitating lending. Kenya scored 95 on this indicator in the 2020 report, ranking 4<sup>th</sup> overall. The country improved access to credit by introducing online registration, modification and cancellation of security interests, and public online searches of its collateral registry. This strongly supports private sector participation in starting a business.

55 The World Bank. 2019. *Doing Business 2019 Report*.

56 International Finance Corporation. 2019. *Country Private Sector Diagnostic: Creating Markets in Kenya – Unleashing Private Sector Dynamism to Achieve Full Potential*.

57 Ibid.

58 Ibid.



### 3.7.6 PROTECTING MINORITY INVESTORS

This indicator measures the strength of minority shareholder protections against directors' misuse of corporate assets for personal gain, as well as shareholder rights, governance safeguards and corporate transparency requirements that reduce the risk of abuse.

Similar to the getting credit indicator, Kenya scored highest in the region on this indicator, at 92, ranking 1<sup>st</sup> overall. The country improved minority investor protections by requiring shareholders to approve the election and dismissal of an external auditor.<sup>59</sup> This demonstrates Kenya's leadership and confidence in supporting private sector players, which is supported by its strong and highly competitive private sector market.

### 3.7.7 PAYING TAXES

This indicator measures the taxes and mandatory contributions that a medium-size company must pay or withhold in a given year, as well as the administrative burden of paying taxes and contributions and complying with post-filing procedures, such as value-added tax (VAT) refund and tax audit. Overall, Kenya scored 72.8, above the regional average of 57.8, and ranks 94<sup>th</sup> overall. The country made it easier to pay taxes by implementing an online filing and payment system for social security contributions.<sup>60</sup>

### 3.7.8 ENFORCING CONTRACTS

This indicator measures the time and cost to resolve a commercial dispute through a local first-instance court and the quality of judicial processes index, evaluating whether each economy has adopted a set of good practices that promote quality and efficiency in the court system. Kenya scored 58.3 on this indicator, which is slightly above the regional average score of 49.6, placing it 89<sup>th</sup> overall.

## 3.8 ENABLING ENVIRONMENT FOR CROSS-BORDER AND FOREIGN INVESTMENTS

The enabling environment related to cross-border and foreign investments is another important factor in driving private sector investment. This section provides an overview of important laws and regulations related to investment in Kenya to assess the gaps and challenges of foreign investment flows under the country's laws.

### 3.8.1 REGULATIONS RELATED TO DIRECT FOREIGN INVESTMENT IN KENYA

The Investment Promotion Act regulates overall investment activities in Kenya, including foreign direct investment. The Foreign Investment Protection Act facilitates the investment of foreign assets in Kenya and provides protection for foreign investors.

OBJECTIVES OF THE REGULATIONS	IMPLICATIONS FOR FOREIGN INVESTMENT
<ul style="list-style-type: none"><li>• Provide the overall framework for investment in Kenya, including foreign direct investment.</li></ul>	<ul style="list-style-type: none"><li>• Minimum capital requirements of \$100,000 or equivalent in other currency for a foreign investor</li><li>• Capital repatriation and remittance of dividends. guaranteed (no restriction on payment of dividends, including remittances in foreign currency and repatriation of funds).</li></ul>

#### THE INVESTMENT PROMOTION ACT, 2004

Kenya's Investment Promotion Act is the primary legislation guiding investment activities. It established the Kenya Investment Authority (KenInvest), a government agency responsible to promote and facilitate both domestic and foreign investment. KenInvest's three main objectives are to promote investment by providing investment

59 Ibid.

60 Ibid.

opportunity information through workshops, forums, and other marketing initiatives, facilitate investment by issuing investment certificates, and advocate for policies favourable to the investment environment.

The Act states the license and other related requirements for investors. Under the Act, a foreign investor must apply for an investment certificate from KenInvest. Foreign investors must invest a minimum of \$100,000 or equivalent in another currency to apply for an investment certificate. The Act does not impose specific requirements on equity and debt minimum thresholds.

The investment certificate offers benefits to its holder, including access to entry permits. A certificate holder is entitled to three entry permits for employees, such as management or technical staff, and three permits for owners, shareholders or partners. The permits are valid for two years after initial issuance.

## **FOREIGN INVESTMENT PROTECTION ACT**

The Foreign Investment Protection Act (FIPA) was enacted to protect approved foreign investments in Kenya. Under the Act, foreign investors may apply for a certificate of approved enterprise from the government. With that certificate, they may transfer profits out of Kenya, unrestricted, in the approved foreign currency. This guarantees capital repatriation and remittance of dividends and interest to foreign investors. Kenya does not restrict the conversion or transfer of funds associated with the investment. However, the CBK requires that all foreign exchange dealers have appropriate documentation for transactions above KSH 1,000,000 (or equivalent to \$10,000).

## **THE COMPANIES ACT, 2015**

The Companies Act, 2015 was introduced to streamline business establishment and operations in Kenya. It details the procedures on registration, reporting by representatives, modification and regulations for operations of foreign companies in Kenya. Furthermore, the Act regulates constitutional documents, consents to appointment, execution of documents, company name, enfranchisement of indirect investors, duties of directors, and shareholder meetings and resolutions.

The procedures related to winding up a company, which were set forth under the prior Companies Act, 1948, were repealed and replaced with the legal concepts of restructuring, administration, liquidation, and moratorium, which are now governed by the Insolvency Act, 2015. Section 3.8.4 provides detail on this.

## **BILATERAL INVESTMENT TREATIES**

Kenya has signed bilateral investment treaties (BITs) with several countries. Currently, Kenya has BITs in force with Japan, the United Arab Emirates, Korea, and Kuwait. Kenya also has BITs with Qatar, Turkey, Mauritius and Slovakia; they have been signed but are not yet in force. BITs provide both contracting parties access to courts of justice, ensure transparency regulations and prevent investment expropriation.

### **3.8.2 CAPITAL MARKET LAWS AND REGULATIONS**

Capital markets facilitate the buying and selling of securities. In Kenya, two acts govern and regulate the capital market: the Capital Markets Act and the Central Depositories Act, 2000. The former mandates that an individual may conduct business in Kenya on the securities exchange or as a stock broker upon approval from the Capital Market Authority. The Capital Markets Authority of Kenya, established under these acts, supervises and regulates the market intermediaries. Its overall responsibilities include supervising, licensing and monitoring the activities of the stock exchange, central depository, settlement system and other financial market intermediaries licensed under the Capital Markets Act. The Authority is also responsible for implementing policies with respect to capital markets and imposing sanctions for failure to comply with the policies. The Capital Market Authority regulates the Nairobi Securities Exchange (NSE), founded in 1954.

Kenya has also established the Capital Markets (Foreign Investors) Regulation, 2002 to regulate the shareholding of foreign investors. Kenya permits 100 percent foreign ownership of firms listed on the Nairobi Stock Exchange, without restrictions. Foreign investors may also obtain credit on the local market.

OBJECTIVES OF THE REGULATIONS	IMPLICATIONS FOR FOREIGN INVESTMENT
<ul style="list-style-type: none"> <li>• Provide the overall framework for foreign investment in capital markets in Kenya.</li> </ul>	<ul style="list-style-type: none"> <li>• No restriction on the participation of foreign investors in the capital markets in Kenya.</li> <li>• 100 percent foreign ownership of firms listed on the Nairobi Stock Exchange is permitted.</li> </ul>

## CROSS-BORDER LISTING OF SECURITIES IN KENYA

Cross-border listing of securities in Kenya requires an issuer to register under Kenya's Companies Act and meet various criteria prescribed under public offers listing regulations. These criteria include:

- Issuer should be a public limited company and registered under Kenya's Companies Act (Cap 486);
- Issuer should possess minimum authorized issued and fully paid-up ordinary share capital of KSH 50 million;
- Issuer's shares to be listed should be freely transferable and must have a clear future dividend policy;
- At the date of application, issuer should not be in breach of any of its loan covenants (especially with regard to maximum debt capacity);
- Issuer must have shown profits to its shareholders, after applicable taxes, in at least three of the last five accounting periods;
- Issuer's net assets (immediately before listing) should not be less than KSH 100 million;
- Issuer should not be insolvent and must possess adequate working capital;
- Issuer should obtain a no objection certificate from the foreign securities exchange on which its shares are already listed; and
- At least 25 percent of issuer's shares must be held by no fewer than 100 shareholders, excluding employees of the issuer.

### 3.8.3 BANKING SUPERVISION LAWS AND REGULATIONS AND OTHER REGULATIONS RELATED TO THE FINANCIAL SECTOR

Banking and financial institutions in Kenya are governed primarily by two acts: the Central Bank of Kenya Act, 2015 and the Banking Act, Cap. 488. Under these acts, CBK is the governing and regulating authority of all financial institutions operating in Kenya. The Microfinance Act (2006) assigns CBK the authority to oversee operations of microfinance institutions (MFI).

OBJECTIVES OF THE REGULATIONS	IMPLICATIONS FOR FOREIGN INVESTMENT
<ul style="list-style-type: none"> <li>• Provide the overall framework for all financial institutions in Kenya.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum capital requirements set at KSH 500 million for banks and mortgage finance companies and KSH 375 million for financial institutions.</li> <li>• Borrowing of funds from abroad and repayment permitted through an authorized bank with license from CBK.</li> <li>• International financial institutions permitted to lend to companies in Kenya.</li> </ul>

## THE CENTRAL BANK OF KENYA ACT, 2015

The Central Bank of Kenya Act established CBK as the monetary authority for all financial institutions in Kenya. Its core functions include implementing monetary policy, supervising banks, establishing national payments system, banking and providing currency services.

CBK also has the authority to engage in foreign exchange transactions with foreign central banks, foreign financial institutions, foreign banks, foreign governments, agencies of foreign governments and international financial institutions. It may also open accounts for, accept deposits from, and collect money and other monetary claims for foreign financial institutions as it is authorized to act as a banker to those banks. The Act permits residents to borrow funds from abroad and international financial institutions to lend to companies in Kenya. However, it requires that every transaction or payment be made through an authorized bank in Kenya; that is, a bank licensed by the Central Bank of Kenya.

### THE BANKING ACT, CAP. 488

The Banking Act was introduced to amend and consolidate laws regulating banking in Kenya. It mandates that any person may transact any form of banking or financial business with the approval or consent of and a license from CBK.

The Act authorizes establishment of representative offices by foreign banks as long as they do not conduct banking business in Kenya. Representative offices are authorized to undertake research, marketing and liaison roles on behalf of their parent institutions. Foreign banks interested in setting up a branch or a subsidiary in Kenya are required to follow the requirements under the Companies Act and to register and obtain a license to operate from the CBK. The Act mandates that in addition to meeting minimum capital requirements, foreign banks must have at least the minimum amount of capital inside Kenya at all times. It sets minimum core capital at KSH 1 billion.

### THE MICROFINANCE ACT, 2006

The Microfinance Act regulates the operations of microfinance businesses in Kenya. It requires businesses to be licensed under this Act by CBK and that they be either companies registered under the Companies Act or wholly-owned subsidiaries of a bank or a financial institution. A microfinance business may not grant a loan or credit to a single borrower that exceeds its core capital or against the security of shares of its deposit-taking business.

## 3.8.4 INSOLVENCY AND BANKRUPTCY-RELATED REGULATIONS AND PROCEEDINGS

Kenya's Insolvency Act 2015 includes all the insolvency and bankruptcy provisions for limited liability companies operating in Kenya.

OBJECTIVES OF THE REGULATIONS	IMPLICATIONS FOR FOREIGN INVESTMENT
<ul style="list-style-type: none"> <li>• Provide the overall framework for insolvency procedures in Kenya.</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-border insolvencies permitted to protect the interests of all creditors and other interested person, including the debtor.<sup>61</sup></li> </ul>

### INSOLVENCY ACT, 2015

The Insolvency Act was enacted to regulate the liquidation of incorporated and unincorporated organizations. It was based on the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Cross-Border Insolvency. As such, the Act allows for foreign creditors to access foreign courts in Kenya and seek foreign assistance related to an insolvency proceeding. Overall, the Act recognizes and allows for foreign proceedings, cross-border cooperation and coordination of concurrent proceedings.<sup>62</sup>

<sup>61</sup> .S. Department of State. 2019 Investment Climate Statements: Kenya. <https://www.state.gov/reports/2019-investment-climate-statements/kenya/> .  
<sup>62</sup> Ibid.

### 3.8.5 COMPANY LAW

The Companies Act, 2015 regulates the establishment and operation of private and public companies in Kenya, including foreign companies.

OBJECTIVES OF THE REGULATIONS	IMPLICATIONS FOR FOREIGN INVESTMENT
<ul style="list-style-type: none"><li>• Provide the overall framework for establishment and operation of private and public companies in Kenya, including foreign companies.</li></ul>	<ul style="list-style-type: none"><li>• 100 percent shareholdings by foreign investors permitted.</li></ul>

Originally, the Act contained restrictions on foreign investment, requiring that Kenyan citizens by birth hold at least 30 percent of the shares of all foreign companies in Kenya. However, this requirement was later repealed, allowing for 100 percent foreign ownership.

The Companies Amendment Act, 2017, which amended the prior Companies Act, covers both private and publicly-owned companies. It eliminates the requirements that small companies have a lawyer register their firms, have a company secretariat and hold annual general meetings. These amendments represent a savings in regulatory compliance and operational costs.<sup>63</sup>

### 3.8.6 FOREIGN EXCHANGE REGULATIONS

OBJECTIVES OF THE REGULATIONS	IMPLICATIONS FOR FOREIGN INVESTMENT
<ul style="list-style-type: none"><li>• Provides foreign exchange regulation (part of the Central Bank of Kenya Act).</li></ul>	<ul style="list-style-type: none"><li>• Transfer or conversion of funds associated with investment permitted without restriction.</li></ul>

Kenya repealed all exchange control laws in 1993 and moved to a market-determined exchange rate system. CBK regulates the financial system and foreign exchange in Kenya, based on the regulation of foreign exchange in Part VI A of the Central Bank of Kenya Act.

The following limitations apply to non-residents under the foreign exchange regulation:

ASPECT	LIMITATION
<b>Ownership of listed companies</b>	100 percent foreign ownership of firms listed on the Nairobi Stock Exchange permitted.
<b>Ownership of financial institution</b>	Only banks, financial institutions, the Government of Kenya, foreign governments, state corporations, foreign companies licensed to operate as financial institutions in Kenya, and non-operating holding companies approved by the Central Bank of Kenya may hold more than 25 percent of the share capital in a financial institution.
<b>Buying and selling foreign exchange</b>	<p>Non-residents and residents may buy and sell foreign exchange up to the equivalent of \$10,000 from authorized dealers without restrictions.</p> <p>For amounts exceeding \$10,000, documents supporting the purpose of the transaction are required.</p>
<b>Inward investments</b>	There are no limitations on inward investments; non-residents are free to invest in real estate, equities, money and stock exchange securities.

### 3.8.7 TAX LAW

Applicable tax law in Kenya is governed mainly by the Income Tax Act, Value-Added Tax Act, Excise Duty Act and the Stamp Duty Act. The Tax Laws Act, 2020 introduced amendments to the Income Tax Act, which reduced income tax rates for both corporate entities and individuals and eliminated certain investment allowances and exceptions. Table 10 presents the taxes applicable to companies in Kenya.

63 Ibid.

**Table 10: Taxes applicable in Kenya**

TAX	
<b>Corporate tax</b>	Corporations resident in Kenya (including subsidiary companies of foreign parent companies): • 25 percent (effective April 25, 2020)  Non-resident companies with a permanent establishment in Kenya: • 37.5 percent
<b>Value-added tax (VAT)</b>	16 percent on taxable goods and services, value of imported taxable goods, and the value of supply of imported taxable services
<b>Tax on dividends (withholding tax)</b>	15 percent levied on dividends for non-residents
<b>Tax on transportation of goods (withholding tax)</b>	20 percent levied on services related to transportation of goods for non-residents
<b>Stamp duty</b>	1 percent to 4 percent levied, depending on the transaction type.

