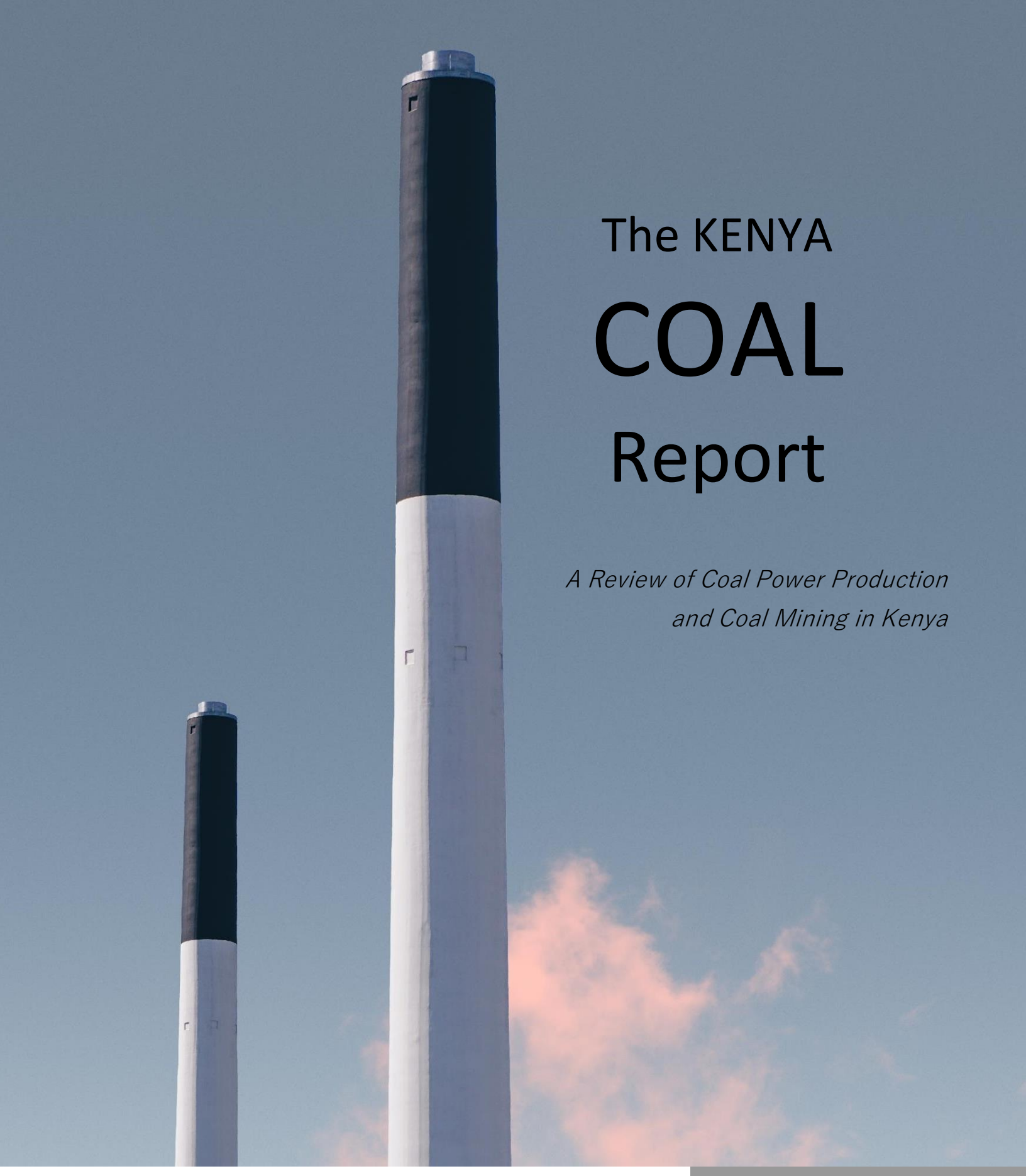

The KENYA COAL Report

A Review of Coal Power Production and Coal Mining in Kenya

THE KENYA COAL REPORT

A Review of Coal Power Production and Coal Mining in Kenya

This report provides information for policymakers, civil societies, community members, and others interested in Coal Power exploration and production in Kenya. The report includes a literature review to provide a comprehensive timeline of the industry. It describes the Kenya Coal industry development projects, history, progress and current status of major proposed projects, including the Lamu Coal Power plant and Kitui Coal Mining. It presents the justifications presented by the Kenyan government and project proponents supporting coal while also discussing the economic, social, and environmental concerns raised by community members, activities, and civil society. The report summarises the technology, public perception, legal and regulatory aspects of coal exploration and power production in Kenya. Members of the deCOALonize Campaign also provide recommendations for policymakers and government agencies in the energy and environmental conservation sector.

The deCOALonize campaign is a movement committed to stopping the development of coal and coal-related industries for a clean and sustainable energy future in Kenya and the region. The campaign aims to achieve this through community engagement, public activism and legal advocacy. The campaign was formed by a coalition of environmental and social justice advocates concerned about the increasing interest in Kenya on coal power production and exploration

THE KENYA COAL REPORT

A Review of Coal Power Production and Coal Mining in Kenya

Edited by Samia Omar Bwana

Prepared and Published by deCOALonize

August 2021

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This paper has been developed based on secondary information found until August 2021. This overview might require periodic updating to ensure it is up to date. While deCOALonize has been prudent in editing this report, it must disclaim all responsibility and liability for any and all possible oversights regarding content completeness and accuracy of secondary sources. The information provided in this report and the report's statements remain the authors' responsibility and do not necessarily reflect the position of the sponsors.

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Acronyms

AfDB	African Development Bank
BAU	"business as usual" scenario
BCP	Bio-Cultural Community Protocol
BSA	Benefit Sharing Environment
BOO	Build-Own-Operate
cal/g	Calories per gram
CBO	Community Based Organisation
CCS	Carbon Capture and Sequestration
CHRCE	Centre for Human Rights and Civic Education
BMU	Beach Management Unit
EIA	Environmental Impact Assessment
ELAW	Environmental Law Alliance Worldwide
EMCA	Environmental Management and Coordination Act
EPC	Engineering, Procurement, and Construction
EPR	Environmental Project Report
EPRA	Energy and Petroleum Regulatory Authority (new, replaces ERC)
ERC	Energy Regulatory Commission (now EPRA)
ESIA	Environmental and Social Impact Assessment
ESR	Environmental Study Report
GCD	Green Credit Directive
GCD	Geothermal Development Company
GCG	Green Credit Guidelines (China)
GE	General Electric
GEL	Gulf Energy Limited
GHG	greenhouse gas emissions
GoK	Government of Kenya
GPOBA	Global Partnership of Output-Based Aid
ICBC	Industrial and Commercial Bank of China
IPPs	Independent Power Producers
IEA	Institute for Economy Analysis
IEEFA	Institute for Energy Economics and Financial Analysis
IFC	International Finance Corporation
KenGen	Kenya Electricity Generating Company
KES	Kenya Shillings
KETRACO	Kenya Electricity Transmission Company Limited
KNES	Kenya National Electrification Strategy
KOSAP	Kenya Off-Grid Solar Access Project
KP or KPLC	Kenya Power and Lighting Company
kj/kw	Kilojoules per Kilowatt
Ksh	Kenya Shillings
KWh	Kilowatt-hour
KV	Kilo Vault
LAPSSET	Lamu Port-South Sudan-Ethiopia-Transport Corridor Project
LCOE	Levelised cost of electricity
LCPDP	Least Cost Power Development Plan
LoS	Letter of Support
MoE / MoEF	Ministry of Environment and Forestry
MoEP / MoE	Ministry of Energy and Petroleum

MUHURI	Muslim Human Rights
MW	Megawatts
Mwh	megawatt-hour
NDC	Nationally Determined Contribution
NEMA	National Environment Management Authority
NET	National Environment Tribunal
NSSF	National Social Security Fund
OUV	Outstanding Universal Value (UNESCO World Heritage)
PPA	Power Purchase Agreement
PPEO	Poor People's Energy Outlook
PPP	Public-Private Partnership
PRG	Partial Risk Guarantee
PVoC	Pre-Export Verification of Conformity
RAP	Resettlement Action Plan
REP	Rural Electrification Programme
REREC	Rural Electrification and Renewable Energy Corporation
SEA	Strategic Environmental Assessment
SPV	Special Purpose Vehicle
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USAID	United States Agency for International Development
VAT	Value-added Tax

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EXECUTIVE SUMMARY

As one of the fastest-growing economies in Sub-Saharan Africa[1], Kenya has prioritized increasing power capacity to promote industries and development. Being in the centre of East Africa and sharing a border with most East African nations (Ethiopia, South Sudan, Tanzania and Uganda), Kenya remains a regional hub of East Africa whose economic growth has always been of strategic importance.

To promote economic growth, the Government of Kenya developed a blueprint, known as Vision 2030, to "transform Kenya into a newly industrializing, middle-income country providing a high-quality life to all its citizens by the year 2030"[2]. The blueprint called for Kenya to generate more energy at a lower cost while also encouraging more private generators of power sources of energy, including exploiting coal, geothermal power, renewable energy, improving efficiency, and connecting more Kenyans to the grid.

This document has been developed to provide information on the status and trends of coal power production and exploration in Kenya, highlight the sequence of events related to lobbying and advocacy against coal in Kenya, and share the issues of concern raised on coal and its implications for sustainable development in Kenya. The report critically analyses the policy and programmatic objectives of coal power development in Kenya and how it affects the local community members, Kenyan consumers, and the country's progression towards Vision 2030.
In the last decade, coal has featured prominently as a solution to increasing power generation in Kenya. The most prominent project has been the 1,050 MW Lamu Coal Power Plant, which would become the first and biggest coal plant in East Africa. However, there have been many other prior attempts to mine local coal mineral resource and proposing Coal Power Plants in Kwale, Kilifi, and Kitui Counties[3].

Interestingly, the Government of Kenya has pursued these projects despite Kenya having a number of laws governing its commitments to reduce its contributions to climate change. The country has developed the National Climate Change Action Plan and Climate Change Act, which aims to enhance climate change resilience and low carbon development for the sustainable development of Kenya[4][5]. Kenya is also a signatory to the Paris Agreement, committing the country to reduce its carbon dioxide emissions by 32% compared to a business as usual (BAU) scenario by 2030 as announced in the country's Nationally Determined Contribution (NDC) to the Paris Agreement[6].