According to the Value Added Tax Act, 2013, foreign exchange transactions, including the supply of foreign drafts and international money orders, and provision of guarantees, letters of credit, and other forms of documentary credit are exempt from VAT in Kenya.

### 3.8.8 ENFORCEMENT LAW

Kenya is a member of the International Centre for Settlement of Investment Disputes (ICSID) Convention and acceded to the United Nations Convention on the Recognition and Enforcement of Foreign Arbitral Awards 1958, also known as the New York Convention. Arbitration has become the preferred mechanism for resolving commercial disputes in Kenya in recent years and is most commonly used by foreign direct investors.<sup>64</sup>

OBJECTIVES OF THE REGULATIONS	IMPLICATIONS FOR FOREIGN INVESTMENT
• Provide the overall framework for arbitration and litigation in Kenya.	• International arbitration follows international standards, both between private sector parties and government.

In Kenya, arbitration is regulated by the Constitution of Kenya 2010, the Arbitration Act 1995 and the Nairobi Centre for International Arbitration Act, 2013 (NCIA). The Arbitration Act, 1995, which was amended in 2010, is based on the UNCITRAL Model Law and applies to both domestic and international arbitration.<sup>65</sup>

Arbitration is based on a written agreement between the parties, which requires that the following conditions be met:

- Existence of a binding agreement;
- Valid appointment of the arbitrator; and,
- Existence of a dispute that the parties have agreed to arbitrate.

The arbitration is considered to be binding and enforceable if provided in writing.<sup>66</sup>

### 3.8.9 OTHER SIGNIFICANT REGULATORY LIMITATIONS ON FOREIGN INVESTMENT

The Kenyan Constitution prohibits foreign nationals and foreign-owned companies from owning land in Kenya. However, foreign nationals may lease land, with tenure up to 99 years.

<sup>64</sup> Thompson Reuters. *Practical Law*. [https://uk.practicallaw.thomsonreuters.com/5-633-8955?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/5-633-8955?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1).

<sup>65</sup> Ibid.

<sup>66</sup> Ibid.



### **3.8.10 SUMMARY OF FINDINGS FOR FOREIGN INVESTMENT REGULATORY ENVIRONMENT**

The overall regulatory environment in Kenya supports foreign investors. Kenya has established a minimum capital requirement of \$100,000 or equivalent in other currency for a foreign investor to invest in Kenya. However, aside from this capital requirement, there are no restrictions pertaining to foreign direct investment. In addition, foreign investment is not restricted. The regulatory environment also guarantees capital repatriation and remittance of dividends and permits transfer or conversion of funds associated with investment without restriction. Full foreign ownership of firms listed on the Nairobi Stock Exchange is also permitted. Kenya also introduced the Insolvency Act, 2015, which supports cross-border insolvency proceedings, allowing foreign companies to access foreign courts and foreign assistance related to insolvency proceedings. Together, these provisions protect foreign investors' interests.

In addition, the regulatory environment allows funds to be borrowed abroad and repaid without restriction if every transaction is made through an authorized bank in Kenya (that is, a bank with a CBK license). International financial institutions located outside of Kenya may also lend funds to companies in Kenya.

## **3.9 SUMMARY OF OVERALL ENABLING ENVIRONMENT IN KENYA**

Kenya offers a strong enabling environment overall for private investment in the energy sector. The country has introduced new policies, strategies and plans as part of its efforts to create such an environment to attract private investment. In the energy sector specifically, a significant change was introduced with the recent revision to the Energy Act, which allows the sale of off-grid electricity directly to consumers. This creates opportunities for increased private sector participation in electricity generation. As part of its efforts to attract foreign direct investment, Kenya has amended a number of laws and regulations to create a favourable environment for foreign investors. These include allowing 100 percent foreign ownership of companies, guaranteeing capital repatriation and remittance of dividends without restriction related to foreign exchange, and allowing cross-border insolvency proceedings.

Kenya's macroeconomic environment had been stable, supported by continued economic growth in recent years and projected growth in coming years. However, the COVID-19 crisis has had a significant impact on this environment. Forecasts project that Kenya will enter a recession in 2020, its first since 1992. The country's business environment also improved in recent years with the help of strategic reforms involving new policies and initiatives, providing a favourable market for foreign investors. However, the COVID-19 crisis will likely slow investment in Kenya in the short term.

## 4. PRIORITIZED SECTOR CONTEXT

Kenya has sought to create an enabling political and business environment over the years through a number of reforms. The energy sector already has a strong private sector presence. However, obstacles remain. For the private sector, they relate to infrastructure deficiencies, skills shortages and supply chain issues, along with the relationship between the formal and informal sector.<sup>67</sup> These obstacles must be addressed in order to scale up investment. This section highlights the ecosystem and value chain of each energy subsector and the current state of private sector investment in the sector and identifies key barriers and critical gaps to enhance private sector investment in the energy sector.

The ecosystem analysis focuses on an overview of the relationship between inputs and products for specific subsectors. It provides an understanding of the business environment for private stakeholders involved in each subsector. The value chain analysis builds on the ecosystem analysis and presents the actors identified, their functions and an analysis of their relationships.

The combined analysis provides a picture of how and where stakeholders and organizations are positioned within the ecosystem and value chain and identifies opportunities and engagement points for decision-makers in both the public and private sectors.

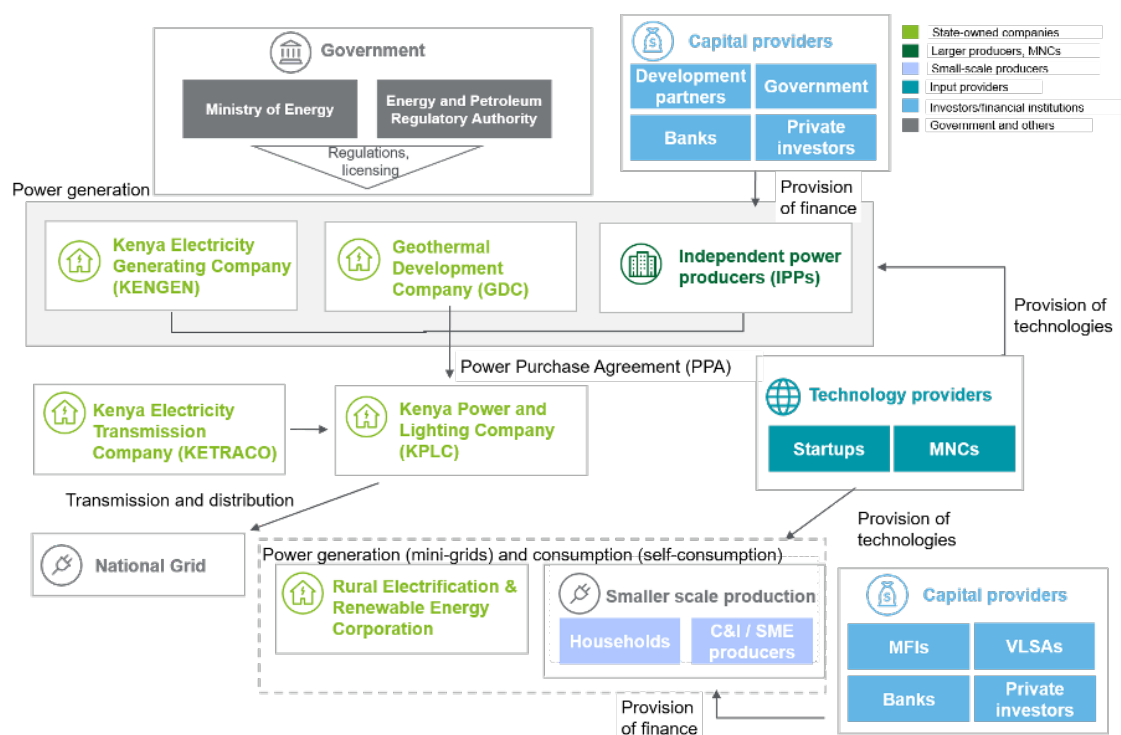
### 4.1 RENEWABLE ENERGY

The priority in terms of renewable energy generation in Kenya is to develop 2,405 MW capacity by 2022 from geothermal, biomass, wind, hydro and solar for on-grid generation. In addition, off-grid and mini-grid electricity generation presents an additional opportunity, especially for the private sector, though it is not a priority action for the sector in meeting the NDC target.

#### 4.1.1 ECOSYSTEM ANALYSIS

Figure 3 shows Kenya's renewable energy generation ecosystem.

**Figure 3: Kenya's renewable energy power generation ecosystem**



67 International Finance Corporation. 2019. *Country Private Sector Diagnostic: Creating Markets in Kenya – Unleashing Private Sector Dynamism to Achieve Full Potential*.

The renewable energy power generation ecosystem can be divided into three groups: input providers, electricity producers and end users. Input providers include primarily technology providers and capital providers. These may be both utility-and small-scale renewable energy generation, including solar panel and solar home systems (SHS) solution providers. End users include those connected to the national grid managed by KPLC, C&I producers, and households that self-consume electricity generated off-grid.

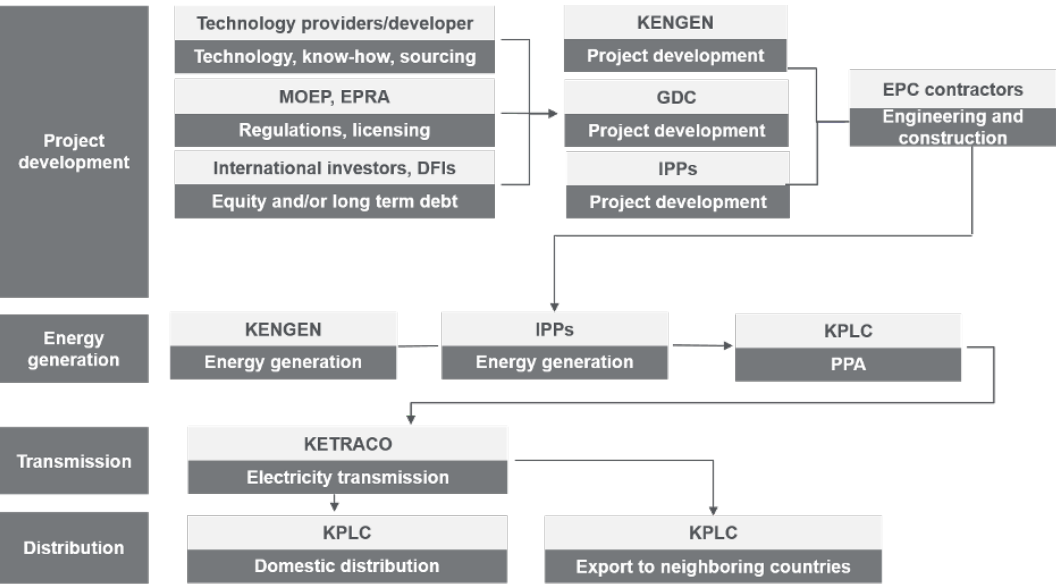
The price of electricity and the regulations established for this ecosystem have a significant impact on all stakeholders. They impact profitability and/or return on investment for all electricity producers through the PPA and impact decisions of off-grid electricity producers. Stakeholders within the ecosystem are therefore significantly linked to one another.

Renewable energy producers in Kenya include utility-scale on-grid power producers, C&I producers and households. Utility-scale on-grid power producers are involved in long-term energy generation projects, while C&I producers and households are involved in small-scale energy projects primarily for self-consumption. Capital needs differ across utility-scale power producers and C&I producers and households; utility-scale producers require access to long-term finance, while C&I producers and households require finance on a smaller scale for a shorter period.

4.1.2 ANALYSING THE VALUE CHAIN, MAPPING PRIVATE SECTOR ACTORS AND IDENTIFYING BARRIERS TO ON-GRID UTILITY-SCALE RENEWABLE ENERGY GENERATION IN KENYA

Figure 4 shows the value chain analysis of on-grid utility-scale renewable energy power generation.

Figure 4: Value chain for on-grid renewable energy generation in Kenya



IPPs are at the centre of the on-grid renewable energy value chain in Kenya. They generate electricity, which is sent to the national grid through PPAs with KPLC. IPPs develop utility-scale on-grid power generation projects, along with technology providers, engineering, procurement and construction (EPC) contractors, capital providers, and public utilities.

Investors in IPP-led utility-scale projects are mainly development finance institutions (DFI) and other international investors and donors, while terms and conditions of the PPAs are agreed upon with public utilities, such as KPLC. Government ministries and agencies, such as the Ministry of Energy and Petroleum and the Energy and Petroleum Regulatory Authority (EPRA), issue regulations and licenses to IPPs.

After project initiation, IPPs work with EPC contractors to commission the power plant. After commissioning, the IPPs are responsible for operating and selling electricity to the national grid, under conditions agreed upon in the PPAs. Electricity is then distributed to the domestic grid and exported to neighbouring countries.

The main gap in the on-grid renewable energy value chain in Kenya is the availability of long-term capital for project developers and an oversupply of electricity, which impacts PPA negotiations.

## DEVELOPERS/IPPS

Private sector investments in the on-grid renewable energy sub-sector are made primarily by IPPs through the development of utility-scale power plants. IPPs are involved in initiation, development and operation of power plants once commissioned. At the project development stage, IPPs receive support from technology providers/developers and investors. Technology providers/developers help with sourcing for potential projects and provide the technological know-how required to initiate and develop a project. Kenya has attracted significant and growing private participation through IPPs. Twelve IPP projects are underway in Kenya, accounting for 30 percent of installed generation capacity of over 658 MW.<sup>68</sup> Table 11 lists those projects as of June 2017.<sup>69</sup> The remaining 70 percent of capacity is owned and operated by KenGen, a state-owned electricity generation company.<sup>70</sup> To date, Kenya has the most IPPs in the sub-Saharan African region, along with Uganda.<sup>71</sup>

**Table 11: IPPs in Kenya**

PROJECT	TECHNOLOGY	CAPACITY (MW)	STATUS	SPONSORS/STAKEHOLDERS
Iberafrica Power Company	Diesel/heavy fuel oil	108	Commissioned	Union Fenosa and KPLC Pension Fund
Tsavo Power Company Ltd. <sup>72</sup>	Diesel/heavy fuel oil	74	Commissioned	IPS Power Investment Limited, Cinergy Global Power Limited, Tsavo Power Company Limited of Kenya, CDC Financial Services, Tsavo International LLC C/o Wartsila
Rabai Power	Diesel/heavy fuel oil	90	Commissioned	Burmeister & Wain Scandinavian Contractor A/S ("BWSC") and Aldwych International Limited ("Aldwych")
Thika Power (Melec) <sup>73</sup>	Diesel/heavy fuel oil	87	Commissioned	Melec PowerGen Inc.
Gulf Power <sup>74</sup>	Diesel/heavy fuel oil	80.3	Commissioned	Gulf Power
Triumph	Diesel/heavy fuel oil	83	Commissioned	Triumph Power Generation Co.
Orpower 4 Inc.	Geothermal	86	Commissioned	Ormat
Mumias Sugar Company Ltd.	Cogeneration	26	Commissioned	Mumias Sugar Company Ltd.
Biojule, Regen-Terem, Imenti Tea, Gikira	Various small RE	7.814	Commissioned	
Malindi Solar Project <sup>75</sup>	Solar	52	Planned	African Energy Development Corporation (AEDC), IDEA Power, and CDC
Lake Turkana Wind Power <sup>76</sup>	Wind	310	Commissioned	KP&P Africa B.V and Aldwych International
Menengai Geothermal Power Limited <sup>77</sup>	Geothermal	400	Planned	Quantum East Africa Power Limited, Sosian Menengai Geothermal Power Limited (SMGPL)

Source: Eberhard, A., Gratwick, K. and Kriuki, L. 2018. Kenya's lessons from two decades of experience with independent power producers. Utilities Policy 52, 37 – 49.

68 Pueyo, A. 2018. "What constraints renewable energy investment in Sub-Saharan Africa? A comparison of Kenya and Ghana." World Development 109, 85-100.

69 Ibid.

70 Ibid.

71 Eberhard, A., Gratwick, K. and Kriuki, L. 2018. Kenya's lessons from two decades of experience with independent power producers. Utilities Policy 52, 37 – 49.

72 World Bank Group. Multilateral Investment Guarantee Agency. Kenya: Tsavo Power Company Limited (Kipevu II).

73 World Bank Group. 2016. Kenya: Thika Power. Multilateral Development Banks' Collaboration: Infrastructure Investment Project Briefs.

74 Gulf Power. <https://gulfenergy.co.ke/gulfpower.html>.

75 Africa Energy Portal. 2019. Kenya: First Utility-scale IPP solar project achieves financial close. <https://africa-energy-portal.org/news/kenya-first-utility-scale-ipp-solar-project-achieves-financial-close>.

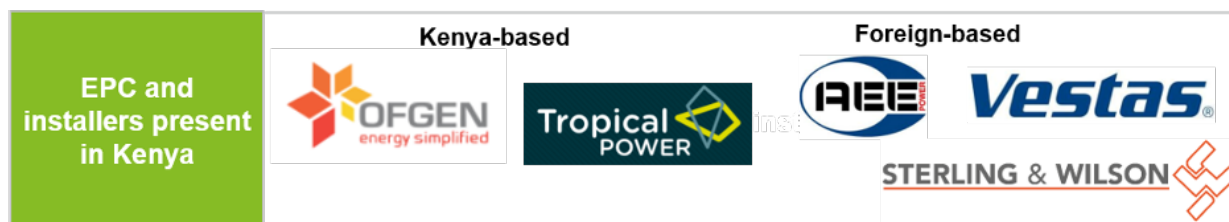
76 Lake Turkana Wind Power. <https://ltwp.co.ke/>.

77 African Development Bank. 2018. Geothermal Energy Powering Kenya's Future: Menengai Geothermal Field Development Facilitated by Public-Private Partnerships. Climate Investment Funds and Geothermal Development Company (GDC).

## EPC/INSTALLERS

EPC contractors are responsible for all activities related to renewable energy project design, procurement, construction and commissioning, including the handover of the power plant to the IPP once commissioned. Foreign-based EPC contractors have a strong presence in Kenya, although some local EPC contractors are also available. An illustrative list of EPC and installers is provided in Figure 5.

**Figure 5: Selected EPC contractors and installers in Kenya**



## RENEWABLE ENERGY SUBSECTOR ASSOCIATION

One of the actors in this subsector is the Kenya Renewable Energy Association,<sup>78</sup> an independent, not-for-profit association working to facilitate, promote and develop growth in Kenya's renewable energy sector.

## GAPS AND CHALLENGES FOR ON-GRID RENEWABLE ENERGY GENERATION VALUE CHAIN

### Electricity supply surplus

Significant new capacity has been added to Kenya's energy grid in recent years to provide access universal access to electricity. However, while new capacity continues to be built at an ambitious pace, demand growth has been slow, resulting in an oversupply of electricity. According to Kenya's Least Cost Power Development Plan 2017 – 2037, the average annual excess energy as share of generation in the period 2019 – 2030 is 15 percent. In addition, new planned operation of a coal plant in 2024 is projected to result in a surplus of 43 percent above the total of peak and required reserve, with 32 percent excess energy during the year.<sup>79</sup> This constitutes a barrier to investment, as private sector investors may not be willing to engage in a market with low demand prospects.

### Low electrification rates

Since 2006, in an effort to provide universal access, REREC has been expanding the national grid, installing electricity distribution lines and transformers across Kenya, especially in rural areas. However, despite this expanded grid coverage, household electrification rates are estimated to be low, as high connection charges remain a challenge.<sup>80</sup>

### Limited electricity transmission and distribution infrastructure

The small size of the electricity distribution network poses a challenge, leading to poor reliability and supply quality.<sup>81</sup> Electrical outages are common and frequent.<sup>82</sup> This affects nearly 90 percent of businesses and undermines productivity, which, in turn, increases the cost of doing business.<sup>83</sup> In Kenya, two-thirds of businesses are estimated to own a generator.<sup>84</sup> The latest power generation and transmission plan, supported by the National Energy and Petroleum Policy and Vision 2030, recommends considerable expansion, reinforcement and rehabilitation measures to allow transport of energy from power plants to load centres. However, implementation of the plan could be delayed and construction could last for a long time, adding further risk of delay in completing a transmission line and increasing the overall high cost of doing business.<sup>85</sup>

<sup>78</sup> <https://www.gogla.org/about-us/members/kenya-renewable-energy-association-kerea>.

<sup>79</sup> Republic of Kenya. 2018. Updated Least Cost Power Development Plan 2017 – 2037.

<sup>80</sup> United Nations Development Programme (UNDP). *Nationally Appropriate Mitigation Action (NAMA): Access to clean energy in rural Kenya through innovative market-based solutions*. New York.

<sup>81</sup> Pueyo, A. 2018. "What constraints renewable energy investment in Sub-Saharan Africa? A comparison of Kenya and Ghana." *World Development* 109, 85-100.

<sup>82</sup> Ibid.

<sup>83</sup> International Finance Corporation. 2019. *Country Private Sector Diagnostic: Creating Markets in Kenya – Unleashing Private Sector Dynamism to Achieve Full Potential*.

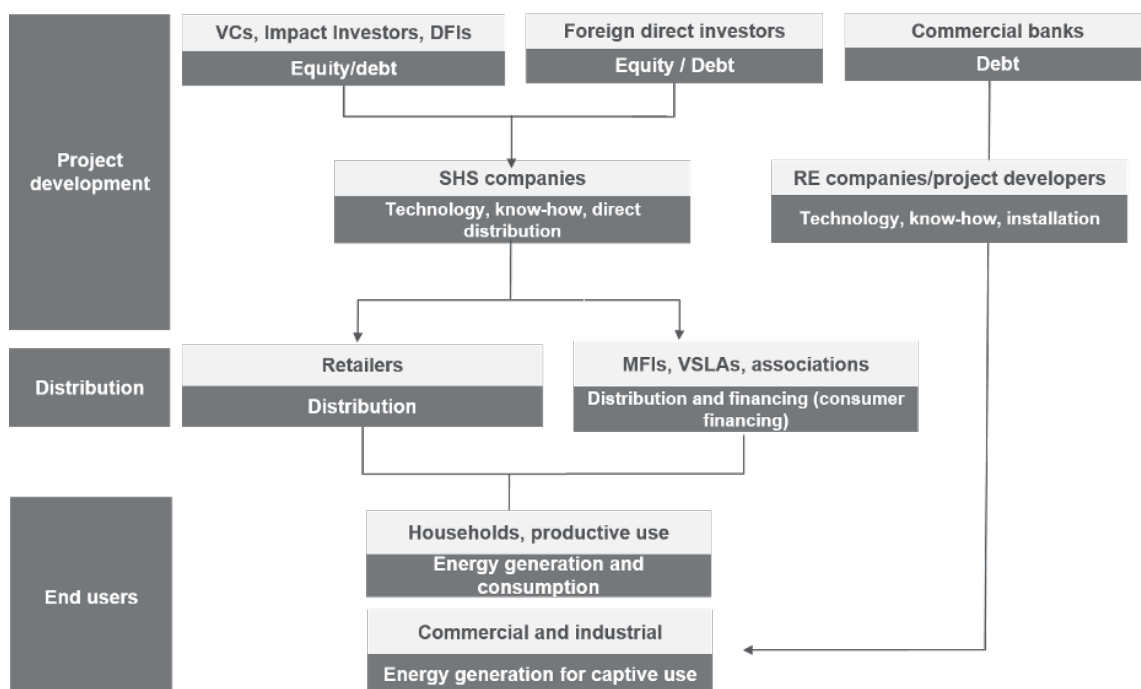
<sup>84</sup> USAID. 2019. *Kenya: Off-Grid Solar Market Assessment – Power Africa Off-Grid Project*.

<sup>85</sup> Pueyo, A. 2018. "What constraints renewable energy investment in Sub-Saharan Africa? A comparison of Kenya and Ghana." *World Development* 109, 85-100.

### 4.1.3 ANALYSING THE VALUE CHAIN, MAPPING PRIVATE SECTOR ACTORS AND IDENTIFYING BARRIERS TO C&I AND HOUSEHOLD RENEWABLE ENERGY USE IN KENYA

Figure 6 presents the value chain analysis of the C&I and household-level use of renewable energy in Kenya.

**Figure 6: Value chain for off-grid renewable energy power generation in Kenya**



The off-grid renewable energy power generation value chain is centred on households and C&I end users. Most household users are off-grid or located too far away to be connected to the national grid, driving demand for off-grid renewable energy applications. The primary demand from on-grid connected end users for off-grid renewable energy applications is based on saving on electricity and fuel costs and increasing the reliability of power supply.

The off-grid renewable energy power generation value chain in Kenya can be divided into two groups: one focused on larger-scale renewable energy projects and another focused on smaller-scale projects. Both include project developers providing technologies and solutions to C&I or household end users.

A larger-scale value chain project is generally initiated by a request from C&I users and is then relayed to technology providers and installers. Some developers also provide financial services related to the project's financial structure.

SHS technology providers play a central role in the smaller-scale value chain. These small-scale projects are generally based on requests from end users; SHS companies develop products to meet their needs.

Small-scale off-grid renewable energy solutions are provided directly to end-users or indirectly through retailers, small vendors, supermarkets, MFI, and village savings and loan associations. These distribution channels allow products to reach customers in rural areas removed from the national grid. Companies providing off-grid renewable energy generation applications, such as M-KOPA, are financed primarily by foreign investors, such as venture capital (VC) and impact investors.

To date, Kenya has the greatest deployed capacity of off-grid solar photovoltaic (PV) in sub-Saharan Africa. Two companies – Powerhive and PowerGen - attracted the greatest amount of investment in Kenya, with a total of over \$36.5 million (\$32 million and \$4.5 million, respectively).<sup>86</sup> There are approximately 63 mini-

86 USAID. 2019. Kenya: Off-Grid Solar Market Assessment – Power Africa Off-Grid Project.



grids in Kenya; 23 of them are owned primarily by four private developers - Powerhive, Talek, PowerGen, and RVE.Sol. Privately owned mini-grids operate on a prepaid fee-for-service model, although other than KPLC, only Powerhive has the provisional licenses to distribute electricity generated.<sup>87</sup> Specific regulations for mini-grid development are being drafted and will be implemented in coming years. This is intended to further promote private sector participation in the market. Ten percent of the population -3.520 million Kenyans – are expected to receive electricity via an estimated 8,000 solar mini-grids by 2023.<sup>88</sup>

## TECHNOLOGY PROVIDERS AND SMALL-SCALE DEVELOPERS

Renewable energy technology providers and small-scale developers in Kenya range from providers of mini-grid solutions to C&I-scale installations, community-based installations and household solutions. The country's solar off-grid market is well developed. Private sector players have developed innovative business models, such as pay-as-you-go systems, and innovative financing structures to fund their fast-growing businesses.<sup>89</sup> The companies and private sector players selling solar home kits include Azuri Technologies, Bboxx, Brighterlite Kenya Ltd., Go Solar Systems and M-KOPA.<sup>90</sup>

**Figure 7: Technology providers and small-scale developers in Kenya**



## MINI-GRID SUBSECTOR ASSOCIATION

The African Mini-Grid Developers Association (AMDA)<sup>91</sup> is a pan-African regional organization focused on mini-grids. It has chapters in Kenya, Tanzania and Nigeria and its membership totals 16 mini-grid developers. The association promotes best practices in policy, regulation and financing.

## GAPS AND CHALLENGES FOR TECHNOLOGY PROVIDERS, SMALL-SCALE DEVELOPERS, C&I AND HOUSEHOLD RENEWABLE ENERGY GENERATION VALUE CHAIN

### Uncertainty in the mini-grid market

Two factors contribute to uncertainty in the mini-grid market in Kenya. First, the Government of Kenya has developed strategies and projects that provide a clear role for mini-grids in delivering access to electricity to the population. However, in an attempt to increase electrification, some of these projects overlapped with the private sector, with RREC developing mini-grids in areas that already included private sector-owned mini-grids. This suggests a need to improve coordination between publicly-funded and privately-financed initiatives to reduce the risk, to the extent possible, that public initiatives will compete with or crowd out the private sector. A coordinated approach will also ensure that Kenya achieves its electrification goal in the most efficient manner.

Second, pending regulatory and procedural changes related to the development of new mini-grids create uncertainty in the market. According to the Kenya National Electrification Strategy (KNES) 2018, mini-grids are expected to play a significant role in achieving the universal electrification goal. However, the most promising

<sup>87</sup> United Nations Development Programme (UNDP). 2018. *Derisking Renewable Energy Investment: Off-Grid Electrification. A Framework to Support Policymakers in Selecting Public Instruments to Promote Private Investment in Solar PV-Battery Mini-Grids in Developing Countries.*

<sup>88</sup> USAID. 2019. *Kenya: Off-Grid Solar Market Assessment – Power Africa Off-Grid Project.*

<sup>89</sup> Ibid.

<sup>90</sup> Ibid.

<sup>91</sup> <https://africamda.org/>

sites for public sector mini-grid deployment only target about 3 percent of households that cannot be served by the national grid.<sup>92</sup> This provides significant potential for private sector participation in mini-grid deployment to bridge the gap and requires additional policies for effective operation. Currently, Powerhive and Talek Power Company are the only two companies with distribution licenses and approved tariff schedules.<sup>93</sup> The new regulation is expected to clarify these processes as new players enter the market. Providing clarity is, therefore, essential for the development of the market for the private sector. It was expected that the new regulation would be enacted in the third quarter of 2019, following the adoption of the Energy Act, 2019, but has not been due to additional delay from COVID-19 crisis. This has slowed the market as many private sector players are waiting for the new regulation to be introduced before starting development work. Even after it is enacted, further clarification will likely be needed, which may result in additional delay in market development.

**RECOMMENDATION AND POINT OF ENTRY 1**

**Establish stable market conditions in mini-grid development for the private sector through timely introduction of the regulation and better coordination**

The Government of Kenya should introduce the regulation to implement the new Energy Act, 2019 to allow the private sector to understand the changes coming to the market and the opportunities those changes are expected to bring. The new regulation will drive private sector actors interested in providing electricity to those rural areas that lack access to it. This makes it even more important to improve coordination between the public and private sectors to avoid overlapping mini-grid development.

**Best practice: Standardized Power Purchase (SPP) Framework, Tanzania**

Tanzania has been successful in implementing sustainable business models for renewable energy-based mini-grids. The Government of Tanzania passed the Rural Energy Act in 2005 to accelerate electricity access and promote the development and operation of small power projects among local and foreign private investors. In 2009, Tanzania introduced a SPP policy, providing a legal basis to interconnect renewable energy generators to both the national grid or isolated mini-grids and to export excess power to the national utility.<sup>94</sup> Importantly, the SPP policy also allows IPPs to construct new isolated mini-grids to provide electricity to communities, such as in rural areas, and sell directly to new customers.<sup>95</sup> The SPP framework includes model power purchase agreements, standardized tariffs, and streamlined interconnection and licensing requirements, which have transformed the sector in Tanzania.

<b>Main implementer</b>	The Government of Kenya
<b>Private sector involvement</b>	The private sector will be involved in developing mini-grids and providing electricity through PPP.
<b>Financial benefits</b>	Increased number of private sector players providing electricity to customers, especially in rural areas.
<b>Mitigation outcomes</b>	Increased electricity generation from renewable energy sources; decreased GHG emissions from electricity supply.