Communities and activists have raised concerns that the construction and operation of the proposed coal-fired power plants and coal mining in Kenya would be a major source of air pollution, with significant impacts on human health. This and several other reasons justify local community group actions to oppose the construction of a coal plant and coal mining in their counties, in Lamu and Kitui Counties, respectively.

Concerns regarding coal in Kenya from communities and activities have included:

1. **Health:** Coal mining and power production have been widely researched worldwide to adequately highlight the impacts on human and animal health that are not disputable anymore. Specific to Kenya, however, the Least Cost Power Development Plan of Kenya (LCPDP) 2018 report notes major environmental impacts such as high emissions of sulphur dioxide, heavy metals and harmful greenhouse gases from coal power plants.[7] The Lamu coal plant alone would be allowed to emit 5–10 times as much key air pollutants as new coal-fired power plants in China and the EU, according to an air quality modelling study from Greenpeace, which also finds that pollution from the plant will cause 1,600 premature deaths during its operating life, a conservative calculation.[8]

2. **Social:** For generations, the indigenous and traditional communities of Lamu and Kitui Kenya have managed their land and shared natural resources and cultural traditions, in spite of losses due to insecure land tenure and political marginalization. Communities in both Counties are particularly reliant on their natural resources, including those who are farmers, farmers, pastoralists, fisher folk, among many others. The expected loss in forest cover, biodiversity, and acid rain risk is expected to impact social and livelihood activities significantly. Concerns in Kitui

include that coal mining would lead to large-scale evictions and impacts, particularly for women with informal land tenure rights, as well as a range of environmental concerns[9]. Coal mining would likely displace more than 100,000 residents of Kitui by forcing them to leave their ancestral land[10]. For farmers, land in Lamu was already compulsorily acquired from 675 farmers; however, compensation and relocations are yet to be made to date[11].

3. **Environment:** If complete, the first coal plant in East Africa, the Lamu coal plant, would become Kenya's single largest carbon emitter of greenhouse gases and a major source of toxic air pollution. Dredging during construction will "cause significant and serious damage" to mangroves and coral reefs, according to the Environmental and Social Impact Assessment (ESIA) undertaken by the project proponent, Amu Power[12]. Cooling water discharged into the sea around the plant will raise water temperatures, further disrupting marine ecosystems and threatening fishing livelihoods. Fly ash, acid deposition, and acid rain could reduce farmers' yields and introduce toxic metals into food and water. To write off these concerns, project proponents have claimed that they will use "c lean coal" technologies. This report counters this preposition by highlighting how this proposed technology is just a branding gimmick to a mitigation process rather than a solution in itself.

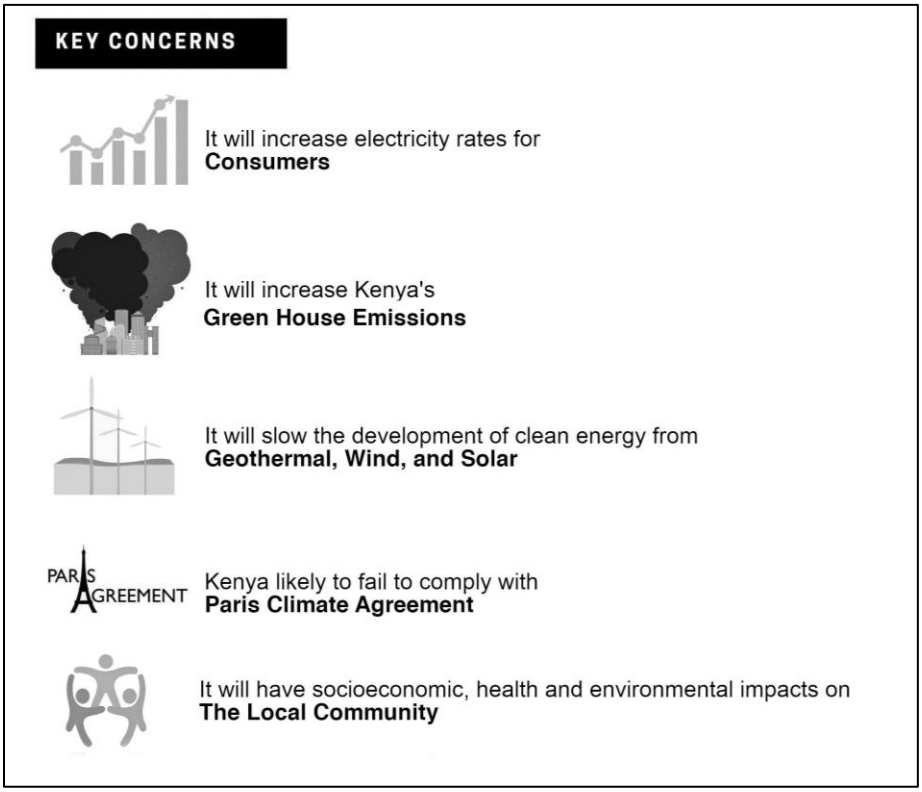
   Being open cast, Kitui coal mining would not only cause widespread displacement of residents but also cause considerable pollution, profoundly change the topography of the ground, disrupt the environment, air quality, solid waste disposal, and quality of water[13]. The mining could also contaminate the supply of ground water, disrupt water flow, and harm local flora and fauna. According to the Kenyan government's power development plan (LCPDP 2018), open-pit coal mining, as planned for the Mui basin, has strong environmental and social impacts. Further, mining will produce considerable pollution. Considering that the local coal is of lower quality with regard to the content of energy, ash, moisture and sulphur, pollution is even more concerning.

4. **Public Participation and Access to Information:** Community concerns in Lamu and Kitui include that local people were not involved in the coal mining and power production projects. This was the justification used for the two public interest lawsuit against both the mining[14] and the power plant project[15]. To seek additional information and articulate grievances regarding the opacity of the process and their lack of consent, community members exercised their right to petition Parliament for Kitui and the National Environmental Tribunals for Lamu. In addition, there are many claims over an unprocedural tendering process in Kitui[16]. While the Kitui case was dismissed, the Lamu coal plant case was successful with a landmark ruling that was decided in favour of the community. [17] In its June 2019 ruling, the National Environmental Tribunal (NET) found that the project ESIA was incomplete and inadequate levels of public participation that violated the Environmental Management and Coordination Act (EMCA). The case is still under appeal by Amu power.

5. **Economic**: Unfortunately, the above impacts are not considered in calculating the cost of coal. According to economist Ernest Niemi, an economist specializing in cost-benefit analysis to determine the economic importance of natural resources, who gave a detailed testimony to the NET against the Lamu coal plant, the health, livelihood and other social costs of the Lamu plant will exceed the value of the electricity produced by as much as 9.5 times[18]. The underestimated cost of coal is also due to a failure to consider the cost of production, the accurate cost of imported coal, the infrastructure required for the plant, the fixed capacity charges, as well as overestimating the plant operating efficiency. According to independent experts, the Institute for Energy Economics and Financial Analysis (IEEFA), a more realistic assumption of the cost of coal electricity from the Lamu coal plant, for example, would be as much as US 75 cents/per kilowatt-hour (KWh) during the years 2024 to 2037[19], whereas the project proponents claim the biggest incentive for the plant is that it will provide cheap power, estimated at USD 7.5-7.81¢ per kWh. When considering the fixed capacity charges for excess power production, the Ministry of Energy in Kenya most recently predicted that according to energy cost predictions for 2020-2040, the highest Levelised cost of electricity would see a spike by 2027 at 12.68USDCent/kWh, attributable primarily to commissioning of the Lamu Coal power plant[20].

6. **Oversupply of Power**: Kenya has always had ambitious plans of increasing power generation and universal energy access. The targets were mostly based on electricity demand forecasts from the Least Cost Power Development Plan

(LCPDP), a publication that examines Kenya's energy sector holistically and predicts future demand. The 2011 LCPDP had estimated an electricity usage growth rate of 11.5%, almost doubling previous LCPDP projections of future demand from 7% to 11.5%[21]. The exaggerated 2011 estimates were used to justify the need for the production of coal in Kenya.



However, the June 2018 LCPDP diverged substantially from the prior three reports with a more moderate projection that Kenya does not need as much power as previously predicted. The current demand growth rate according to the most recent 2020 LCPDP predicts the Vision scenario peak demand at a more reasonable rate of 8.35%. The report predicts the average annual excess energy as a share of generation in 2020-2030 at 6%, ranging between 300-800 MW in 2024 to 3031 primarily due to the Lamu coal plant.

This aligns with the LCPDP 2017–2037, which predicted that large-scale power projects, particularly the Lamu coal plant, "will be grossly underutilized" and "aggravate the projected supply-demand imbalance" even if it were introduced in 2024[22]. The 2018 LCPDP recommended that the government renegotiate PPAs for large power plants, including for Lamu Coal, to reduce reserve requirements and minimize energy costs. As a consequence of the oversupply, it is expected that Kenya would pay at least $360 million in annual capacity charges according to the existing 25-year Power Purchase Agreement for the Lamu Coal plant, even if no power is generated at the plant.[23]

In 2019, Kenya Power, which owns and operates most of the country's electricity transmission and distribution system, froze the signing of new PPAs in Kenya due to financial constraints and excess capacity[24]. The demand became even lower following the COVID-19 pandemic, dropping about 8% per month[25]. This forced Kenya Power to alter terms in electricity procurement, resulting in protests from independent power producers (IPPs).

The World Bank economic update of Kenya following the COVID-19 predicted that the Kenyan economy would not resume its growth potential until at least 2022[26]. The excess capacity is, therefore, significantly being born by the consumer. The impact on the consumer has been made clear with the recent announcement on Kenya increasing its tariffs by 20% to cover the cost of buying electricity from power producers[27]. This has brought the debate on the cost of energy to the forefront of civil society and public policy discourse in Kenya.

To consolidate lobbying efforts in Lamu and Kitui counties on the above issues, community mobilization and lobbying against coal, civil society groups, local communities, and individuals came together under the banner of the deCOALonize campaign in 2017. The deCOALonize campaign is a movement committed to stopping the development of coal and coal-related industries for a clean and sustainable energy future in Kenya and the region (www.decoalonize.org). The campaign was formed by a coalition of environmental and social justice advocates concerned about the increasing interest in Kenya on coal power production and exploration.

Through the Centre for Human Rights and Civic Education (CHRCE) in the Mui Basin in Kitui, communities have opposed the proposed coal mining project and petitioned Parliament seeking to have coal mining stopped in the County[28]. Save Lamu, the local community group in Lamu that founded the campaign, petitioned the National Environmental Tribunal (NET) against the issuance of a license for the Lamu Coal power plant, which they won in 2019[29]. The judgment cited that the Lamu coal plant project's Environmental and Social Impact Assessment (ESIA) was incomplete and inadequate in regards to considerations over climate change and public participation of the affected community. Despite this, Amu Power, the project proponent, has appealed the decision to the Environment and Land Court.