**4.2 ENERGY EFFICIENCY**

Kenya has significant opportunities to improve energy efficiency in industries and buildings by improving demand-side practices and reducing system losses. Energy efficiency is an important component of the country's GHG emission reduction strategy, with priority actions in enhancing energy and resource efficiency across different sectors. However, the ecosystem for energy efficiency for commercial, industrial and household use in Kenya is still nascent. The Government of Kenya has made progress in recent years by mandating installation of solar water heaters for high-income consumers and performing energy audits at the premises of large commercial, institutional and industrial customers. However, improving energy efficiency

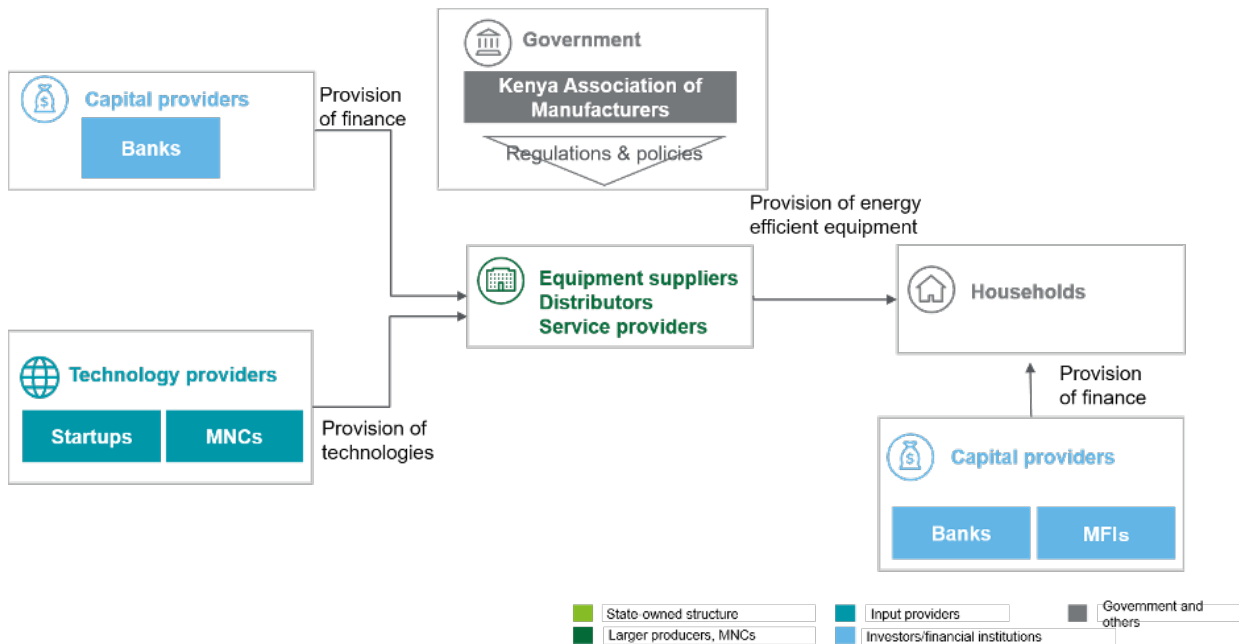
92 NewClimate Institute. 2019. The role of renewable energy mini-grids in Kenya's electricity sector: Evidence of a cost-competitive option for rural electrification and sustainable development.  
93 The World Bank. 2017. *Mini Grids in Kenya: A Case Study of a Market at a Turning Point*.  
94 Bodis, K., Ghanada, R., Huld, T., Kougias, I., Moner-Girona, M., Solano-Peralta, M. and Szabo, S. 2016. "Adaptation of feed-in tariff for remote mini-grids: Tanzania as an illustrative case. *Renewable and Sustainable Energy Reviews*, 5, 306-318.  
95 Ibid.

in Kenya further requires the active participation of the private sector in advancing such measures, such as energy efficiency improvements in lighting. The government may also consider expanding its implementation of standards and labelling for energy efficient appliances and equipment, an effective way to raise awareness and steer the private sector toward energy efficient practices.

## 4.2.1 ECOSYSTEM ANALYSIS

Figure 8 presents Kenya's energy efficiency ecosystem.

**Figure 8: Kenya's energy efficiency ecosystem**



The energy efficiency ecosystem can be divided into three groups: technology and capital providers; equipment suppliers, distributors and service providers; and end users. A local supply chain does not currently exist in this subsector. Equipment suppliers and distributors operate mainly on a small scale and are usually located in urban areas.

## ENERGY EFFICIENCY SUBSECTOR ASSOCIATION

The Kenya Association of Manufacturers,<sup>96</sup> a business association, brings together manufacturers in the industry sector and promotes and removes barriers to energy efficiency. Through its Centre for Energy Efficiency and Conservation, it offers programmes designed to help companies identify energy efficiency opportunities.

## GAPS AND CHALLENGES FOR THE ENERGY EFFICIENCY VALUE CHAIN

### Lack of awareness and information

There is limited awareness of the technical and economic opportunities and benefits related to energy efficiency investments, especially in the residential sector, and limited capacity to take advantage of them. This includes insufficient information on energy-saving opportunities, investment costs, financing instruments, available technologies and standards. In addition, the actors do not adequately understand the potential savings in the economic subsectors and how implementation of efficiency measures might affect projected energy supply and demand. As a result, commitment and awareness in various subsectors are low.

### Lack of demand for energy efficient appliances and products

The demand for energy efficient appliances and products is low in Kenya, based on a lack of awareness of their benefits and availability. This lack of demand also results from the high cost to purchase these products. In Kenya, the residential sector offers a significant opportunity to improve energy efficiency. However, the

<sup>96</sup> <https://kam.co.ke/>.

lack of demand hinders the sector from leveraging this opportunity. Despite the 2012 introduction of a regulation that required building owners and contractors to install solar water heaters in commercial or residential buildings that use more than 100 litres of hot water per day, demand slowed in the second half of 2018 when the government suspended the regulation. To date, demand remains low, despite efforts such as energy audits.

### High cost of energy efficient technologies

The high cost of purchasing energy efficient technology and products is a major barrier in supporting adoption of energy efficient technologies at the household level. New, rather than existing, residential customers offer the greatest potential for savings. However, a barrier preventing new customers from accessing these technologies must be addressed before their full potential can be achieved.

#### RECOMMENDATION AND POINT OF ENTRY 2

### Establish an enabling environment for energy efficiency

**Policies and regulations** – Several energy sector policies and regulations include or support one or more aspects of energy efficiency in an effort to scale up the adoption of energy efficient practices. However, existing policies do not capture aspects such as capacity building and awareness campaigns. This only worsens the lack of awareness within the market.

**Awareness campaign** – Lack of awareness presents a major barrier to scaling up the energy efficiency subsector on both the demand and supply sides. Consumers often lack the information they need to make informed decisions on energy efficiency solutions, while distributors lack information on the full benefit of solutions they are offering. This results in a lack of demand for energy efficient products and solutions.

**Appliance labelling** – Energy efficiency labelling is an effective means of raising public awareness on appliance energy savings benefits. Under such a scheme, appliance labels inform consumers of a product's electricity consumption and energy efficiency. This facilitates decision-making for end users, who can then consider energy efficiency performance factors when purchasing an appliance. In 2016, Kenya introduced the Energy (Appliances' Energy Performance and Labelling) Regulations to enhance the implementation of the standards and labelling programme. The regulations cover a limited range of appliances, primarily lamps, refrigerator, air conditioner, and cage induction motors.

### Best practice example: Economic Community of West African States (ECOWAS) Energy Efficiency Policy

The Economic Community of West African States (ECOWAS) developed and implemented a regional Energy Efficiency Policy (EEEP) that included key components, such as capacity building and raising awareness for energy users and decision-makers. Overall, the framework contributes to creating an enabling environment that promotes private investment in energy efficiency, initiates industrial development and increases employment through energy savings. Specific EEEP targets include phasing out incandescent bulbs, establishing energy efficiency standards and labelling for major energy equipment, implementing capacity building and awareness raising for energy users and decision-makers, and creating financing instruments for sustainable energy.<sup>97</sup>

<b>Main implementer</b>	The Government of Kenya
<b>Private sector involvement</b>	The private sector will be involved in developing and distributing energy efficient appliances and solutions.
<b>Financial benefits</b>	The main challenge this subsector experiences is lack of end user demand. Therefore, creating an enabling environment will drive demand. Private sector players, who provide products, can expect additional and sustainable revenue streams from sustainable appliances.
<b>Mitigation outcomes</b>	Decreased energy use through improved efficiency; decreased GHG emissions from energy demand.

97 Economic Community of West African States. *ECOWAS Energy Efficiency Policy*.

### Limited availability of financing mechanisms

Financing options from commercial banks for energy efficient activities and solutions are limited.<sup>98</sup> Borrowing for energy efficiency solutions often falls under general borrowing activities, such as corporate or consumer finance, and is not specific to energy efficiency efforts, making it difficult for a lender to assess the scale of activity or demand. Innovative financing options aim to address this barrier; specialized commercial finance providers are starting to develop them.

#### RECOMMENDATION AND POINT OF ENTRY 3

### Provide energy efficient appliances and products at an affordable price

To encourage households to replace their appliances with more energy efficient equipment and products, they must have access to efficient appliances that are affordable. This can be achieved by further leveraging asset-based lending for appliances, such as refrigerators and air conditioning, thereby reducing the initial cost of investment. In Kenya, the sale of appliances has grown significantly, primarily through the pay-as-you-go model of asset-based lending. Improving affordability can also be achieved by working with companies that provide renewable energy products. In the long term, this can lead to local manufacturing of energy efficient products and appliances, contributing to efficient development and distribution of such products locally, further lowering their price.

#### Best practice example: Financing DESCOS: AfDB's DESCOS Financing Program

In 2019, the African Development Bank (AfDB) approved a financing programme aimed at distributed energy service companies (DESCOs) in Africa. It promotes securitization financing techniques to address barriers to accessing finance for DESCOs, as well as the use of local currency financing. The objective is to help offset the risks in this sector that both local banks and international investors perceive as high, which include lack of familiarity with the technology, currency risk and limited information about consumers' credit history.

<b>Main implementer</b>	The private sector players involved in energy efficient appliance imports and distribution.
<b>Private sector involvement</b>	<p>The private sector will be involved in the import, distribution and provision of appliances and SHS.</p> <p>Financial service providers, including commercial banks and non-banking organizations, may also be involved by providing financing to service providers and/or households.</p>
<b>Financial benefits</b>	The main challenge facing this subsector is lack of end-user demand. Therefore, creating an enabling environment will drive demand. Private sector players, who provide products, can expect additional and sustainable revenue streams from sustainable appliances.
<b>Mitigation outcomes</b>	Decreased energy use through improved efficiency and decreased GHG emissions from energy demand.

## 4.3 CLEAN COOKING

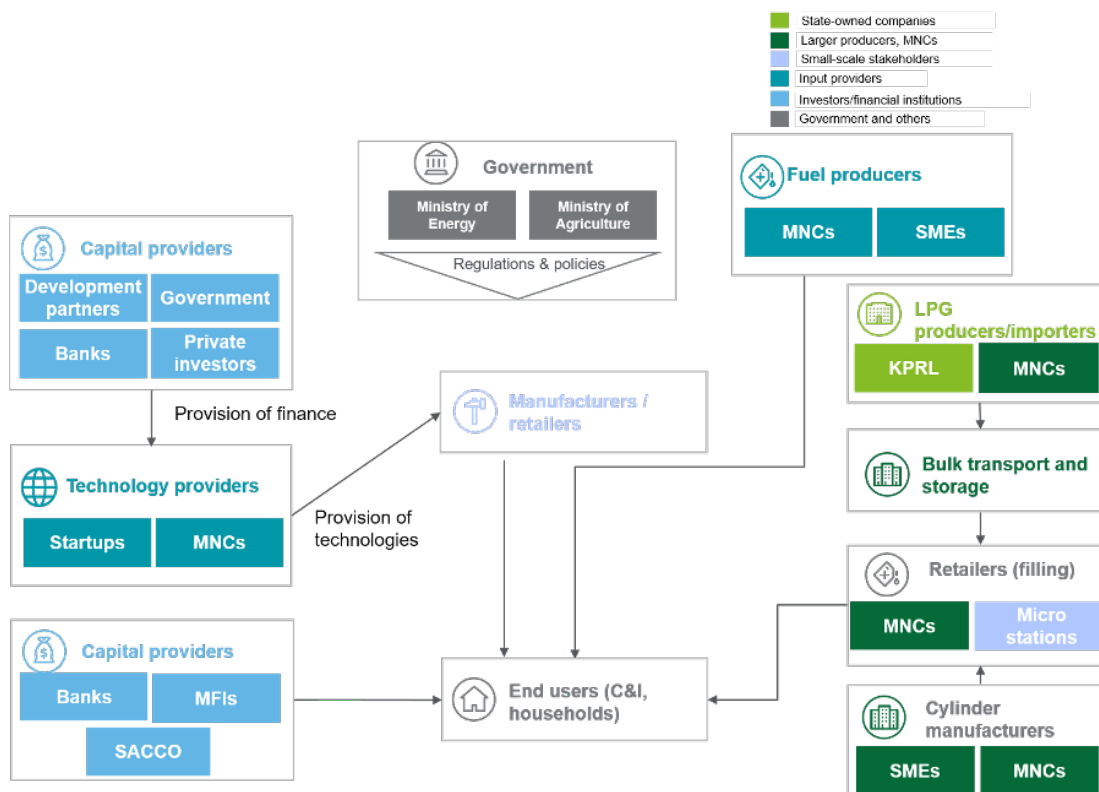
Priority actions in Kenya's clean cooking subsector are related to the development and distribution of improved cooking stoves. Specifically, actions focus on developing and distributing 4 million improved biomass stoves, including 2 million charcoal stoves and 2 million biomass stoves. Priority actions also include developing and distributing 1 million clean energy stoves using liquefied petroleum gas (LPG), biogas and ethanol by 2022. Stakeholders involved in the clean cooking ecosystem and value chain in Kenya include cookstove manufacturers, fuel producers, distributors, retailers and end users.

98 Ibid.

### 4.3.1 ECOSYSTEM ANALYSIS

Figure 9 presents Kenya's clean cooking ecosystem.

**Figure 9: Ecosystem for clean cooking in Kenya**



The clean cooking ecosystem can be divided into input providers, technology providers, manufacturers, retailers and end users. Based on the business model adopted, technology providers can act as input providers by providing the technology to manufacturers, or directly as manufacturers, by producing products and distributing them to end users.

Input providers include raw material providers, such as fuel producers who provide fuel to retailers for distribution, and capital providers. End users are mainly households; additional users include schools and other institutions. The government can influence the ecosystem by establishing standards and regulations.

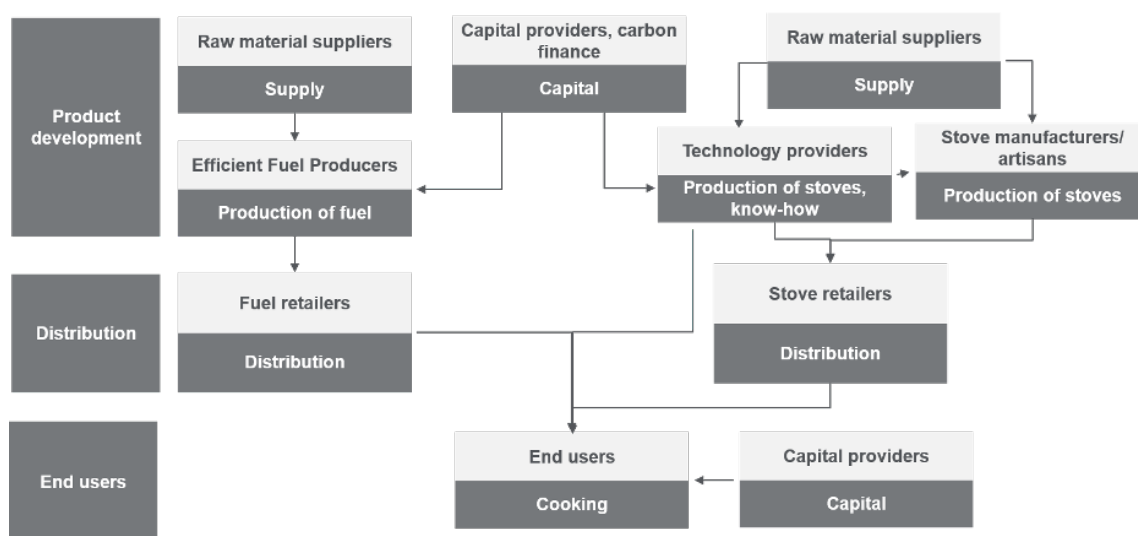
Private sector stakeholders constitute the bulk of value chain players in this subsector. End users - households and C&I entities - are key drivers of demand for clean cooking technologies.