The main goal of this document is to contribute to this discussion by summarizing the status and discourse of coal energy production and exploration in Kenya and identify the social, environmental, economic and political impacts of coal in Kenya if the country is to achieve its objectives of providing reliable and sustainable access to energy for all. Within this context of the soaring expectations by market forces and the exaggerated demand for energy, this document hopes to provoke a new set of conversations that will seek to bring alternative viewpoints and solutions to the question of how we are approaching energy provision in Kenya.

This report also provides the policy and legal framework under which this constitutional objective is to be achieved in coal mining and coal power generation processes. It sets out provisions touching on the rights of affected persons, including: land and property rights, benefit-sharing, rights to a clean environment, compensation and resettlement assistance, amongst others.

To contextualize the issues, this document also includes a summary of the current energy policies in Kenya and how they relate to coal power production and exploration, a description of the sequence of activities and events in Kenya related to coal, and a summary assessment of the debate for and against coal power production and mining in Kenya focusing on the cost of coal, impacts on health and livelihoods, and climate change. The report will conclude with recommendations for policy makers to guide the development of sustainable energy in Kenya.
This document has been developed in collaboration with members of deCOALonize and local experts.

The contributors of this document recommend the following to government and private agencies in the energy and environmental regulation sector:

- Considering the cited negative impacts of coal, plans to produce coal power or extract coal in Kenya should be cancelled and reconsidered. Future energy production decisions should equally consider the various impacts, including health, sustainable economic livelihoods, and environmental sustainability.

- The Government of Kenya should work together with the private sector to explore opportunities for local manufacturing of renewable technologies, including increased mapping and research on renewable energy that has previously been unexplored in Kenya. Due to several bureaucratic and political hurdles faced by renewable energy projects in Kenya, there needs to be a development of clearer and stable policy frameworks and incentives that enable the private sector to invest with confidence in renewables.

- Kenya needs to develop a renewable energy power production strategy and rural electrification projects that mirror the spirit of devolution as envisioned in the constitution as a means to increase sustainable energy production, while reducing capital costs and creating local employment.

- New research and policy frameworks should be developed based on new and more accurate projections of energy demands to help map out the needs of energy development and production in Kenya. Considering the recent drastic decrease in demand for energy in Kenya due to COVID-19, new research and policy frameworks should reflect the real needs of energy in Kenya.

- The Government of Kenya needs to provide a clear investment policy on how the private sector can mitigate the effects of climate change and achieve Kenya's commitments to reaching the Paris Agreement goals of limiting global warming to well below 2°C.

- More efficient alternative dispute mechanisms and legal support should be provided to allow affected communities to obtain their right to justice when aggrieved by environmental impacts resulting from energy production projects. The government and financiers must enforce exclusive liability principles in Law such as the polluter pays principle, precautionary principles to regulate and hold corporations fully responsible for any pollution or damage arising from their activities.

Energy Production in Kenya

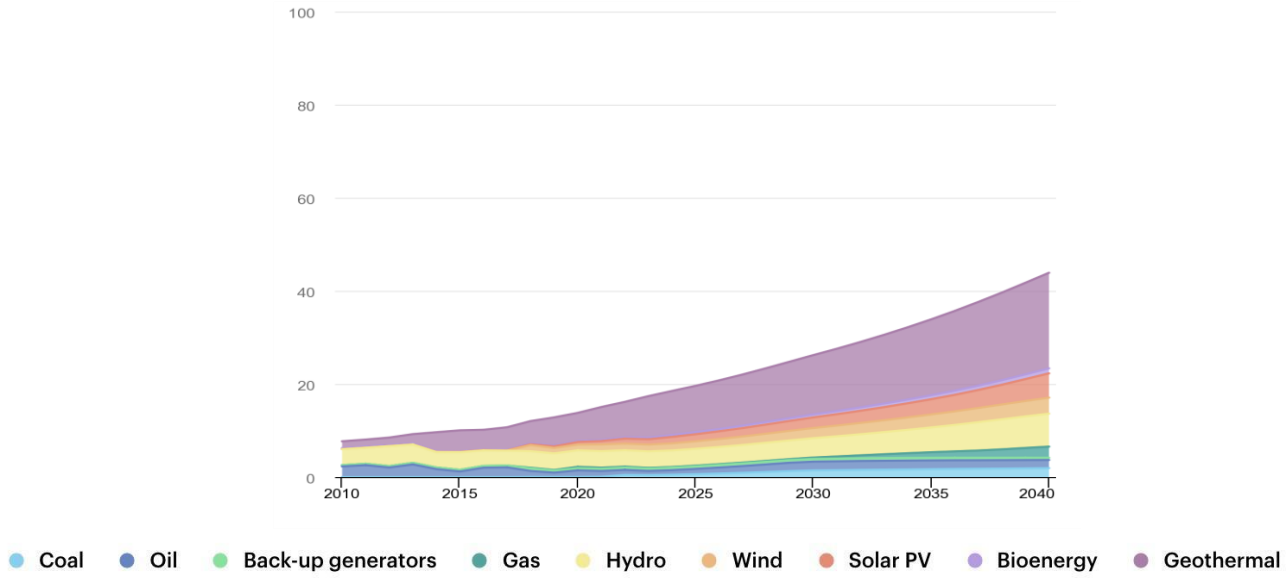
Being in the centre of East Africa and sharing a border with most East African nations (Ethiopia, South Sudan, Tanzania and Uganda), Kenya remains a regional hub of East Africa whose economic growth has always been of strategic importance. As one of the fastest-growing economies in Sub-Saharan Africa[30], Kenya has placed a priority on increasing power capacity with the aim of promoting industries and development. To meet its energy needs to date, Kenya has relied on a mix of biomass, hydropower, wind, solar, and geothermal energy sources.

According to the 2020 LCPDP, the effective capacity mix comprises 30.2% of hydro, 24.7% thermal (Medium speed diesel), 2.1% Thermal (Gas Turbine), 28.8% geothermal, 12.2% from wind and 1.96% from solar. Household energy usage in Kenya is approximately 9% electricity, 22% petrol, and 70% biomass[31].

In recent years, power generation in Kenya continues to grow at a fast pace, mainly from renewable energy sources, which constitute 90% of Kenya's electricity generation[32]. The country's newest energy generation projects include the largest wind power plant in Africa, the Lake Turkana Wind Project, and large-scale geothermal operations, and more recent proposals of coal plants, including the Lamu Coal Power Plant.

As of June 2020, Kenya had an installed electricity capacity of 2,819 MW[33]. In fact, Kenya produced more electricity in 2019 than ever before, adding 1000MW of electricity to the grid in the past six years.

Kenya electricity generation by technology in the Stated Policies Scenario, 2010-2040 (IEA, 2019)[34]



The country enjoys significant capacity for additional renewable energy, particularly geothermal, solar, and wind, while hydropower has been intermittently affected by drought. In Kenya, it is estimated that between 10-30% of the primary energy input is wasted due to inefficiencies (Mokveld et al., 2018).

The focus of the energy sector has been to improve reliability for industrial sectors and extend connectivity to a higher proportion of Kenyans. The grid has been extended to remote parts of the country under the Last Mile Connectivity Project[35]. Rapid, decentralized renewable solutions are increasing electrification countrywide, now serving 90% of rural households.

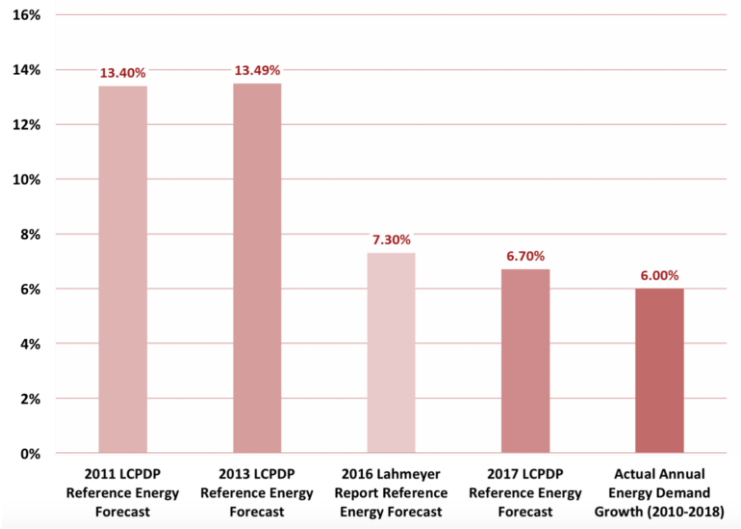
Energy Demand

The government tracks energy demand projections primarily through the LCPDP, a report designed to examine Kenya's energy sector and predict future demand through the Least Cost Power Development Plan (LCPDP). In June 2018, the Kenyan government released its updated official LCPDP for 2017–2037, which diverted substantially from the prior three reports by having more moderate projections in line with independent analyst predictions[36].

The 2011 LCPDP grossly exaggerated the electricity usage growth rate of 11.5%, almost doubling previous LCPDP projections of future demand from 7%[37]. The LCPDP for the period 2013–2033 forecasted an even higher energy demand growth rate of 14.5% and peak demand in 2030 of 10,000–15,000MW[38]. These estimates were used to justify the need for coal production in Kenya by suggesting that "clean coal technology" should be a part of future energy sources in Kenya. The same year, the government announced its ambitious plan for 5000MW more power production within 40 months.

Shortly after the 2013 publication, the coal development planning began with concession for coal mining in Kitui in 2015 and a call for expressions of interest for the Lamu coal plant in September 2013. However, the higher energy demand growth in these inflated projections has not materialized. Actual energy demand caused the government and project proponents to freeze plans for other mega power plant projects, which had been part of the country's ambitious 5,000 MW mega power plan[39]. In 2017, the Energy Cabinet Secretary Charles Keter noted that there were numerous idling plants that were placing a burden on taxpayers, which led the Ministry of Energy to terminate, prematurely, existing contracts with independent power producers in 2018[40].

Kenya's Average Annual Energy Demand Load Growth, Projected Versus Actual (IEEFA, 2019)



The June 2018 LCPDP diverged substantially from the prior three reports with a more moderate projection that Kenya does not need as much power as previously predicted. The most recent LCPDP of 2020 predicts Kenya's average energy demand growth rate of 8.5% based on Vision scenario peak demand[41]. Using the current demand growth rate according to the most recent 2020 LCPDP, it is predicted that the average annual excess energy would be 6%, as a share of generation in the period 2020-2030, and ranging between 300-800 MW in 2024 to 3031, largely due to the Lamu coal plant.