### 4.3.2 ANALYSING THE VALUE CHAIN, MAPPING PRIVATE SECTOR ACTORS AND IDENTIFYING BARRIERS TO CLEAN COOKING

The value chain analysis of Kenya's clean cooking subsector is shown in Figure 10.

**Figure 10: Value chain for clean cooking in Kenya**



The value chain for the clean cooking subsector is structured around end users, which include households and C&I institutions. Products in this value chain include clean cooking technologies, such as improved biomass cooking stoves, biofuels cooking stoves and electric cookstoves, and efficient fuels, such as sustainably sourced fuelwood, efficiently produced charcoal, briquettes, biofuels (ethanol) and LPG.

#### COOKSTOVE MANUFACTURERS

Cookstove manufacturers are responsible for the development of efficient technologies and/or the production of efficient cookstoves. Manufacturers in Kenya include players from both the formal and informal sectors. Some are involved in producing and distributing stoves, while others may import the technology but assemble and distribute locally. The product flow within the sector is also based on models in which manufacturers sell products directly to end users; products flow from manufacturers to retailers and then to end users; or manufacturers sell products to wholesalers, which are then distributed to end users through retailers. Kenya has several local manufacturers. International manufacturers, such as EcoZoom and Envirofit, are also present in the market and provide improved woodstoves and charcoal stoves. Figure 11 presents selected efficient and LPG cookstove manufacturers.

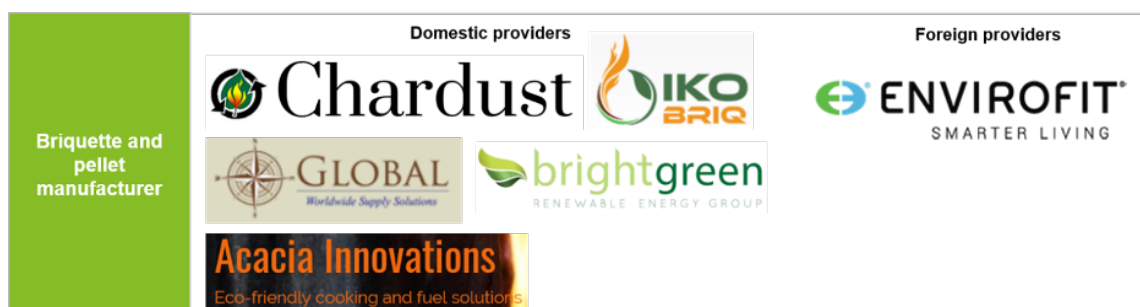
**Figure 11: Cookstove manufacturers in Kenya**



## FUEL MANUFACTURERS

Fuel manufacturers produce efficient fuel (briquettes and pellets). Briquettes have the potential to displace or reduce the use of unsustainable charcoal. Briquette production in Kenya is dominated by solo entrepreneurs, limited companies, community-based organizations (CBO) and faith-based organizations (FBO).<sup>99</sup> At least 10 companies and small enterprises produce briquettes in Kenya; most are involved in domestic production.<sup>100</sup> They include Chardust, Global Supply Solution, Acacia Innovations, BrightGreen Renewable Energy and Tamua. Figure 12 presents selected fuel manufacturers.

**Figure 12: Selected fuel manufacturers in Kenya**

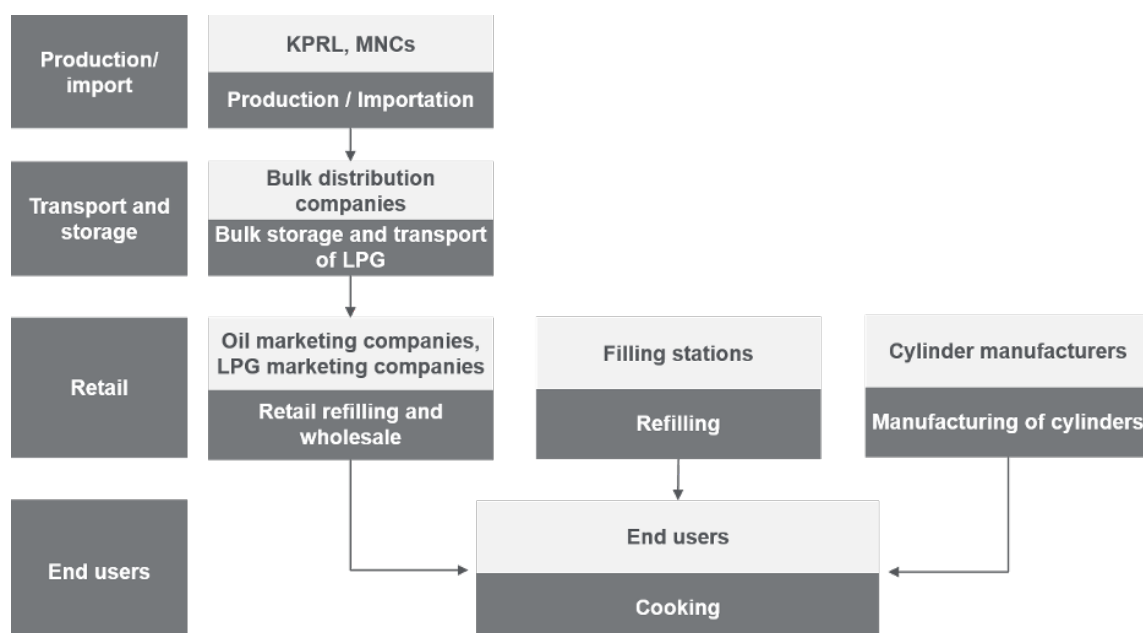


## STOVE AND FUEL DISTRIBUTORS AND RETAILERS

Stove and fuel distributors and retailers are responsible for the distribution of efficient stoves and fuel. The lack of an efficient distribution and retail network is a major barrier in scaling the uptake of clean cooking and fuel technologies in Kenya.

The LPG fuel value chain differs from the efficient fuels value chain, as shown in Figure 13.<sup>101</sup>

**Figure 13: Clean cooking LPG value chain**



Kenya's entire supply of LPG is imported.<sup>102</sup> Key stakeholders in the value chain include the Kenya Petroleum Refineries Limited, Oilibya, Total Energy, and Kenol Kobil. The main private sector stakeholders are involved in bulk transport and storage, as well as retailing. Retailing and refilling have traditionally taken place at specified filling stations; the model has since evolved, providing for refilling at kiosks and through home delivery.

<sup>99</sup> A CBO is a public or private non-profit organization representing a community and working to meet its needs. An FBO is an organization of individuals united on the basis of religious or spiritual beliefs.

<sup>100</sup> Clean Cooking Association of Kenya. 2019. *Kenya Household Cooking Sector Study: Assessment of the Supply and Demand of Cooking Solutions at the Household Level*.

<sup>101</sup> Dalberg. 2013. *GLPGP – Kenya Market Assessment*.

<sup>102</sup> The World Bank Group. 2018. *Kenya's Strategy to Make Liquefied Petroleum Gas the Nation's Primary Cooking Fuel*.

Kenya has a well-defined LPG distribution value chain that is regulated and licensed by EPRA. As of January 2019, EPRA had issued licenses to 33 importers, 41 storage facility operators, 91 transporters, and 46 export and wholesale dealers.<sup>103</sup>

The LPG distribution value chain is structured around the following private sector stakeholders.

## TRANSPORT AND STORAGE

Several private sector companies are involved in the bulk storage and transport of LPG in Kenya. Bulk storage players include Total Kenya, Vivo Energy, and African Gas and Oil Ltd. Private sector companies involved in bulk transport include Roy Transmotors Ltd., Multiple Hauliers (EA) Ltd. and Dakawou Transport. The latter is one of the largest LPG transporters in East and Central Africa.

## RETAIL

LPG is sold at retail at filling stations and through home delivery. Traditionally, LPG distribution was limited as filling stations were located primarily in urban centres and only sparsely in rural areas. However, with LPG cylinders now stocked at local kiosks and, most importantly, the advent of home delivery services, the last mile distribution of LPG has improved significantly in both urban and rural areas.<sup>104</sup>

## CYLINDER MANUFACTURERS

Private sector companies that manufacture cylinders in Kenya include Cylinder Works Limited, Allied East Africa Limited and East Africa Spectre Limited. These are all based in Kenya and lead the market.

## CLEAN COOKING SUBSECTOR ASSOCIATION

The Clean Cooking Association of Kenya<sup>105</sup> is a private, not-for-profit association for the clean cooking subsector, supporting stakeholders throughout the value chain.

## GAPS AND CHALLENGES IN CLEAN COOKING VALUE CHAIN

### **Lack of trained and professional manufacturers to scale up distribution of clean cookstoves**

The challenges facing the clean cooking sector are related to the sector's informal nature. Manufacturers lack access to financing and working capital that would enable them to scale their businesses, which traditional commercial banks or MFIs often perceive as high risk, with an unattractive return on investment. The opportunity to scale up clean cookstoves is also limited by the lack of skilled technicians and maintenance facilities, as the sector is dominated by artisanal manufacturers. Taken together, these issues suggest the need to transform the sector by formalizing and professionalizing its artisanal manufacturers so that it can reach the capacity needed to achieve sectoral NDC targets.

### RECOMMENDATION AND POINT OF ENTRY 4

#### **Implement market-based solutions by developing hubs or “energy productivity zones” (EPZs)**

A market-based approach involves commercializing improved cookstoves through a network of hubs, or EPZs, that provide artisanal manufacturers with necessary services and infrastructure. This has been proposed for both Kenya and Ghana as part of their respective Nationally Appropriate Mitigation Action (NAMA) for access to clean energy.

Under this approach, artisanal manufacturers have access to workspaces, which include areas for manufacturing and storage and access to energy required to manufacture cookstoves. The workspaces can also serve as training and capacity development facilities.

<sup>103</sup> Clean Cooking Association of Kenya. 2019. *Kenya Household Cooking Sector Study: Assessment of the Supply and Demand of Cooking Solutions at the Household Level*.

<sup>104</sup> Ibid.

<sup>105</sup> <https://ccak.or.ke/>.

**Private sector participation:** As proposed in the NAMA for access to clean energy in rural Kenya through innovative solutions, private sector entities can participate in developing EPZ infrastructure and services, manufacturing improved cookstoves, and distributing and retailing cookstoves by ensuring that the necessary technical equipment and machinery are available and accessible to local artisans. Private sector actors may generate income from renting out workspaces to other manufacturers and charging them for the electricity consumed, while local artisans receive payment based on the number of quality cookstoves produced. Providing the necessary infrastructure and services removes barriers facing artisanal manufacturers and allows them to improve the technical and manufacturing capacities required to achieve scale.

**Best practice example: Toyola Energy Ltd. – Ghana<sup>106</sup>**

Toyola Energy Ltd., is a for-profit business founded in 2006 in Ghana. It engages self-employed artisans to produce energy efficient and cleaner cookstoves on a subcontracted basis and has established production and training centres where self-employed artisans manufacture cookstoves. A quality control process is in place and poor-quality products are rejected. Payment is made based on work performed. This model removes barriers for local artisans, as they are not required to raise capital to establish a production line, but use existing facilities and are paid based on the number of stoves produced. All stoves manufactured in Toyola production centres are serialized and recorded with the names of the purchaser and assembler for traceability and carbon financing purposes. Toyola has grown into a successful business with operations in three other West African countries and annual sales of more than 100,000 cookstoves. Toyola also provides customers with access to loans through its Toyola Money Box, in which customers place funds saved from using smaller amounts of more efficient fuel to pay for the stove over an eight-week period.

<b>Main implementer</b>	The private sector involved in the development and distribution of cookstoves will be the main implementer.
<b>Private sector involvement</b>	The private sector entities may participate in developing EPZ infrastructure and services, manufacturing improved cookstoves, and distributing and retailing cookstoves.
<b>Financial benefits</b>	Private sector actors can generate income by renting workspace to other manufacturers and charging them for the electricity consumed, while local artisans receive payment based on the number of quality cookstoves produced.
<b>Mitigation outcomes</b>	Decreased GHG emissions from energy demand by using energy efficient cookstoves and fuel.

**Lack of reliable distribution channels for improved cookstoves and underdeveloped and limited distribution channels constrain the use of efficient fuels**

The clean cooking sector is constrained by limited and underdeveloped distribution channels for both cookstoves and efficient fuels. Distributors and retailers face challenges in providing a reliable supply of clean cookstoves and fuels to customers, especially in rural and remote areas. Kerosene is the most accessible commercial fuel source for both rural and urban households. It is characterized by one of the most elaborate and extensive distribution networks in the country, with households traveling shorter distances to purchase this fuel compared to other, more efficient fuel sources. Meanwhile, consumers must travel further to purchase LPG, for example.

**RECOMMENDATION AND POINT OF ENTRY 5**

**Repurpose existing distribution network to expand distribution capacity of cookstoves and efficient fuels**

The distribution of cookstoves and efficient fuels can be expanded without developing a new distribution network. Instead, manufacturers and distributors can rely on an existing distribution network previously used for another purpose and repurpose it to sell improved cookstoves and efficient fuels.

<sup>106</sup> Clean Cooking Association of Kenya. 2019. *Kenya Household Cooking Sector Study: Assessment of the Supply and Demand of Cooking Solutions at the Household Level*.

### Best practice example 1: Raj Ushanga House (RUH)<sup>107</sup> - Kenya

RUH is a leading distributor and warehousing company in Kenya that imports and distributes high-grade jewellery beads used to create Kenya's famous Maasai jewellery. To leverage its established distribution network serving off-grid areas, RUH repurposed it to sell renewable energy products. In 2012, RUH signed an agreement to distribute pay-as-you-go solar home systems from Azuri Technologies. Today, it is the largest distributor for Azuri Technologies.<sup>108</sup>

### Best practice example 2: One Acre Fund<sup>109</sup> - Kenya

One Acre Fund is a non-profit social enterprise in Kenya providing seeds and fertilizers to its rural farmers through asset-based loans. In 2011, using its existing distribution network, One Acre Fund started offering cost-saving solar products as an optional add-on to its loan package.

<b>Main implementer</b>	The private sector involved in developing and distributing cookstoves will be the main implementer.
<b>Private sector involvement</b>	The private sector will be involved in developing and distributing energy efficient cookstoves.
<b>Financial benefits</b>	Decrease in production cost associated with distribution and increase in revenue from reaching wider population and users.
<b>Mitigation outcomes</b>	Decreased GHG emissions from energy demand through the use of energy efficient cookstoves and fuel.

## 4.4 FINANCIAL INSTITUTIONS PROVIDING GREEN FINANCING RELEVANT TO THE ENERGY SECTOR

Multiple financial institutions provide green financing and financing to the energy sector in Kenya, offering financial services and products to SMEs and consumers. The energy sector is supported by various financing options; only a certain subsector faces challenges accessing finance. Table 12 maps the institutions that offer green financing and the financial products and services that they provide to the energy sector.

**Table 12: Financial institutions providing green financing to Kenya's energy sector**

FINANCIAL INSTITUTIONS		SUBSECTOR SERVED	PRODUCTS AND SERVICES	DETAILS
Type	Concrete example			
COMMERCIAL BANKS	Equity Bank	Renewable energy and clean cookstove	Corporate finance (debt)	Interest rate: 14% per annum
MFIS, RURAL BANKS AND SAVINGS AND CREDIT COOPERATIVES (SACCOS)	Kenya Women Microfinance Trust (KWFT)	Renewable energy and clean cookstove	Consumer finance (debt)	Interest Rates: 18.57%
	Yehu Microfinance			Tenor: maximum 52 weeks
	SACCOS	Clean cookstove		Interest rate: 19%
IMPACT INVESTORS, VCS AND CVCS	Acumen, Energy Access Ventures, Novastar Ventures, AHL Ventures Partners Investment, SunFunder	Renewable energy and clean cookstove	Venture capital (debt, equity)	Tenor: up to 36 months
ASSET-BASED FINANCING	PayGo Energy, Envirofit	Renewable energy (off-grid) and clean cookstove	Asset finance/asset-based lending	Clean Stove Fund
				Significant ticket size
				Foreign based
				Provided directly or through partners

<sup>107</sup> <https://www.rajushanga.com/>.

<sup>108</sup> USAID. 2019. Kenya: Off-Grid Solar Market Assessment – Power Africa Off-Grid Project.

<sup>109</sup> <https://oneacrefund.org/>.

FINANCIAL INSTITUTIONS		SUBSECTOR SERVED	PRODUCTS AND SERVICES	DETAILS
Type	Concrete example			
DFIS	AFD	Renewable energy and energy efficiency	Credit line to commercial banks	SUNREF
	WB	Renewable energy	Project finance	Kenya Off-Grid Solar Access Project (KOPSA)
	EIB	Renewable energy	Credit line to commercial banks	Partnered with the Trade Development Bank (TDB)
	GIZ	Renewable energy	Project finance	Mini-Grids Result- Based Financing (RBF) project
	FMO	Renewable energy	Project finance	Radiant and Eldosol Projects
	DfID	Renewable energy	Project finance	Africa Mini-Grid Developers Association (AMDA) Result-Based Financing
CROWDINVESTING	Global Giving, M-Changa, Kiva, Bettervest, Lendahand and TRINE, and Crowdcube	N/A	Renewable energy and cooking stoves	Donation-based funding, micro-loan debt, SME loans and equity- based funding platforms Average interest rate: 6%

#### 4.4.1 COMMERCIAL BANKS

The commercial banking sector in Kenya is composed of many local and international banks, including Stanbic Bank,<sup>110</sup> Co-operative Bank,<sup>111</sup> KCB Bank,<sup>112</sup> and Equity Bank.<sup>113</sup> Some already provide financing to renewable energy projects. Recently, the Kenya Bankers Association (KBA)<sup>114</sup> developed sustainable finance principles, which all banks have signed. The introduction of sustainable principles may translate into further investments in the energy sector. Equity Bank is a large commercial bank in East Africa that provides loans and other financial products to approximately 9.5 million low-, middle- and high-income customers. It is one of Kenya's largest commercial banks and introduced the EcoMoto Loan, which was developed with support from IFC and the Lighting Africa Program for Kenya, through which consumers may apply for a loan to purchase solar lanterns, SHS or improved cookstoves. Loans range between KSH 1,000 and KSH 60,000 (or between \$10 and \$600).<sup>115</sup> The interest rate is 14 percent with terms between 2 to 12 months.<sup>116</sup> Commercial banks also provide capital to the country's MFIs, which can reach remote areas.

#### 4.4.2 MFIS AND RURAL BANKS

MFIs, rural banks and SACCOs in Kenya provide consumer financing in the form of debt to SMEs, although they play a smaller role than asset-based lending, such as pay-as-you-go.<sup>117</sup> Still, that role is important in providing access to financing, especially for people who live in rural areas. Some of these organizations, such as Kenya Women Finance Trust (KWFT)<sup>118</sup> and Yehu Microfinance Trust, provide financial services specifically to women. The Kenya Union of Savings and Credit Cooperatives (KUSCCO)<sup>119</sup> received grants from USAID and Winrock International for a loan programme for the project, Developing a Sustainable Cookstove Sector. The SACCOs negotiated contracts with stove manufacturers/distributors to distribute high-tier improved cookstoves to their members. Under the loan programme, KUSCCO and the SACCOs donated \$2 from their own funds for every \$1 provided by USAID. KUSCCO made loans to member SACCOs at 6 percent per stove financed and the SACCOs made loans to their members at 10 percent.<sup>120</sup> This programme, which has ended, removed barriers to accessing finance for distribution and end-use purposes.

<sup>110</sup> <https://www.stanbicbank.co.ke/>.

<sup>111</sup> <https://www.co-opbank.co.ke/>.

<sup>112</sup> <https://ke.kcbgroup.com/>.

<sup>113</sup> <https://equitygroupholdings.com/ke/>.

<sup>114</sup> <https://www.kba.co.ke/>.

<sup>115</sup> USAID. *Equity Bank's EcoMoto Loan Program*.

<sup>116</sup> <https://www.lightingafrica.org/ecomoto-turning-lights-kenya-48-hours/>.

<sup>117</sup> USAID. 2019. *Kenya: Off-Grid Solar Market Assessment – Power Africa Off-Grid Project*.

<sup>118</sup> <https://www.kwftbank.com/>.

<sup>119</sup> <https://www.kuscco.com/>.

<sup>120</sup> Kenya Climate Innovation Centre, 2013. *Sector Mapping and Market Assessment on the Improved Cookstoves (ICS) Sector in Kenya*.



### 4.4.3 IMPACT INVESTORS, VCS AND CVCs

Kenya has the largest concentration of impact investors in East Africa, including venture capital (VC) and corporate venture capital (CVC) investors. This ecosystem is also supported by a number of incubators and accelerators. These impact investors are predominantly international, while locally-based impact investors, VCs and CVCs are limited. Internationally-based impact investors, VCs and CVCs invest in companies based in Kenya that focus on renewable energy projects and clean cooking, such as M-KOPA<sup>121</sup>, a Nairobi-based solar energy company. Active international impact investors, VCs and CVCs in Kenya include Acumen,<sup>122</sup> Energy Access Ventures,<sup>123</sup> Novastar Ventures,<sup>124</sup> AHL Ventures Partners Investment,<sup>125</sup> and SunFunder.<sup>126</sup> These players are critical to advancing renewable energy projects in the off-grid space and in the clean cooking subsector. While the number of impact investors has increased in recent years, investment in the energy sector is still limited compared to the agriculture or financial services sectors, which represent more than 40 percent of all deals in Kenya.<sup>127</sup>

### 4.4.4 ASSET FINANCE AND ASSET-BASED LENDING

Private sector players have developed innovative business models, such as pay-as-you-go systems, and innovative financing structures to finance their growing businesses in the solar off-grid and clean cookstove markets in Kenya. This type of financing is referred to as asset finance or asset-based lending and plays an important role in providing financial services in the energy sector. Companies in the off-grid and mini-grid market include Azuri Technologies,<sup>128</sup> Bboxx,<sup>129</sup> Brighterlite Kenya Ltd., Go Solar Systems<sup>130</sup> and M-KOPA. In the clean cookstove market, PayGo Energy LPG<sup>131</sup> has adopted this model to distribute LPG cooking solutions and offered a service that became Kenya's first pay-as-you-go LPG gas service. Under this model, customers have flexibility in their choice of payment option, which eliminates the need to make high upfront payments. These companies are also more willing to provide financing to unbanked customers who may face challenges in accessing finance. The mobile money concept has been launched in Kenya and provides a platform to facilitate the growth of asset-based lending and access to financing for end users. Tala<sup>132</sup> and Branch<sup>133</sup> offer loans through mobile money, ranging from \$2 to \$2,000, using a unique credit scoring system based on M-Pesa receipts and social media activity to determine customer eligibility. Kopo Kopo<sup>134</sup> is another mobile payment facilitator for SMEs in Kenya. It provides data analytics for revenue from different business sectors, which is then analysed in the context of the off-grid sector to predict repayment behaviour.<sup>135</sup>

### 4.4.5 CARBON FINANCE

Carbon finance has provided opportunities to scale up renewable energy projects in Kenya through the UNFCCC's Clean Development Mechanism (CDM). Those projects include the Olkaria II Geothermal Expansion project, biomass and biogas projects, and improved cookstoves. Thirty-five CDM projects have registered in Kenya to date. Table 13 lists those projects and their certified emission reductions (CERs, or carbon credits) as of March 2020.

**Table 13: CDM projects in Kenya**

PROJECT NAME	ESTIMATED ANNUAL CERS (tCO <sub>2</sub> e)	CERS ISSUED TO DATE (tCO <sub>2</sub> e)
5.1 MW Grid Connected Wind Electricity Generation at Ngong Hills	9,941	0
Restoration of Degraded Lands through Reforestation in Aberdare Forest Complex & National Park area	18,571	0

<sup>121</sup> <http://www.m-kopa.com/>.

<sup>122</sup> <https://acumen.org/>.

<sup>123</sup> <https://eavafrica.com/>.

<sup>124</sup> <https://novastarventures.com/>.

<sup>125</sup> <http://www.ahlventurepartners.com/>.

<sup>126</sup> <https://www.sunfunder.com/>.

<sup>127</sup> GIIN. 2015. *The Landscape for Impact Investing in East Africa – Kenya*.

<sup>128</sup> <https://www.azuri-group.com/>.

<sup>129</sup> <https://www.bboxx.com/>.

<sup>130</sup> <https://www.gosolarltd.com/>.

<sup>131</sup> <https://www.paygoenergy.co/>.

<sup>132</sup> <https://tala.co.ke/>.

<sup>133</sup> <https://branch.co/>.

<sup>134</sup> <https://kopokopo.co.ke/>.

<sup>135</sup> USAID. 2019. *Kenya: Off-Grid Solar Market Assessment – Power Africa Off-Grid Project*.

PROJECT NAME	ESTIMATED ANNUAL CERS (tCO <sub>2</sub> e)	CERS ISSUED TO DATE (tCO <sub>2</sub> e)
Restoration of Degraded Lands through Reforestation in MAU Forest Complex	96,436	0
Energy efficiency improvement project through modification of heat exchanger network at Kenya Petroleum Refineries Ltd	6,068	0
Olkaria IV Geothermal Project	651,349	0
Olkaria I Units 4&5 Geothermal Project	635,049	0
Kipeto Wind Energy Project	254,125	0
Corner Baridi Wind Farm	111,224	0
Optimisation of Kiambere Hydro Power Project	41,204	47,309
Karan Biofuel CDM project – Bioresidues briquettes supply for industrial steam production in Kenya	43,699	0
60 MW Kinangop Wind Park Project	121,036	0
Nairobi River Basin Biogas Project	35,949	15,057
Aberdare Range/ Mt. Kenya Small Scale Reforestation Initiative Kibaranyeki Small Scale A/R Project	7,427	0
Redevelopment of Tana Hydro Power Station Project	25,680	18,677
Aberdare Range / Mt. Kenya Small Scale Reforestation Initiative Kirimara-Kithithina Small Scale A/R Project	8,809	0
Aberdare Range/ Mt. Kenya Small Scale Reforestation Initiative Kamae-Kipipiri Small Scale A/R Project	8,542	0
Lake Turkana 310 MW Wind Power Project	736,615	0
Olkaria II Geothermal Expansion Project	149,632	345,628
Olkaria III Phase 2 Geothermal Expansion Project in Kenya	177,600	0
35 MW Bagasse Based Cogeneration Project” by Mumias Sugar Company Limited (MSCL)	129,591	0
Longonot Phase I Geothermal Power Project	658,000	0
6 MW Bagasse Based Cogeneration Project” by Muhoroni Sugar Company Limited	15,076	0
40 MW Bagasse Based Cogeneration at West Kenya Sugar Limited	107,927	0
Replacement of Fossil Fuel by Biomass in a Crude Palm Oil (CPO) Refinery at BIDCO's Thika facility in Kenya	23,827	0
Installation of Cogeneration plant by utilizing the Biomass based Boiler with a capacity of 20 TPH at BIDCO Oil Refineries Limited	53,034	0
2.1 MW Vinasse Based Electricity Generation at Mumias Sugar Company Limited	10,552	0
Reforestation, sustainable development and carbon sequestration project in Kenyan degraded lands	48,689	0
Aberdare Range / Mt. Kenya Small Scale Reforestation Initiative - Kirimara-Kiriti Small Scale A/R Project	7,526	0
Aberdare Range / Mt. Kenya Small Scale Reforestation Initiative - Karuri Small Scale A/R Project	15,364	0
Aberdare Range / Mt. Kenya Small Scale Reforestation Initiative - Kabaru-Thigu-Mugunda Small Scale A/R Project	4,737	0
Aberdare Range / Mt. Kenya Small Scale Reforestation Initiative - Gathiuru-Kiamathege Small Scale A/R Project	7,026	0
Increasing the Blend in Cement Production at East African Portland Cement Company Limited	105,593	0
6 MW Bagasse Based Cogeneration Project by Muhoroni Sugar Company Limited	16,758	0
Conversion of the Kipevu Open Cycle Gas Turbine to a Combined Cycle Operation Project	44,808	0
Sondu Miriu Hydro Power Project	211,068	0

These projects benefit from carbon credits to reduce incremental costs associated with implementing renewable energy technologies. However, the carbon finance market is currently in decline, preventing investors from leveraging the market. When the new mechanism under the Paris Agreement is established, the market is expected to resume its growth and continue to support the development of clean technologies.

It is also important to note that carbon credits and results-based financing in general remain temporary and are not a permanent cash flow source. They are linked to specific and measurable results. As such, they are better suited to a project than to a sustainable business model. Businesses that use carbon credits should therefore leverage the cash flow that the credits provide to support the development of a sustainable business model, which does not require additional subsidies.

#### 4.4.6 CROWDINVESTING

The minimum loan amount has increased in Kenya, making access to financing challenging for smaller companies. This has led to the rise of crowdinvesting platforms as alternative sources of finance in Kenya. Crowdinvesting platforms offer access to earlier stage companies that require lower levels of financing.<sup>136</sup> For the mini-grid market, crowdinvesting provides bridge funding for projects that are expected to receive result-based financing.<sup>137</sup> International and domestic crowdinvesting platforms include the international Global Giving<sup>138</sup> and the Kenyan-based M-Changa.<sup>139</sup> They offer both funding and financing via donation-based funding. Other platforms include Kiva,<sup>140</sup> which provides microloan debt; Bettervest,<sup>141</sup> Lendahand<sup>142</sup> and TRINE,<sup>143</sup> which offer SME loans; and Crowdcube,<sup>144</sup> an equity-based platform.<sup>145</sup> This trend is expected to continue as crowdfunding/investing platforms continue to offer more favourable rates, develop a greater appetite for risk and provide better value impact for more commercial debt providers.<sup>146</sup>

#### 4.4.7 RECOMMENDATIONS FOR THE FINANCIAL SECTOR

A number of financial products available to the energy sector in Kenya support the private sector. However, some subsectors, such as large on-grid utility-scale projects, still experience challenges in accessing adequate financing options from commercial banks. In addition, restrictions were recently imposed on the financial sector's ability to provide financing to the private sector with the lending rate cap imposed by the amended Banking Bill, 2015. Under the bill, that cap was set at 4 percent above the central bank's base rate. This led Kenya's banks to scale back the provision of unsecured loans and microloans and shift most of their lending to government debt instruments. This has constrained access to finance for the sector's players, especially SMEs, and has slowed growth in the private sector. The cap has since been removed and the restriction is expected to ease.

The challenge to accessing finance from commercial banks is based on the perceived risks associated with these types of investments and the lack of long-term financing, such as long-term debt and equity, specifically for infrastructure projects, such as on-grid utility-scale projects.

##### RECOMMENDATION AND POINT OF ENTRY 6

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

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

136 USAID. 2019. *Kenya: Off-Grid Solar Market Assessment – Power Africa Off-Grid Project*.

137 Ibid.

138 <https://www.globalgiving.org/>.

139 <https://www.changa.co.ke/>.

140 <https://www.kiva.org/>.

141 <https://www.bettervest.com/>.

142 <https://www.lendahand.com/nl-NL>

143 <https://trine.com/>.

144 <https://www.crowdcube.com/>.