In the coming 10-15 years, energy experts and analysts largely agree in their predictions for future growth rates similar to that of the 2018 and 2020 LCDP projections. Lahmeyer International, an engineering consultancy previously involved in producing the LCPDP, projected electricity demand in Kenya to grow at 8-9% and the peak demand for electricity in Kenya in 2030 to be 5,000MW. In addition, Mr Hindpal Jabbal Singh, a former Energy Regulatory Commission Chairman and energy expert, calculated a future growth rate of 7-8.5%[42], and BMI Research, a consultancy firm, predicted that Kenya's demand for electricity will rise at an annual average of 7.9 per cent over the next decade[43]. As of July 2020, the Covid-19 pandemic has caused a further drastic decrease in electricity demand[44].

In a preliminary objection to the issuance of the Lamu coal plant's electricity generation, Mr Jabbal noted that higher projections of demand before the 2018 LCPDP were inflated and based on very high growth scenarios, which cannot be realized[45]. The 2018 LCPDP predicts that large-scale power projects, particularly the Lamu coal plant, will be underutilized and create a bigger imbalance between supply and demand imbalances even if introduced in 2024[46]. As a solution, the LCPDP recommends that PPAs for large power plants such as the Lamu Coal are renegotiated to reduce reserve requirements and minimize energy costs[47].

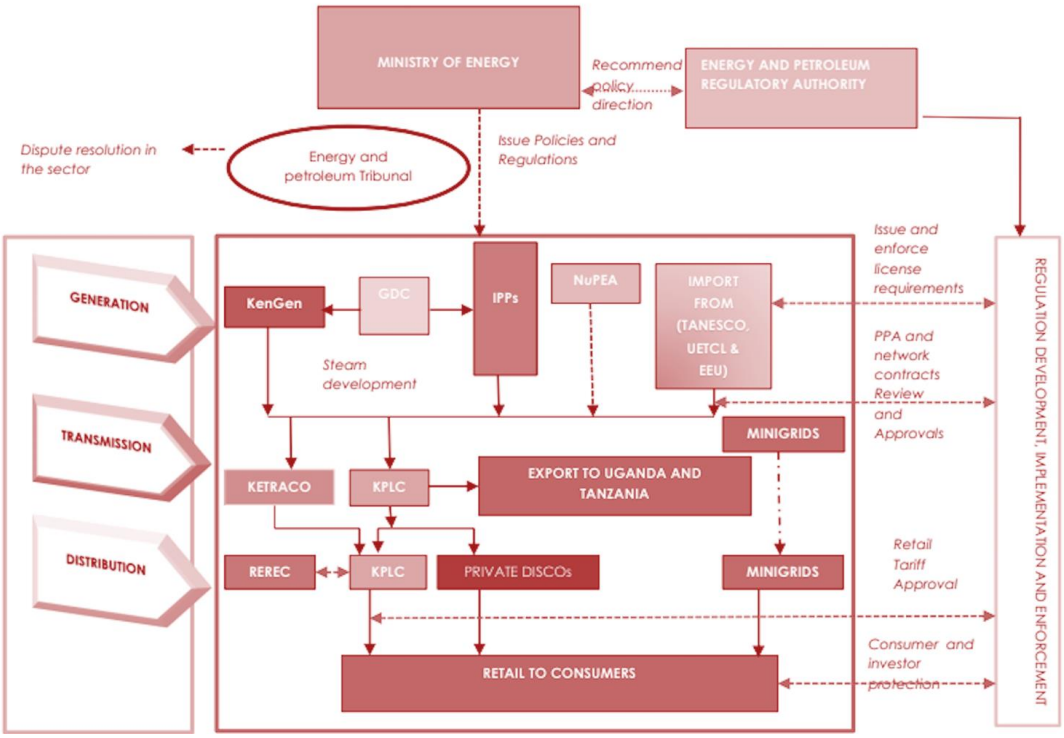
Energy Sector Reform

The focus of energy policy reform has been developing regulatory and licensing frameworks, restructuring processes and agencies to streamline planning, focusing on renewable energy, and including coal and petroleum.

To consolidate the laws relating to energy to provide for National and County Government functions concerning energy and conform to the new constitution, Kenya enacted a new Energy Act in 2019[48]. This includes the promotion of renewable energy; exploration, recovery and commercial utilization of geothermal energy; and regulation of midstream and downstream petroleum and coal activities. The Energy Act was the first in Kenya to introduce a framework for the licensing and operation of downstream coal production and distribution for energy with strict compliance with the environmental health, safety, and planning maritime laws[49].

The Act led to the reform that helped transition the power industry in Kenya from a monopoly into shared responsibilities between the government to a balance of Kenya Power and Lighting Company (KPLC) that was made responsible for the distribution of power, KenGen responsible for the generation of power, and the Energy Regulatory Commission (ERC), now named the Energy and Petroleum Regulatory Authority (EPRA) as the regulator. KPLC is a public company whose majority shares are owned by the Ministry of Finance.

Power Sector Institutional Structure (LCPDP 2020)



According to the Energy Act 2019, the Rural Electrification and Renewable Energy Corporation (REREC) is mandated to be the lead agency for developing renewable energy resources, except geothermal energy and hydropower. The Geothermal Development Company (GDC) was formed as a fully owned Government Special Purpose Vehicle (SPV), after the enactment of the Energy Act No. 12 of 2006, in order to undertake surface exploration of geothermal fields, exploratory, appraisal and production drilling and managing proven steam fields.

In December 2018, the Kenyan government launched the Kenya National Electrification Strategy (KNES) in partnership with the World Bank, which provides a roadmap for universal access to power by 2022[50]. The KNES identified energy as critical to the realization of Kenya's Vision 2030 to transform Kenya into a newly industrializing middle-income country. Following the identification of the Government's "Big 4 Agenda", which the President unveiled in 2017 as a prioritization of objectives, all depends on the provision of adequate and competitively priced energy accessible to all.

Accessibility and Distribution

Access to electricity, particularly affordable and reliable electricity, remains a significant challenge in Kenya. Even major cities face intermittent outages. Rural electrification lags behind significantly, including in Lamu and Kitui, where proposed coal projects are centred.

The Kenyan Government has recognized that to improve electricity access and support economic growth, decentralized, small-scale, rapidly deployed systems are the best solution[51]. Consequently, over the last few years, the government has worked on several programs to provide access to cheaper, more reliable, and sustainable energy. This includes interventions such as the Last Mile Connectivity Project, electrification of all public primary schools, Global Partnership of Output Based Aid (GPOBA), and the Rural Electrification Programme (REP), among others. This is seen clearly through access rates to both grid and off-grid options rising from 32% in 2014 to 75% in 2018.

The Poor People's Energy Outlook (PPEO), an annual joint study between the United Nations Development Program (UNDP) and Practical Action, noted that mini-grids and stand-alone systems are the cheaper solutions for meeting the electricity needs of the majority that are yet to be connected[52]. The PPEO further notes that these systems would be quickly deployable and provide more reliable electricity than the national grid. In Kenya, it is estimated that between 10-30% of the primary energy input is wasted due to inefficiencies in the national grid distribution system[53]. In an Africa Case scenario proposed by the International Energy Agency, it is predicted that Kenya could supply an economy six-and-half times larger using little more than twice its current energy consumption if it were to improve energy efficiency[54].

Despite the devolution of the Kenyan system of governance calling for more distributed service provision, the large-scale projects proposed in power production have been centrally led. Experts have proposed that to allow for better distribution of energy, smaller power plants that need small low-voltage power lines over shorter distances, such as distributed solar, wind, and biogas power produced privately in homes or villages, are much more sustainable distributions models.[55] However, it is claimed that corruption stands in the way of such proposals. "The large-scale investment in coal-fired or nuclear power plants....are attractive to the – often corrupt – politicians who can get large kick-backs from large projects. Solar panels don't corrupt people in the same way," said Andreas Kraemer, Founder & Director Emeritus of Ecologic Institute in Berlin.

Affordable Energy

Fossil fuel investors and proponents argue that fossil fuel energy is necessary to have grid stability and support the country's growth and development and provide cheap energy. In litigation on Lamu coal plant, developer Amu Power and the National Environmental Management Agency (NEMA) argued during litigation that having even 10% of power production coming from renewables is risky. However, multiple independent analyses show that Kenya can meet its energy needs reliably and cheaply with only renewables, and in fact, cannot afford not to do so [56]. The arguments on this have been so divisive, even internally within the Kenya Government, where the Ministry of Energy and Ministry of Environment were seen to have points of disagreement on the planned coal-fired power plant[57].

The prices of renewable energy sources in Kenya are competitive even without considering a holistic assessment of real costs, including externalities. Worldwide, renewable energy generation costs, and in particular wind and solar technology, are rapidly declining. The International Renewable Energy Agency (IRENA) calculates that in 2025 the global average price for Offshore Wind will be USD 11¢/kWh; Solar PV USD 6¢/kWh; and Onshore Wind USD 5¢/kWh.[58]

Overall, geothermal electricity will continue to be cheaper than potential coal plants. Analyst Simon Nicholas at the Institute for Energy Economics and Financial Analysis (IEEFA) noted that Kenya could meet its growing electricity demand at a lower cost with geothermal than coal-fired power[59].

In the most likely scenarios for Kenya's energy demand over the next two decades, geothermal is estimated to cost US 10 cents/kWh, while coal would cost at least US 29.5 cents/kWh, according to a conservative calculation from New Climate Institute, or perhaps most realistically 75 cents per kilowatt-hour (KWh) according to a detailed economic analysis of Lamu coal plant, itself drawing from the data in the government's power plan.[60]

Since 2014, Kenya's increasing use of geothermal energy has caused the cost of electricity to industrial and domestic consumers to drop dramatically, helped triple the number of Kenyans with access to electricity, and reduced greenhouse gas emissions.[61] While requiring significant capital investment, geothermal energy is low-carbon, and it does not require external fuel sources. It becomes comparatively cheap over time, is reliably available throughout the day and year, and can be operated flexibly without incurring significant additional cost.

In contrast, coal electricity generation would emit six to nine times the amount of carbon. It would get increasingly expensive if operated at a lower capacity level, as dictated by demand: the levelised cost of electricity (LCOE). When considering the fixed capacity charges resulting from this excess power production, the 2020 LCPDP predicts that the highest Levelised cost of electricity would see a spike by 2027 at 12.68USDCent/kWh, mainly attributable to commissioning of the Lamu Coal power plant[62].

Renewable Energy

Given its natural resources and the economic trajectory of renewable energy, Kenya is positioned to leapfrog ahead of many countries, avoiding the social and environmental ramifications of fossil fuel energy projects, preserving its status as a leader in renewable energy and ranking having the cleanest air of any country.

Energy Cabinet Secretary Charles Keter noted that Kenya already uses 90% renewable energy.[63] The country is endowed with hydro, geothermal, wind, solar and biomass sources. The energy purchased of geothermal, hydro, wind, and solar resources in Kenya is estimated to contribute to 5,362 GWh, 3,693 GWh, 1,284 GWh, 336.05 MW and 91GWh, respectively[64]. Energy experts predict that Kenya has enough potential technologies and resources to meet its current and future power demands with renewable sources [65].

Kenyan energy expert and former head of the ERC Hindpal Jabbal Singh found that Kenya can meet peak 2030 demand with existing resources and available renewable energy resources , and currently untapped geothermal and wind capacity[66]. Professor Izael Da Silva, the deputy vice-chancellor at Strathmore University, stated that considering Kenya is sunny and geothermally endowed, "it doesn't make economic or environmental sense to pursue coal-burning power stations"[67].

In a comprehensive and data-driven plan for the sustainable, low-carbon expansion for the power sector of Kenya, energy researchers recommend the introduction of geothermal operation subsidies, integration of variable renewable resources, and transmission expansion as a means to support the emerging economy[68].

Geothermal energy

Kenya is a leading producer of geothermal power worldwide and a regional leader in geothermal energy output, very little[69]. Geothermal energy is mainly produced in the Rift Valley area, with recent estimates putting the resource potential at about 10,000MW spread over 14 sites managed by the government parastatal, Geothermal Development Company (GDC).

According to the 2020 LCPDP, geothermal capacity provides nearly 50% of total power generation in Kenya, with an installed capacity of 828 MW and up to 29.12% of electricity supply in Kenya.

Geothermal energy is considered very sustainable and has a very low carbon footprint with limited environmental impacts. It has numerous advantages over other renewable energy sources, especially hydro and solar, as it is not affected by weather changes such as drought or heavy rains. However, many risks have set back investment in the sector, including high upfront costs and a very long implementation period.

Hydropower

As per the 2020 LCPDP, Kenya has a considerable hydropower potential estimated in the range of 3,000- 6,000 MW. The current eight (8) power stations with a capacity of more than 10MW each, owned and operated by the national power generation utility, KenGen. The installed capacity of 800MW is estimated to contribute about 30% of national annual electricity generation.

There has been a growing interest in Kenya for small-scale hydropower generation over vast projects options. Hydropower projects are considered to have more significant social and environmental risks than geothermal but having lower investment capital costs as hydro projects require many people to be relocated. Hydro power plants are also very vulnerable to the impact of drought.

The undeveloped hydroelectric power potential of economic significance is estimated at 1,484 MW. There are current plans to develop large hydro projects in Karura (90MW) and High Grand Falls (500MW) in the Tana catchment area, Nandi Forest (50MW) in the Lake Victoria North catchment area, Magwagwa (115MW) in the Lake Victoria South catchment area, and Arror (80MW) in the Rift Valley area. There have also been preliminary studies on suitable sites for pumped storage hydropower projects d in the northwestern, western and southwestern parts of Kenya. Pumped storage is a type of hydroelectric power generation where water is stored in an upper reservoir and pumped from a second reservoir at a lower elevation to produce energy during periods of high electricity demand.

Wind

Kenya has a vast potential for wind power development, with interest in the sector steadily growing. According to the 2020 LCPDP, on average, the country has about 90,000 square kilometres with excellent wind speeds of 6m/s and above. According to a wind energy data analysis conducted by Wind Force Management Services Pvt. Ltd in 2013, Kenya has a total technical wind potential of 4,600 MW.

Kenya produced more wind power from mid-2018 to mid-2019, with wind power projects feeding electricity into the national grid, including the Lake Turkana Wind (310 MW) and Ngong Wind Plants (25.5 MW)[70]. While wind energy costs have been high, they are going down with time. One of its investment risks is that its rated power is only achieved at higher wind speeds, making wind power production fluctuate depending on wind speeds. Because of this, their capacity fluctuates between 20 and 55%.

Several new wind power projects are planned and are in various stages of implementation. The best wind sites are located in Marsabit, Samburu, Laikipia, Meru, Nyeri, Nyandarua and Kajiado counties. Other areas of interest include Lamu, off shore Malindi, Loitokitok, and Narok plateau. There has been a proposal for a wind power project in Lamu's Bahari Ward, which has stalled due to various legal conflicts, including between two proposing firms and the local landowners who claim compensation for their land[71].

Solar Energy

Due to its strategic location near the equator, Kenya has high insolation rates[72]. Insolation rate is the amount of radiant energy from the sun which impacts upon a unit surface area. Kenya has an average of 5-7 peak sunshine hours and average daily insolation of 4-6 kWh/m2, of which 10-14% can be converted into electricity. Currently, the 50MW Garissa Solar

Plant is the first major solar power plant in Kenya and the largest grid-connected solar power plant in East & Central Africa. To support the project, a 6 Kilometre 132 Kilo Vault (KV) power transmission line has been constructed between the REREC solar power plant and the Kenya Electricity Transmission Company (KETRACO) sub-station in Garissa. Currently, this project is contributing about 2% of the national energy mix[73].

In Kenya, solar power plants are mainly privately commissioned as solar is seen as an option for rural electrification and decentralized power production. The Kenyan central government has selected 121 solar power plant sites in 14 counties as part of the Kenya Off-Grid Solar Access Project (KOSAP) flagship project to ensure universal access to electricity by 2022[74]. The KOSAP project is an initiative of the Kenyan Ministry of Energy-funded by the World Bank as part of the National Electrification Strategy, aimed at providing electricity to parts of the country that are not served by the national grid. The government intends to rely on private companies who will benefit from a line of credit of 3.2 billion Kenyan shillings with the goal of connecting 1.3 million households in remote villages in Kenya to solar power.

Coal in Kenya

The focus of energy policy reform has been developing regulatory and licensing frameworks, restructuring processes and agencies to streamline planning, focusing on renewable energy, and including coal and petroleum. The Energy Act 2019 was explicit in the government's interest in the promotion of coal energy by stipulating that the act is aimed at consolidating the laws relating to energy, including the regulation of midstream and downstream coal activities with the Cabinet Secretary given powers, on the recommendation of the Authority, to make regulations for the use of coal for energy production.

As of July 2020, active coal development efforts focused on the creation of a mining industry in Kitui County, which would be Kenya's first foray into coal production in East Africa. The 1050 MW Lamu Coal Power Plant has also been an important flagship project for the country, which would become the first and biggest coal plant in East Africa if completed. There have been many other attempts to mine local coal mineral resource and proposing of Coal Power Plants in Kwale and Kilifi Counties[75].

Since 2000, the Ministry of Energy conducted coal-prospecting efforts in Kwale and Kilifi Counties and the Mui Basin in Kitui[76]. Coal discoveries in Kitui led to the inclusion of coal in the government's mining and energy sector planning. From 2010 to 2014, Kenya Electricity Generating Company (KenGen) planned 600MW coal plants in Mombasa and Kilifi. In 2014 National Cement announced its plans to build a smaller 15MW coal plant in Kajiado, which would provide electricity for its planned mining and clinker manufacturing operation.[77] In 2016, the Ministry of Environment and Natural Resources listed ongoing coal development in several regions: Dongo-Kundu, Kilifi, Kwale, and the Meru to Isiolo area.[78]

Vision 2030 and Coal

The Kenyan government has advocated for, and pursued, the development of a coal energy industry seriously, with the aspiration of developing Kenya into a middle-income industrialized country by the year 2030. Vision 2030 is Kenya's development blueprint covering the period 2008 to 2030[1]. The blueprint called for Kenya to generate more energy at a lower cost, whilst also encouraging more private generators of power sources of energy through exploitation of coal. This was further supported with the identification of the Government's "Big 4 Agenda", which was unveiled by the President in 2017 to include the prioritisation of the provision of adequate and competitively priced energy that is accessible to all.

While the Vision 2030 also calls for exploitation of geothermal power, renewable energy, improving efficiency, and connecting more Kenyans to the grid, coal has featured primarily as a solution of

Kitui County is located in Eastern Kenya, covering an area of approximately 30,496.5 Km^2. Coal projects in Kitui County have included both coal mining and exploration.

While there is very little public information on the proposed 960MW coal plant in Kitui, coal mining in Kitui has featured more prominently in public. It has progressed more than the proposed Kitui coal plant into the tendering and concession process. In 2000, the Ministry of Energy began prospecting for coal in the Mui (and Mutitu) Basin in Mwingi and Kitui districts.

The Mui — Zombe Basin is thought to have one of Africa's richest coal deposits. According to the national Ministry of Energy, it has an estimated one billion tonnes of coal, valued at $75 billion, and which can produce 5,000MW of electricity[79].

Proposed Kitui Plant

The Government of Kenya and media reports have indicated in detailed government documents its intent to build a 960 MW coal plant in KituI. Although it is barely publicly mentioned and has no noticeable progress, the Kitui coal plant project profile appears in official documents from government ministries, as well as the private sector and media reports, for years, to date[80].

The project is described as being located on the eastern side of Mui Basin, in Kitui County. The project was to be developed via an Independent Power Production (IPP) framework at a project value of $1.8 billion (USD). As of the publishing of this report, not much information exists on the progress of the project. In 2019, the Treasury's public-private partnership disclosure report stated that the project is suspended, pending further guidance from the Ministry of Energy & Petroleum (MoEP)[81]. As recently as 2020, a Kitui plant was only mentioned in the LCPDP as part of techno-economic data and the screening analysis where it is mentioned as three units of 320MW each.