145 USAID. 2019. *Kenya: Off-Grid Solar Market Assessment – Power Africa Off-Grid Project*.

146 Ibid.

Blended finance may offer an option for the country's commercial banks by addressing the risks that investors perceive, such as macroeconomic and technical risks. Blended finance offers de-risking options for emerging markets and developing countries through the use of instruments such as guarantees, direct investments and concessional financing for lines of credit. These instruments could reduce current interest rates, thereby lowering the barrier to finance for private sector stakeholders.

Direct investment could 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. Importantly, guarantees could provide the security needed for a loan recipient to cover a loss in case of failure.

**Best practice example: Sustainable Use of Natural Resources and Energy Finance (SUNREF) Program<sup>147</sup>**

The SUNREF programme, initiated by the Agence Française de Développement (AFD), supports financial institutions and their clients to access financing for projects for sustainable natural resources management, with a focus on clean energy. SUNREF offers long-term concessional financing instruments to banks and contributes to building the technical capacities of financial intermediaries. Capacity-building programmes include helping banks to identify innovative green projects and reviewing the corresponding loan applications.

<b>Main implementer</b>	Providers of concessional capital, such as climate finance funds (Green Climate Fund), international organizations, multilateral development banks and bilateral donors, are likely to be the main implementers, working closely with local financial institutions and the government.
<b>Private sector involvement</b>	The private sector will be involved through the development of credit lines and specific instruments targeting commercial banks and investment funds (VCs, PE funds) that are ready to invest in innovative business models.
<b>Financial benefits</b>	<p>Financial institutions will benefit from risk mitigation, which may be achieved through reduced cost of capital, guarantees and other instruments.</p> <p>Private sector stakeholders and end users will benefit from reduced interest rates, which will reduce the cost of project implementation. In the long term, the private sector and end users will benefit from concessional financing.</p>
<b>Mitigation outcomes</b>	Decreased GHG emissions in the energy sector overall.

The private sector already has a strong presence in the renewable energy and clean cooking subsectors of Kenya's energy sector. For example, IPPs have contributed to significant installed generation capacity over the years. While the sector is currently characterized by an energy surplus, demand is expected to pick up with the projected annual economic growth of 5 percent. The off-grid market in Kenya is one of the strongest in the region, with a number of private sector companies leading the market. These companies have developed innovative business models that are supporting the sector in scaling up.

Greater private sector involvement is needed in the clean cooking subsector, specifically in the distribution of improved cookstoves and efficient fuels. Stove and fuel manufacturers are already active in the market, but have not been able to reach the scale required to meet the NDC target. Scaling up this sector will require innovative thinking and alternative business models, such as partnering with other industry players to use existing distribution networks to reach customers or creating hubs or centres that will contribute to training and professionalizing artisan manufacturers.

The energy efficiency subsector is an important area for private sector involvement. However, barriers related to regulation, cost and awareness have constrained the development of the value chain. To further

<sup>147</sup> <https://www.sunref.org/en/>.

support the development of the subsector, it is important to establish policies or regulations that take into account key capacity building and awareness raising components. Labelling of energy efficient products should also support this effort.

Finally, concessional financing schemes must be developed by developing blended finance with commercial banks. The recent removal of the lending cap is expected to drive lending to the private sector and, thus, investment in the sector, especially for SMEs.

## 5. PRIVATE SECTOR INVESTMENT POTENTIAL

Private sector players already have a strong presence in Kenya's energy sector. Existing and additional private investments must be scaled up to meet its development and climate mitigation goals. In its NDC, Kenya committed to reducing GHG emissions by 30 percent relative to BAU levels by 2030. The energy sector is critical to helping Kenya meet that target, as its related GHG emissions are projected to increase significantly in 2030 as a result of projected economic growth. In the NCCAP 2018–2022, which is also the NDC implementation plan, Kenya identified three priority actions in meeting its NDC target (these actions are presented in Table 6 in section 2.3.1). If achieved, they will help the energy sector meet its reduction goal and achieve its sectoral NDC target.<sup>148</sup> This section assesses the private sector investment potential and opportunities for private sector participation in implementing the priority actions for the energy sector.

### 5.1 RENEWABLE ENERGY

The priority action related to energy supply or electricity generation is to develop 2,405 MW of new grid-connected renewable electricity generation and retire three thermal plants by 2022.<sup>149</sup> The assessment of private sector investment potential for the energy supply or electricity generation subsector will focus only on developing 2,405 MW of new grid-connected renewable energy installed capacity by 2022, as specified in the NCCAP 2018–2022.

To reach that goal, the Government of Kenya has identified renewable energy projects already planned for implementation between 2018–2022, including geothermal, biomass, wind, hydro and solar. These projects present opportunities for private sector investment, which the Ministry of Energy identified in the NCCAP 2018 – 2022. These opportunities are supported by a strong enabling environment in the energy sector, where the Energy Act, the FIT Policy, and the National Energy and Petroleum Policy all support the diversification and promotion of renewable sources and provide incentives for private sector participation.

#### 5.1.1 DATA SOURCES

The required investment for this 2,405 MW of new grid-connected renewable electricity generation was based on the Ministry of Environment and Forestry's NCCAP 2018–2022, Volume 3 Mitigation Technical Analysis Report. The report lists proposed additional renewable sources to be introduced between 2018 and 2022, along with information on capacity and related costs drawn from the Ministry of Energy's Power Generation and Transmission Master Plan 2015–2035.<sup>150</sup>

#### 5.1.2 CALCULATION METHOD

Table 14 summarizes the proposed projects identified in the NCCAP 2018–2022 that will contribute to developing this additional generation capacity.

**Table 14: Proposed renewable energy projects (2018-2022)**

	GEOTHERMAL	BIOMASS	WIND	HYDRO	SOLAR
Number of projects	12	9	10	9	19
Total capacity (MW)	913	157	800	93	442
Rate (\$/kW)	3,557	3,045	2,030	3,970	1,695
Total investment cost (\$ million)	3,247	477	1,624	370	749
Total estimated capital expenditure (CAPEX) for all renewable (\$ million)					6,468

Source: Government of Kenya. 2018. NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report.

<sup>148</sup> Government of Kenya. 2018. NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report, Ministry of Environment and Forestry.

<sup>149</sup> Ibid.

<sup>150</sup> Ibid.



### 5.1.3 RESULTS

Based on the data reported in the NCCAP 2018–2022, the investment opportunity in developing this new capacity of 2,405 MW totals approximately \$6.5 billion. This is the amount required to execute all of the proposed projects by 2022 to achieve the potential GHG emissions reduction from electricity generation. However, this subsector currently faces barriers related to an electricity surplus resulting from low consumer demand caused by high connection charges. The low demand needs to be addressed to convince the private sector that further participation in electricity generation will be profitable. Forecasts do show demand increasing, driven by factors including demographic growth and electrification.<sup>151</sup> The subsector also faces high transmission costs and lack of infrastructure that constrain private investment. However, with the recent change in the Energy Act, which allows the sale of off-grid electricity directly to consumers, the government aims to remove this barrier and encourage the private sector to meet the gap related to infrastructure and the distribution network.

## 5.2 CLEAN COOKING

The priority actions identified in the NCCAP 2018–2022 regarding the energy sector's energy demand component are related to the development and distribution of improved cooking stoves, which is also supported by the strong enabling environment created by the NAMA that calls for private sector-driven, market-based solutions to scale up intervention. Table 15 lists those priority actions.

**Table 15: Energy demand-side priority actions (2018-2022)**

ACTION
<b>Develop and distribute four million improved biomass stoves by 2022</b>
• Charcoal stoves (2 million)
• Biomass stoves (2 million)
<b>Develop and distribute 1 million clean energy stoves by 2022</b>
• LPG, biogas and ethanol stoves

The NCCAP assumes that these 4 million improved biomass stoves will have a thermal efficiency level at least 10 percent higher than the baseline stoves, which is 10–18 percent thermal efficiency.<sup>152</sup>

### 5.2.1 DATA SOURCES

Data sources used to calculate the investment opportunity in clean cooking include the Dalberg Global Development Advisors market and policy analysis on scaling up clean cooking in urban Kenya with LPG and bioethanol.<sup>153</sup> Additional sources include the Kenya Household Cooking Sector Study 2019<sup>154</sup> and the Kenya Market Assessment Sector Mapping study, prepared by Global Village Energy Partnerships (GVEP) on behalf of the Global Alliance for Clean Cookstoves.<sup>155</sup> These sources combined provide the investment cost (CAPEX) of scaling up clean cooking stoves in Kenya.

<sup>151</sup> GetInvest, 2014. Kenya Energy sector. <https://www.get-invest.eu/market-information/kenya/energy-sector/> ; Reuters, 2019. <https://www.reuters.com/article/kenya-electricity/kenya-slashes-2030-power-production-targets-as-usage-still-low-media-idUSL5N22R20O>.

<sup>152</sup> Government of Kenya. 2018. *NCCAP 2018 – 2022, Volume 3: Mitigation Technical Analysis Report*, Ministry of Environment and Forestry.

<sup>153</sup> Dalberg. 2018. *Cleaning up cooking in urban Kenya with LPG and bio-ethanol*.

<sup>154</sup> Clean Cooking Association of Kenya. 2019. *Kenya Household Cooking Sector Study: Assessment of the Supply and Demand of Cooking Solutions at the Household Level*.

<sup>155</sup> Global Village Energy Partnerships (GVEP). 2012. *Accelerating Access to Energy – Kenya Market Assessment: Sector Mapping*. Global Alliance for Clean Cookstoves.

## 5.2.2 CALCULATION METHOD

### 5.2.2.1 IMPROVED BIOMASS STOVES

The following table summarizes the data inputs used in the calculation.

**Table 16: Data inputs used to calculate investment potential in improved biomass stoves**

IMPROVED BIOMASS STOVES	
Total production cost per unit (KES)	303
Number of stoves required for development and distribution	4 million
Currency conversion	\$1 = 1 KES
Total estimated CAPEX for improved biomass stoves (\$ million)	12.1

The total production cost per unit is calculated for the Kenya Ceramic Jiko (KCJ) stove, an improved stove. While KCJ traditionally focused on charcoal as its fuel source, more recent KCJ stoves support biomass. Therefore, we assume that the total production cost above applies to both charcoal and biomass improved cookstoves. According to the GVEP market assessment study, KCJ stoves have a thermal efficiency of 30–40 percent, which is at least 10 percent higher than the baseline efficiency.<sup>156</sup> This meets the thermal efficiency requirement established in the NCCAP 2018–2022 and, thus, also achieves the required emission reduction by developing and distributing KCJ stoves.

### 5.2.2.2 IMPROVED CLEAN STOVES

To determine the investment opportunity in developing and distributing 1 million improved clean stoves, the relative percentage for each of the three types of clean stoves was calculated, based on current market share. According to the Household Cooking Sector Study, the number of households using LPG stoves has increased approximately six-fold over the last two decades, with approximately 30 percent of the population using LPG stoves today.<sup>157</sup> It is assumed that this trend will continue to 2030, with the number of households using LPG expected to triple from 30 percent to 90 percent. It is further assumed that the remaining 10 percent will be divided equally between ethanol and biogas stoves as the uptake has been slow for both of these stoves. The following table summarizes the percentage estimated to calculate the investment potential.

**Table 17: Percentage estimated to calculate investment potential**

Percentage of development and distribution of 1 million units for each type of improved clean stove	LPG	ETHANOL	BIOGAS
	90 percent (900,000 units)	5 percent (50,000 units)	5 percent (50,000 units)
<b>Total</b>	<b>1 million units</b>		

To calculate the investment opportunity in developing and distributing ethanol/bioethanol and LPG stoves, Dalberg Global Development Advisors had already calculated the CAPEX requirement for scaling these cookstoves to 2 million households in Kenya. The following calculation thus leverages this CAPEX to calculate the investment cost for development and distribution. The CAPEX calculated by Dalberg for bioethanol is based on KOKO Networks' "Version 2.0 Smart Fuel ATM," which dispenses bottled bioethanol from vending machines, reducing the distribution cost significantly. The following table summarizes the data inputs used in the calculation.

<sup>156</sup> Ibid.

<sup>157</sup> Clean Cooking Association of Kenya. 2019. *Kenya Household Cooking Sector Study: Assessment of the Supply and Demand of Cooking Solutions at the Household Level*.

**Table 18: Data inputs used to calculate investment potential in improved clean stoves for bioethanol and LPG**

IMPROVED CLEAN STOVES		
	BIOETHANOL	LPG
Terminal (\$ million)	0.05	27
Bulk storage and transport (\$ million)	0.08	98
Last mile distribution (\$ million)	16	164
Total cost (\$ million) for scaling up to 2 million households	16	290
Total cost (proportional)	\$400,000 (50,000 units)	\$130.5 million (900,000 units)

The investment cost of providing access to biogas for cooking and lighting to 2 million African households, already estimated based on the Africa Biogas Partnership Program, was used to determine the investment potential in scaling up improved biogas stoves. The calculation below leverages this estimate in assessing the investment potential in the development and distribution of 50,000 biogas stoves in Kenya. It is assumed that, given that initial upfront cost and affordability are the main barriers to the uptake of biogas systems in Kenya, the estimate of access to biogas may also be used to estimate the investment required to scale up the use of biogas stoves in Kenya. It is also assumed that one stove unit is distributed to one household. The following table summarizes the data used in the calculation.

**Table 19: Data inputs used to calculate investment potential in improved clean stoves for biogas**

IMPROVED CLEAN STOVES (BIOGAS)	
Estimated investment cost to provide access to biogas to two million households (\$ million)	1,050
Number of stoves required for development and distribution	50,000
<b>Total estimated CAPEX for improved clean stoves (biogas) (US\$ million)</b>	<b>26.3</b>

## 5.2.3 RESULTS

**Table 20: Total investment opportunity in clean cooking**

	IMPROVED BIOMASS STOVES	IMPROVED CLEAN STOVES		
		ETHANOL/BIOETHANOL	LPG	BIOGAS
		\$400,000	\$130.5 million	\$26.3 million
Investment opportunity	\$12.1 million	\$157.2 million		
<b>Total investment opportunity</b>			<b>\$169.3 million</b>	

Based on the calculation, the total investment opportunity in the clean cooking sector in Kenya is approximately \$169.3 million, with \$12.1 million in biomass stoves and \$157 million in improved cookstoves. Opportunities in improved cookstoves can be divided into ethanol/bioethanol stoves (\$400,000 to develop and distribute 50,000 units of ethanol/bioethanol stoves); LPG stoves (\$130.5 million to develop and distribute 900,000 units); and biogas stoves (\$26.3 million). The largest opportunity is in the LPG stove market. Overall, this is a significant market opportunity for private sector involvement as this subsector can be, and is already, led by private commercial companies. The subsector currently faces financial, regulatory and technical barriers, such as lack of financing, conflicting policies, lack of skilled technicians and an inadequate distribution network. However, the sector is working to address these barriers, such as through the NAMA, which was developed specifically for this sector to introduce interventions. Therefore, investments in this subsector can be scaled up if the NAMA is implemented successfully and if options related to distribution network can

be explored. A number of successful private players already exist in the space. This market is still growing and offers more opportunities to provide access to clean cooking solutions.

Private sector investment opportunities in the energy sector that contribute to meeting the NDC targets focus on generating electricity from renewable sources and on distributing and accessing clean cooking solutions. The investment opportunity in building additional electricity generation capacity from renewable energy totals \$6.5 billion. However, the share of public and private financing needed to achieve these opportunities is not clearly defined. Currently, KenGen provides 70 percent of installed capacity and IPPs provide the remaining 30 percent. Barriers to investment exist, such as electricity oversupply, high costs and lack of infrastructure. However, the recent change in the Energy Act seeks to address these barriers and meet the forecasted growth in energy demand. The investment opportunity in distributing and providing access to clean cooking solutions totals \$169.3 million. This subsector is already private sector-led, suggesting that this investment opportunity represents additional potential. Financial, regulatory and technical barriers exist, although, if implemented successfully, the NAMA already developed for this subsector addresses them. Overall, these provide insight on potential private sector investment in the energy sector.