Kitui Coal Mining

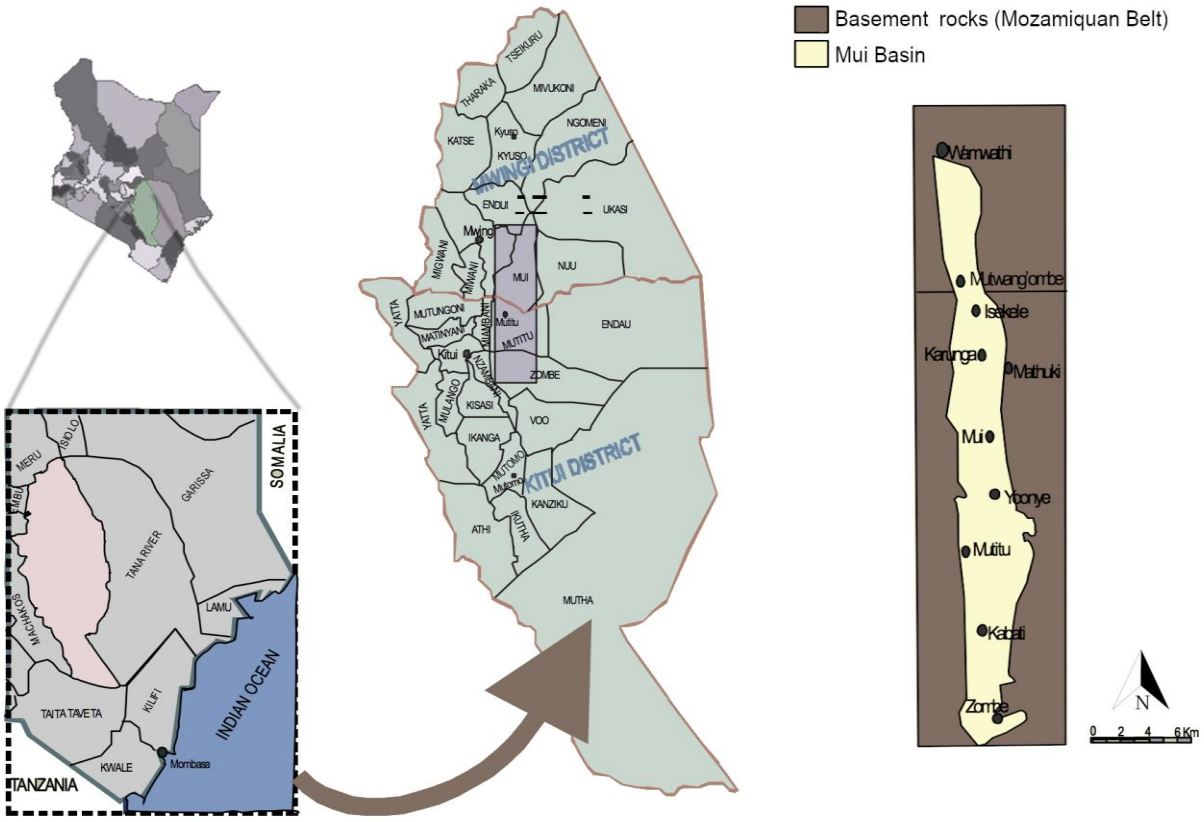
As of July 2020, Kitui County continues to pursue coal development while also investigating potential conflicts of interest with government officials involved in mining industry contracts and tenders.[82] The Ministry of Energy started coal exploration in the Mui Basin of Kitui County in 1999[83]. The coal-rich Mui Basin of Kitui, an area of 490.5 square kilometres located about 270km east of Nairobi. The Basin covers parts of Mwingi East, Mwingi Central, Mutitu and Kitui Central sub-counties. It is primarily an area of small-scale agriculture. If developed, coal mining could provide a domestic supply of coal for domestic processing or export.

The Mui Basin has been subdivided into four blocks: A, B, C and D in eight areas (Zombe, Kabati, Itiko, Mutitu, Yoonye, Kateiko, Isekele and Karung'a), but the activities are concentrated more in Block C, which includes Kateiko and Yoonye[84]. After drilling 73 coal exploration wells spread over the four coal exploratory blocks, four million tonnes of coal reserves were confirmed in Block C in 2010.

In June 2010, the Ministry of Environment and Natural Resources and Ministry of Energy gazetted land in Mwingi and Kitui districts, designating it as a "coal resources area" and specifying coordinates and area covered. Having established the potential of coal mining in the four blocks, the government set up an Inter-ministerial Committee comprising of the Ministries of Energy, Environment and Natural Resources, Finance, Industrialization, State Law Office and the National Environmental Authority (NEMA) to concession the Coal Blocks for the purpose of exploration, exploitation and development. A local liaison committee was also formed to be the go-between the community and the project proponent, Fenxi, which the Government also facilitated to visit the company in China.

The coal in Kitui was ranked from bituminous to peat and analyzed to have calorific values ranging from 3318 - 3980 cal/g[85]. The calorific value of coal is a measure of the heating ability of coal that is used to estimate the amount of coal needed to produce a desired amount of heat. While coal may be exploited for power generation, bituminous coal contains more water and less carbon, thus making it a less efficient source of heat than anthracite but a better source than lignite and sub-bituminous.

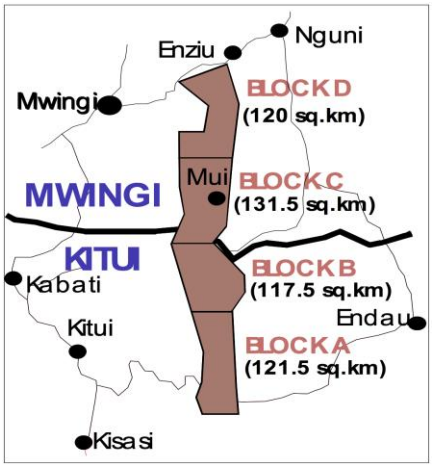
Location of Mui Basin Blocks (DaikonIa, 2014)



Size and Locations of Mui Basin Blocks (Parliament of Kenya, 2019)

Coal Block	Size Sq. Km	Location	
		Sub County	Sub County Km²
A	121.5	Mutitu	121.5
B	117.5	Mutitu	112.5
		Kitui Central	5
C	131.5	Mwingi East	120.5
		Mutitu	8
		Kitui Central	3
D	120	Mwingi East	57
		Mwingi Central	63

Size and Locations of Mui Basin Blocks (Parliament of Kenya, 2019)



Project Justification

The coal deposits in Kitui in eastern Kenya are cited as being a source of cheaper energy to drive Vision 2030, the economic blueprint that aims to make Kenya an industrialized country in 20 years. Project proponents note that 23% of Kenya's power being "thermal", the price is sensitive to fluctuating international fuel prices[86]. As such, they suggest that coal would provide a higher base load power source to industrialize the country.

The Kitui coal has been proposed for use to fire the Lamu coal power plant by providing the country with a source of cheaper energy from a domestic source, not subject to fluctuations in international coal importation prices. However, significant questions remain regarding the economic viability of developing coal mining in Kitui, given the quality of Kitui coal, fluctuating global coal prices, a downward trend in coal financing and development globally, and necessary infrastructure for the project.

According to the Environmental Impact Assessment (EIA) undertaken for the Lamu Coal Plant by Amu Power, to evacuate coal from Kitui for processing in Lamu or export, Kenya would build a railway covering a distance of 350Km to transport the coal[87]. The extension is estimated could cost US $2.8 billion (290 billion KES), making the railway extension more expensive than the development of Kitui or Lamu coal plants themselves.

Project Proponents

There are no specified finance partners of the project; however, the project proponents who won rights over the mining blocks are known. According to the Centre For Human Rights and Civic Education (CHRCE), a local human rights group in Kitui, the Kenyan government gave the rights to mine coal in Kitui and Mwingi counties to two different companies featuring Kenyan, Chinese and South African businesses.

The mining rights for blocks C&D were awarded to a Kenyan-Chinese company called Fenxi Mui Mining Co, a project expected to cost up to $500 million. Fenxi Mining Industry Co. Ltd was awarded a tender to explore, evaluate, extract, develop, produce, process, store and dispose of Coal and Coal Bed Methane in Coal Block C and D on 24th August 2011. In 2014, a Benefits Sharing Agreement was signed between Fenxi and the Ministry of Energy on behalf of the Kitui community[88]. The community raised concerns over the agreement being shrouded in secrecy and not having the County government involved in the negotiations.

The blocks were awarded to Fenxi Mui Mining Company as part of the 21-year agreement to provide 22-24% of their total earnings to the national government. Two companies own Fenxi Mui Mining Company: Great Lakes Ltd and Shanxi Fenxi Mining Industry Group[89]. Dr George Kariithi and Ian See Won started Great Lakes Ltd.

Blocks A&B were awarded to a joint venture of a Chinese and South African company: HCIG Energy Investment Group and Liketh Investments Kenya[90]. Liketh Investments Kenya is a private firm co-directed by two wealthy South Africans who have large coal investments in South Africa: Mojalefa Landlord Mbethe and Pius Mokgokong.

Pictured: *Community activists from Kitui holding up a piece of coal found in Mui Basin during a demonstration*

Community Concerns

A survey undertaken by Neumann in 2015 revealed that there is a mix of perceptions and expectations by the local community in Kitui towards the mining project[91]. Results showed that those respondents who had a higher education, were wealthier, younger, and male were more likely to be receptive to the mining project. Meanwhile, the lower educated, poorer, older and female respondents considered the project negatively. Thus served as a clear indication that the project would disproportionally negatively impact the most vulnerable and poorest more.

However, over time, the Kitui community increasingly opposed coal investment when residents became more aware of the expected large-scale evictions and impacts [92]. Community opponents of coal mining cite serious human rights concerns, including the health effects of mining and large-scale community displacement, particularly for women with informal land tenure rights, as well as a range of environmental concerns[93].

In 2012, with support from, among others, the Law Society of Kenya and the Institute for Law and Environmental Governance, community representatives sued the Ministry of Energy, the Attorney General and Fenxi (the mining company[94]. Peter Makau Musyoka and 19 others cited abuse of tendering process, poor access to information, lack of public participation, abuse of property rights, and concerns over impacts on community health and the environment, Constitutional Petition Nos 305 of 2012, 34 of 2013 & 12 of 2014 (formerly Nairobi Constitutional Petition 43 of 2014). The Liaison Committee, KHRC and the Katiba Institute joined the petition.

The public interest lawsuit was determined in 2015 in favour of the government and was dismissed. However, the respondents were ordered to continue engaging with the local community and provide reasonable opportunities for public participation during the process of preparing an Environmental Impact Assessment and the process of Resettlement as outlined in the Benefits Sharing Agreement. The National and County governments were asked to work closely with the community to ensure their issues are addressed.

Public Participation and Access to Information

Community concerns included that local people, including the County government of Kitui and the Liaison Committee, were not involved in the coal mining projects, including negotiations for the Benefits Sharing Agreement. This was the justification used for the public interest lawsuit against the Ministry of Energy and Fenxi.

For a while after the awarding of the project, news regarding the coal-mining project went quiet, with local leaders complaining of being in the dark. In 2019, with little information publicly available regarding coal mining plans, Kitui community members petitioned Parliament regarding the coal mining plans[95]. To seek additional information and articulate grievances regarding the opacity of the process and their lack of consent, community members exercised their right to petition Parliament. They filed a Petition, dated 14 February 2019, via Hon Dr. Gideon Mutemi Mulyungi, presented in National Assembly on 25 March 2019, subsequently committed to Departmental Committee on Energy.

In response, the Parliamentary Committee recommended forming a liaison Committee comprising 19 members to guide the coal activities and land issues in Mui Basin. The committee has not been visibly active since its formation. Following recent attempts to revive coal mining, residents have renewed their campaign to stop the project[96]. This includes the Centre for Human Rights and Civic Education (CHRCE), who are members of the national anti-coal campaign, deCOALonize.

Loss of Livelihoods and Social Impacts

Based on a participatory mapping project by ActionAid and CHRCE, the Mui basin is an agriculturally rich area where most people rely on agriculture for their livelihoods[97]. This includes animal rearing, growing millet, watermelon, green grams, maize, beans and mangoes. The ground surface disruption and acid rain may result in changes in the river flow and water quality, thereby negatively impacting livelihoods, especially farming.

Beyond just livelihoods, other impacts that could be expected on the community's social fabric are asset loss, displaced graves, and cultural sites that could affect the heritage social landscape of this particular community.

Human rights, massive displacement, loss of tenure

Coal mining would likely displace more than 100,000 residents of Kitui by forcing them to leave their ancestral land[98]. Although the Benefit Sharing Environment (BSA) calls for a resettlement plant that follows the World Bank's principles on involuntary resettlement, it does not give clear and detailed terms for post-resettlement access to food, clean water, or a healthy environment.

Coal mining opponents in Kitui cite serious human rights concerns that mining would displace communities and rob residents, particularly women, of their informal land tenure rights. The petitioners also noted concerns that the community never gave consent for mining, which they believe violated their right to property and was contrary to their rights enshrined in the Mining Act[99]. Significant questions over land compensation and ownership rights therefore remain. Coal mining developers defer to the government, while the National Land Commission and Kitui County government each refer the matter to the other.

Environmental

There is still no environmental impact assessment conducted on Mui basin coal mining project to date. Considering that it would mostly be open cast surface mining, what can be expected from existing knowledge is that there will be a clearing of trees and vegetation, removal of topsoil, drilling the hard strata, fragmenting or blasting the hard strata, and removal of the blasted material[100]. As such, it is expected that there will be considerable pollution and deforestation, which will profoundly change the topography of the ground that will disrupt the environment, air quality, and solid waste disposal[101]. The mining could also contaminate the supply of ground water, disrupt water flow, and harm local flora and fauna.

According to the Kenyan government's power development plan (LCPDP 2018), open-pit coal mining, as planned for the Mui basin, has strong environmental and social impacts. As a result of air pollution from coal, expected negative impacts include acid rain, which will impact trees and other plant life, water and soil.

Corruption

In addition to claims over an unprocedural tendering process, there were also questions on the existence of Fenxi as a company. A number of Kenyans visited operations in China to verify its legitimacy. In 2012 the chief geologist of Kenya and vice-director of the coal mining bureau of the Kenyan Ministry of Environment and Natural resources led a delegation of eight visiting Shanxi Fenxi Mining Group and stated that the Chinese company did not appear to exist[102]. The delegation comprised of Members of Parliament, the Kitui provincial administration and Ministry of Energy officials who toured China and found that Fenxi Mining Group does not appear to operate any mine.

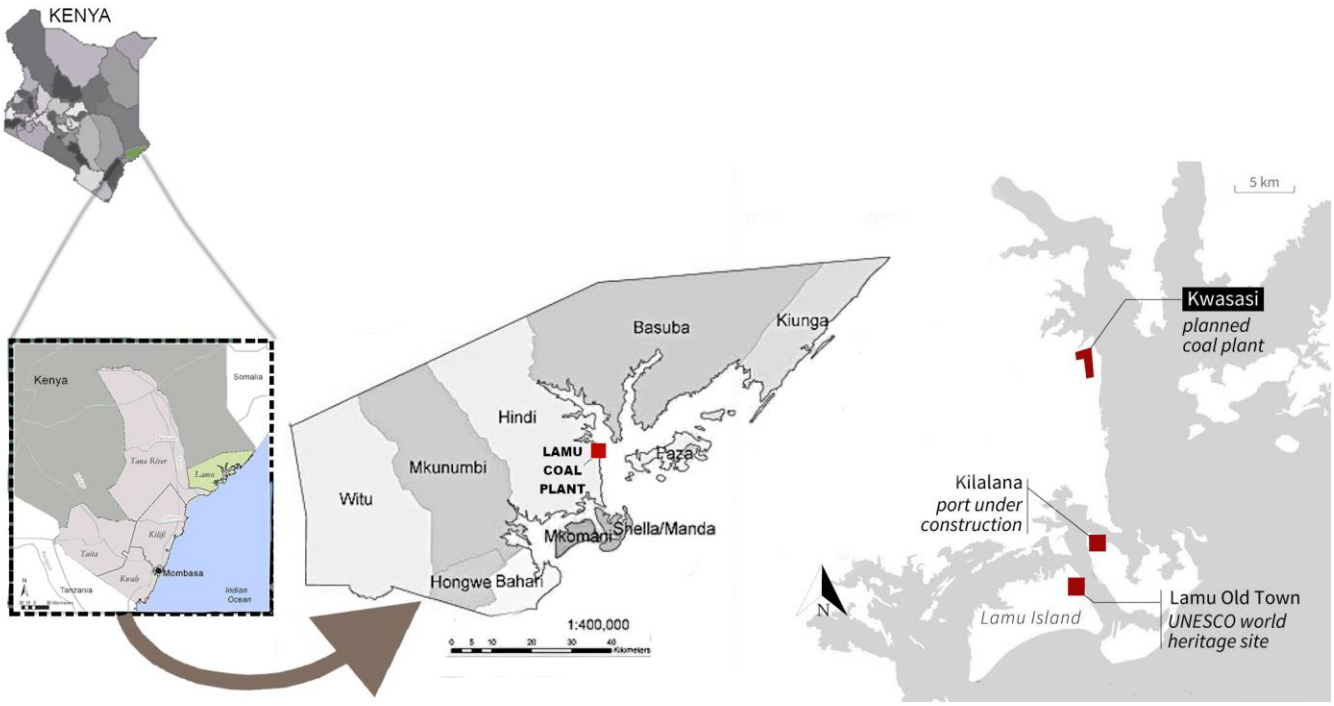
COAL IN LAMU

Lamu County lies on the Northern Coast of Kenya and is one of the Six Coastal Counties in Kenya. The proposed 1050MW Lamu coal plant has been in the planning and development stages for several years since 2014. The proposed US $1.947 billion, 981.5 megawatts coal-fired thermal electricity-generating plant would be located in Kwasasi, on the west side of Manda Bay, in Lamu County, Kenya.

Lamu coal plant would be situated on 865-960 acres of land at Kwasasi, in Lamu County, at Kenyan Coast. Lamu is home to over ten traditional and indigenous communities, a UNESCO World Heritage site, two protected biologically rich reserves, and 70% of the country's mangroves, which are a natural carbon sink and provide integral support a diverse marine ecosystem. Lamu has abundant natural land and marine resources. Local communities in the area primarily rely on fishing, agriculture, tourism, and related industries for their livelihoods.

Questionable economics, controversy, and opposition, based on significant concerns about its economic viability, overall energy needs and alternatives, and potential environmental and health ramifications, plague the project. Despite this, the proposed plant has achieved several key licensing approvals and funding agreements. While public interest lawsuits continue to delay its progress, the project enjoys strong, high-level government support from within the incumbent administration.

As of June 26 2019, the project's EIA license was invalidated when the National Environmental Tribunal (NET) ruled in favour of community groups by revoking the license[103]. Amu Power has since appealed the decision to the Environment and Land Court, although NEMA did not join. Thus indicating Amu Power's intent to continue to try to develop the Lamu coal plant. However, the win for the community set the precedent for many potential investors pulling out of the project, which has put the Lamu Coal plant plans in jeopardy[104].



The Lamu Coal Plant

Amu Power, a special purpose company, plans for the Lamu coal plant to generate 1,050 megawatts of coal-fired thermal power at 85% operating efficiency. The plant is to be situated on approximately 865 acres of land at Kwasasi, currently a sparsely populated traditional agricultural area. The project would be the first coal plant— and its smokestack would be the tallest manmade structure — in East Africa.

The project is expected to generate 1050MW of power through an Independent Power Producer (IPP) on a Build-Own-Operate (BOO) Public Private Partnership (PPP) model or a period of 25 years. Under the take-or-pay Power Purchase Agreement, national electricity provider Kenya Power (KPLC) would be obligated to pay Amu Power for electricity from the Lamu coal plant, for 25 years — whether or not electricity is actually produced or used.

As indicated in all project planning documents and litigation files, Lamu coal plant project would utilize supercritical technology. According to the project's initial 2015 Environment Project Report Study, the power plant will utilize 68.5MW and but will produce a total of 1050MW, thus having a net production of 981.5 MW[105].

The electricity will be distributed into the national grid via a 400kV overhead transmission line. The required new 520km transmission line would cost an additional US $270 million (approximately 28 billion KES). It would be funded separately and developed by government-owned Ketraco, the Kenya Electricity Transmission Company Limited.

The contracting authority for the project is the Ministry of Energy, and its financing would come predominantly ICBC. Neither partner of Amu Power has any experience in coal plants or coal energy, despite that the terms for tendering initially included stringent requirements. The project was to be built by two subsidiaries of PowerChina Group (Sichuan Electric Power and Design and Consulting, Sichuan No.3 Power Construction Company) and China Huadian Corporation Power Operation Company. Huadian, and PowerChina (including it affiliate Sinohydro), have however faced criticism and legal cases in countries with infrastructural projects including Indonesia[106], North Macedonia[107], Colombia[108], among others.