## **6. REPORTING FRAMEWORK TO ALIGN BUSINESS OPPORTUNITIES WITH NDC IMPACT TARGETS IN THE ENERGY SECTOR IN KENYA**

Encouraging the private sector to invest in NDC actions is important if Kenya is to achieve its climate goals. It will also provide business opportunities for the private sector, which can be enhanced further by aligning with the NDC objectives and the SDGs. This section provides a rationale for aligning private sector opportunities with Kenya's NDC energy sector targets and the SDGs and presents a reporting framework to guide the private sector in benefiting from them.

### **6.1 RATIONALE FOR PRIVATE SECTOR ALIGNMENT WITH NDC IMPACT TARGETS**

Governments and international organizations engage the private sector to invest in a country's NDC, as such investment would provide benefits to both through additional business opportunities while achieving climate actions. However, the private sector is often unaware of the opportunities that the NDC offers. Developing a reporting framework that clearly demonstrates linkages and the benefits of investing in climate actions would help the private sector understand this added value. In the short term, the private sector could benefit from the ability to identify actions that translate directly into business opportunities. In the long term, such a reporting framework would allow private sector players to report and disclose the impacts of actions that contribute to achieving the objectives of the NDC and the SDGs. This can improve valuations, credit scores and access to finance, enabling additional business growth and development.

### **6.2 REPORTING FRAMEWORKS**

The NDC and SDGs have been selected as the main reporting framework for this report. A table with identified climate actions for the energy sector in Kenya's NDC and relevant SDG targets has been prepared and presented with clear metrics.

The reporting framework is intended to allow individual businesses to tailor it to their specific features and characteristics.

## 6.2.1 RENEWABLE ENERGY: ON-GRID UTILITY-SCALE POWER GENERATION

Businesses involved in on-grid utility-scale power generation, such as IPPs and developers, directly impact the amount of clean energy available. They also offer important co-benefits, such as improved health and access to education, and contribute to the long-term goal of reducing energy costs and increasing the renewable energy ratio on the grid.

BUSINESS OPPORTUNITY	CLIMATE FRAMEWORK		SDG FRAMEWORK		METRICS
	NDC target	Specific action	SDGs	Outcomes (SDG target or equivalent)	
DEVELOPING ON-GRID RENEWABLE ENERGY POWER GENERATION PLANTS (IPPS)	Expand geothermal, solar and wind energy production, other renewables and clean energy options	Develop new 2,405 MW of grid-connected renewable electricity generation	7 – Sustainable energy	7.1 Ensure universal access to affordable, reliable and modern energy services 7.2 Increase substantially the share of renewable energy in the global energy mix	<b>Reduced cost of energy (US\$)</b> <b>RE ratio in the energy mix (%)</b> # of households connected # and value (US\$) of investments Total capacity installed (by energy source) (MW)
			13 – Climate action	Accelerated decarbonization of the energy and C&I sectors (reduced GHG emissions)	Direct emission reduction achieved through installation of renewable energy capacity (tCO <sub>2</sub> e)
			3 – Good health	3.9 Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	Reduced ratio of fossil fuels used in the energy mix (total % of the energy mix)
			4 – Quality education	4.1, 4.2, 4.3 Improved access to education for all girls and boys	School attendance rate (increase in the # of students)

### KEY

Direct impact

Long-term industry impact

Co-benefits



## 6.2.2 RENEWABLE ENERGY: OFF-GRID ENERGY GENERATION IN SOLAR PV

Project developers and technology providers of off-grid renewable energy technologies for C&I and household use have a direct impact on providing access to clean energy at reduced cost, especially with low-income households. They contribute to the decarbonization of the C&I and household sectors. Some developers and technology providers also provide financing to those customers, thereby directly improving their access to finance.

BUSINESS OPPORTUNITY	CLIMATE FRAMEWORK		SDG FRAMEWORK		METRICS
	NDC target	Specific action	SDGs	Outcomes (SDG target or equivalent)	
PROVIDING SOLAR PV SOLUTIONS TO COMMERCIAL, INDUSTRIAL, SMES AND HOUSEHOLDS	Expand solar and renewables and clean energy options	Distribute 30 MW of solar off-grid and mini-grids by 2022	7 – Sustainable energy	7.1 Ensure universal access to affordable, reliable and modern energy services	Reduced cost of energy (US\$)
				7.2 Increase substantially the share of renewable energy in the global energy mix	Reduced need for diesel generators (litres of diesel used)
				Improved access to energy, especially in rural areas	# and value (US\$) of investments
			1 – No poverty	1.2 Reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions	Capacity installed with C&I customers (MW)
				1.4 Ensure that all men and women, in particular the poor and the vulnerable, have equal access to basic services, appropriate new technology and financial services, including microfinance	# of SMEs and other productive enterprises with SHS kit
			9 – Innovation and infrastructure	9.3 Increase the access of SMEs to financial services, including affordable credit, and their integration into value chains and markets	Average capacity installed by SME (W)
					# of households with a SHS kit in rural areas
					# of households with a SHS kit in urban areas
					Average capacity installed by household (W)
					Total capacity installed (MW)
					# of low-income households with SHS kit
					# and value of loans (US\$) (asset financing) developed directly by SHS providers (households/SMEs)
					# and value of loans (US\$) provided by local financing organizations

BUSINESS OPPORTUNITY	CLIMATE FRAMEWORK		SDG FRAMEWORK		METRICS
	NDC target	Specific action	SDGs	Outcomes (SDG target or equivalent)	
			2 – No hunger	2.1 End hunger and ensure access by all people to safe, nutritious and sufficient food all year round.	# of water pumps using SHS kits
				2.3 Double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.	Direct carbon reduction achieved through installation of renewable energy capacity (tCO <sub>2</sub> e)
			9 – Innovation and infrastructure	9.4 Upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes	
			13 – Climate action	Accelerated decarbonization of the energy sector	
			3 – Good health	3.9 Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	Reduced use of fossil fuels (diesel generators, etc.) (litres of diesel)
			4 – Quality education	4.1, 4.2, 4.3 Improved access to education for all girls and boys	School attendance rate (increased # of students)
			5 – Gender equality	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life	Increased # of women with stable income generation activity

#### KEY

Direct impact

*Long-term industry impact*

Co-benefits

## 6.2.3 ENERGY EFFICIENCY

Businesses providing energy efficiency solutions can have a direct impact on decreasing energy costs. Depending on the business model, these businesses can also impact C&I, SMEs and, especially, low-income households by providing better access to finance.

BUSINESS OPPORTUNITY	CLIMATE FRAMEWORK		SDG FRAMEWORK		METRICS
	NDC target	Specific action	SDGs	Outcomes (SDG target or equivalent)	
DISTRIBUTING EFFICIENT EQUIPMENT  PROVIDING ENERGY AUDITS AND ENERGY MANAGEMENT SYSTEMS	Enhance energy and resource efficiency across the different sectors	Promote sustainable energy sources for industrial heating processes	7 – Sustainable energy	7.3 Improved access to energy efficient appliances	# of LEDs deployed
		Increase the number of companies participating in energy efficiency initiatives by 1,000 and increase the number of energy audits by 1,000 by 2022	9 – Innovation and infrastructure	9.4 Upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes	<b># of efficient refrigerators deployed</b> <b># of other efficient appliances deployed</b> Amount of energy savings realized due to the products/services provided (MWh)
			13 – Climate action	Accelerated decarbonization of the energy sector	Direct carbon reduction achieved through the use of efficient appliances (tCO <sub>2</sub> e)
			1 – No poverty	1.4 Ensure that all men and women, in particular the poor and the vulnerable, have equal access to basic services, appropriate new technology and financial services, including microfinance	# and value of loans (\$) developed directly by DESCOs (households and SMEs) # and value of loans (\$) provided by local financing organizations (MFIs, banks)
		Develop Minimum Energy Performance Standards (MEPs) for 5 more appliances and upscale the existing testing facilities to include these 5 appliances	3 – Good health	3.9 Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	Reduced ratio of fossil fuels used in the energy mix (total % of the energy mix)

### KEY

Direct impact

Long-term industry impact

Co-benefits

## 6.2.4 CLEAN COOKING

Clean cooking-related businesses, such as stove manufacturers and fuel producers, have a direct impact on the provision of clean energy for cooking. They also help to reduce rates of deforestation, reduce the poverty level and improve access to financing for clean cooking. In addition, they provide co-benefits related to improved health, enhanced gender equality and improved access to education.

BUSINESS OPPORTUNITY	CLIMATE FRAMEWORK		SDG FRAMEWORK		METRICS
	NDC target	Specific action	SDGs	Outcomes (SDG target or equivalent)	
MANUFACTURING IMPROVED COOK-STOVES	Make progress towards achieving a tree cover of at least 10 percent of Kenya's land area	Develop and distribute 4 million improved biomass stoves by 2022 (2 million charcoal stoves and 2 million biomass stoves)	7 – Sustainable energy	7.1 Ensure universal access to affordable, reliable and modern energy services	# of efficient stoves deployed
MANUFACTURING LPG COOKSTOVES			13 – Climate action	Accelerated decarbonization of the energy sector	# of LPG stoves deployed
MANUFACTURING EFFICIENT FUELS	Clean energy technologies to reduce overreliance on wood fuels	Develop and distribute 1 million clean energy stoves by 2022 (LPG, biogas and ethanol stoves)	15 – Life on land	15.2 Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	# of households serviced in rural areas for efficient fuel
DISTRIBUTING CLEAN COOKING SOLUTIONS					Direct carbon reduction achieved through the use of efficient fuels (LPG, pellets, briquettes) (tCO <sub>2</sub> e)
					Decrease in volume of wood fuel/inefficient charcoal used for cooking (tons)
					<b>Additional ha of forest preserved</b>
			1 – No poverty	1.4 Ensure that all men and women, in particular the poor and the vulnerable, have equal access to basic services, appropriate new technology and financial services, including microfinance	# and value of loans (\$) (asset financing) developed directly by clean cooking solution providers (households)
					# and value of loans (\$) provided by local financing organizations (MFIs, banks)
			3 – Good health	3.9 Reduced deaths and illnesses from household pollution	# of related illnesses and deaths
					Reduced use of biomass (wood fuel) for cooking (tons)
			5 – Gender equality	5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	Time spent collecting fuel (hours per week)
					Time spent cooking (hours per week)
					Increased # of women with stable income generation activity
				5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life	
			4 – Quality education	4.1, 4.2, 4.3 Improved access to education for all girls and boys	School attendance rate (increase in the # of students)

### KEY

Direct impact

Long-term industry impact

Co-benefits

To leverage the reporting framework, it is recommended that the private sector use additional tools. For example, to calculate GHG emission reductions and mainstream NDC targets and SDGs into their operations, companies may wish to use the following tools.

### **Calculating GHG emissions – Greenhouse Gas Protocol<sup>158</sup>**

Calculating GHG emissions can be challenging for businesses. It requires following specific and complex methodologies, which may not be easy to approach without the appropriate guidance.

The Greenhouse Gas Protocol provides standards, guidance, tools and training for business and government to measure and manage climate-warming emissions, including online tools and related trainings. The platform builds on a long-term partnership with international stakeholders, including the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

Tools include the Project Protocol, which is used to quantify the greenhouse gas benefits of climate change mitigation projects. It provides specific principles, concepts, and methods for quantifying and reporting GHG reductions—i.e., decreases in GHG emissions, or increases in removals and/or storage—from climate change mitigation projects (GHG projects).

The Protocol also provides extensive guidance on developing business-level emission inventories, measuring emissions from purchased/acquired electricity and estimating avoided emissions.

### **Aligning with and mainstreaming the SDGs/Sustainability: Impacti Solutions<sup>159</sup>**

Aligning with the SDGs and integrating sustainability goals into operations can be an important step for enterprises. The SDGs and sustainability provide new business opportunities that the private sector can explore. However, businesses may find it complex to understand where they fit in the scope of the SDGs.

Impacti Solutions provides tools that can help the private sector understand the SDGs and impact areas where they can have the greatest impact. The Rapid SDG Opportunity Finder Tool provides personalized recommendations on priority SDGs and impact areas suited to specific businesses. After businesses choose their priority SDGs, the tool introduces them to thematic areas within each SDG. Businesses receive a personalized SDG business profile with chosen priorities at the end of the assessment. This helps businesses identify strategies to better integrate SDGs in their operations.

Impacti Solutions also provides an online platform so that users can view and update an SDG business profile and connect with like-minded businesses and an Impact Data Management Tool, which can be used to streamline data management, track and manage impact, and create reports.

<sup>158</sup> <https://ghgprotocol.org/companies-and-organizations>.

<sup>159</sup> <https://impacti.solutions/>.

## 7. CONCLUSION

Kenya is one of Africa's leading economic powers and is striving to become an industrialized middle-income country by 2030 under its Vision 2030 development plan. The Government of Kenya has recognized that creating a sustainable development path is crucial to achieving the country's vision. Most importantly, the government recognizes the significance of the private sector in leading transformational change and development in Kenya. To this end, Kenya has focused on creating an enabling environment to attract much-needed private investment. This has involved political, structural and economic reforms over the years. Today, Kenya's private sector is diverse, dynamic and immensely resilient and is well-positioned to drive economic growth. While reforms initiated led to a stable macroeconomic environment and improvement in the overall business environment in Kenya, the COVID-19 crisis has had a significant impact on the economic forecast and the socio-political landscape. Kenya is now expected to enter a recession in 2020, its first since 1992. This will create near-term obstacles for private sector investment in the country.

Prior to the coronavirus outbreak, the private sector had a strong presence in the energy sector. The energy sector is fundamental in driving economic growth to achieve Vision 2030. This suggests that economic growth will increase GHG emissions, which will need to be managed if the country is to follow a low-carbon sustainable development path. By 2030, the energy sector is projected to generate the highest emissions, specifically from electricity generation driven by economic growth. One way forward, therefore, is to strengthen private sector investment and participation in realizing Kenya's climate mitigation and development goals.

Kenya has already taken measures to reduce its climate change impacts, while making progress towards its Vision 2030 goals. The country prepared and submitted its NDC, which identifies key mitigation and adaptation targets. To achieve the NDC mitigation target in the energy sector, Kenya has identified three priority actions related to electricity supply and energy demand. These actions include the development of 2,405 MW of new grid-connected renewable electricity generation and retirement of three thermal plants by 2022; development and distribution of 4 million improved biomass stoves (2 million charcoal stoves and 2 million biomass stoves); and development and distribution of 1 million clean energy stoves, which include LPG, biogas and ethanol. The investment opportunities associated with achieving the NDC target are significant, totalling \$6.5 billion for implementation of the priority action related to development of new grid-connected renewable electricity generation and \$169.3 million for implementation of priority actions related to improved cookstoves. In addition to the priority actions, other actions in the sector, such as the distribution of 30 MW of solar and mini-grid by 2030, present additional investment opportunity.

The strong enabling environment related to cross-border and direct foreign investment is also favourable to the private sector, attracting foreign investors to Kenya. There are no restrictions on payment of dividends, including remittances in foreign currency and repatriation of funds, investors may borrow funds abroad and repay those borrowings, and international financial institutions located outside Kenya may lend to Kenya's private sector after obtaining a license from the CBK. This strong enabling environment for private investment will help Kenya attract the much-needed investment in achieving its NDC mitigation goals.

To drive private investment, however, Kenya must address the challenges that the sector poses today, such as electricity oversupply and delay in the introduction of mini-grid regulation. For the clean cooking subsector, interventions such as market-based approaches and use of existing distribution networks should be adopted to scale up investment in this subsector. Some of the existing players are already adopting these practices, though uptake will need to be scaled up. Energy efficiency is another key component of the energy sector in Kenya. However, the lack of an enabling environment that promotes private sector investment constitutes a barrier in this subsector. Establishing such an environment will be crucial to overcome the barriers and drive private sector investment.

A strong financial sector must also support potential private sector investment opportunities. In Kenya, availability of local financing is limited, characterized by high interest rates and relatively short tenors. Improving financing conditions by leveraging blended finance, with instruments such as guarantees, credit lines and concessional financing, could be an option for local banks to support potential investment opportunities in the energy sector.



# UNDP NDC SUPPORT PROGRAMME

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