Project Summary

Capacity: 1,050 MW Gross/981.5 Net

Acreage of land: 975.4 acres

Location: Kwasasi, Lamu County

Project Cost: US$2 billion

Purchaser: KPLC under 25 yr PPA

Proposed Technology: Sub-Critical

Project Owners: Amu Power - $0.5 billion (PPP as build, operate, transfer)

EPC Contractor: Sichuan Electric Power Design & Consulting Company Limited and Power Construction Corporation of China

Amu Power Shareholders: Centum Investment Company Limited - 51%

Gulf Power Holdings Limited* - 30%: (Gulf Energy Limited- 50% and Francis Njogu- 50%)
*Recently purchased by Rubis Énergie

Gulf Energy Limited- 19%: (25.0% - Nama (K) Ltd, 25.0% - Monte Carlo Investments Ltd, 20.0% - Francis Njogu, 12.5% - Paul Limoh, 12.5% - Duncan Mukira, 5.0% - Abubakar Ali).

Lenders and Financers:
- ICBC - 1.2 billion (Potential withdrawal)
- GE (unconfirmed and non-committal)

Partial Risk Guarantee: AfDB (Backed out before any commitment)

Lead Arranger: Standard Bank - Stanbic Bank Kenya (Contract ended)

The Government of Kenya (Treasury) has offered a Letter of Support (LoS) guaranteeing many aspects of Lamu coal plant, should anything go wrong, including failures to make payments and political events. Other waivers were obtained by Amu Power including the valued added tax (VAT), Pre-Export Verification of Conformity (PVoC), and Construction Levy exemption[109]. The project's PPA and LoS were first publically published by the Treasury on the Public-Private Partnership (PPP) Projects Disclosure Web Portal[110], however it has since been taken down but ihas been made available on the deCOALonize website[111].

To operate the Lamu coal plant, coal would be imported. Amu Power plans to negotiate for discounted prices to buy coal from South Africa. Its projected electricity cost requires that imported coal be purchased for a discounted US $50 per tonne,

30% lower than global and recent historical prices, but also of very poor quality at 21,000 kj/kw. It is predicted that the variable operation and maintenance costs could be significant if the coal is imported[112].

Project Justification

Coal proponents argue that Kenya needs more reliable, low-cost base-load electricity to meet its future industrial needs and its population's electrification needs. Amu Power further claims that the Lamu Coal Fired Power Plant will increase the availability of cheaper power and increase domestic connectivity[113].

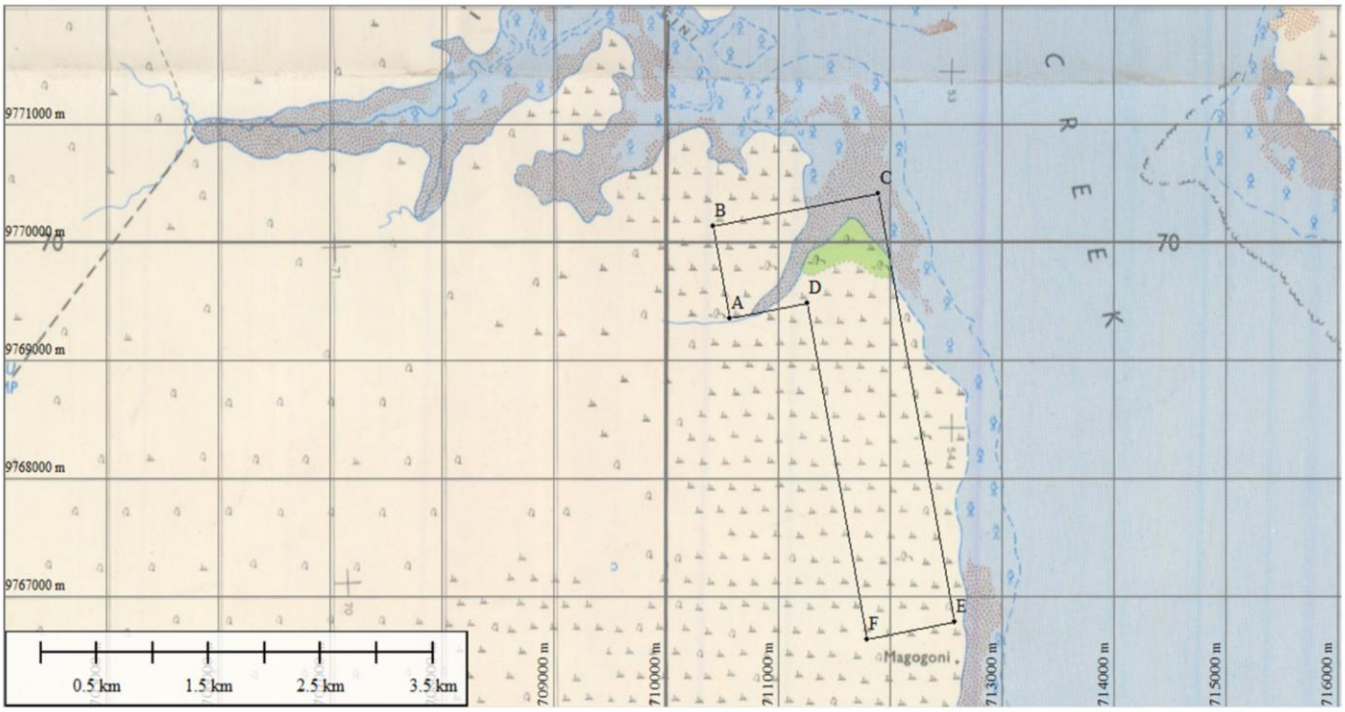
Specifically, Amu Power pointed to the need to meet increasing energy demands to power ongoing and future projects such as the Standard Gauge Railway, and the Lamu Port, South Sudan, Ethiopia Transport (LAPSSET), all of which require reliable, stable and affordable power to be competitive. Developer Amu Power stated that Lamu coal plant will contribute to the provision of reliable electricity to the national grid and reduce the cost of power for both domestic and industrial use as part of the Government of Kenya's (GOK) blueprint for Vision 2030.

The government aims to achieve a fast-tracked production of 5,000+ MW of power to achieve the blueprint goals by providing reliable and cheaper electricity to the national grid. This is all as part of the Big Four Agenda for manufacturing, food security, universal healthcare, and affordable housing.

In a response to complaints from the Business Human Rights Resource Centre in April 2018 on the coal plant, Amu Power claimed that the plant power would produce enough energy to offset nearly 3.32 million household's dependence on biomass and thereby lead to the gradual recovery of deforested areas for 100 years to come[114]. They further claimed that this will mitigate the harmful effects of carbon emissions, respiratory diseases and mortality in children and women.

Proponents plan for Lamu coal plant to generate 1050 megawatts of coal-fired thermal power at 85% operating efficiency, calculating that the electricity produced would cost US 7.81¢ per kWh. These cost of coal has however been contested by energy experts as expounded below in the community concerns. The electricity cost is based on very cheap imported coal of $50 per ton and without including the cost of a new transmission line.

Image showing location of proposed coal fired power plant (Kurrent Technologies, 2016)



Project Proponents

The proposed supercritical coal processing plant is a public-private partnership (PPP), developed on a build-own-operate (BOO) basis by Amu Power, a special purpose joint venture of two Kenyan companies: Centum Investments and Gulf Energy, created in order to pursue development of the proposed Lamu coal plant[115].

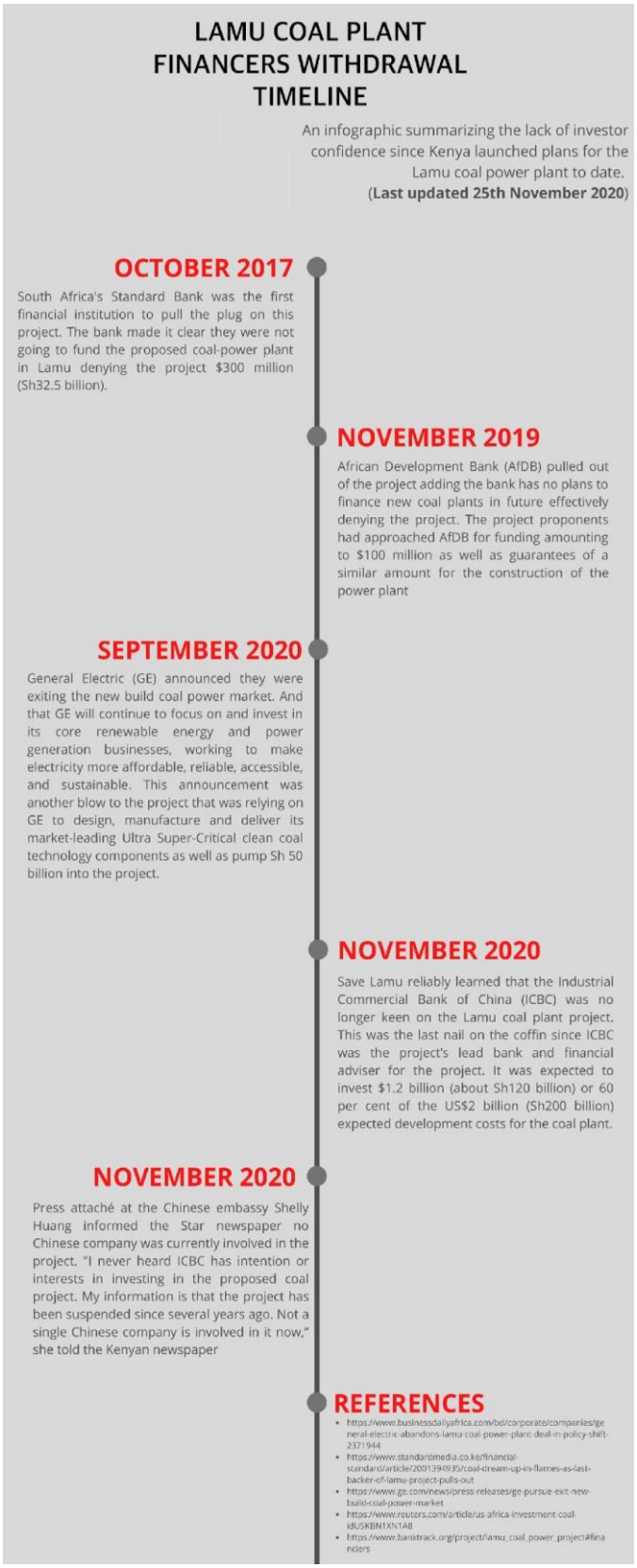
According to the mandate letter and term sheet between the Industrial and Commercial Bank of China (ICBC) and Amu Power, the ICBC were to finance the plant at $1.24 billion as a senior secured term loan facility[116]. The balance of the financing was partially to be covered by the Standard Bank, and the rest secured by Amu Power with the help of Stanbic Bank (Standard Bank Kenya) as the appointed transaction advisor for Gulf Energy Limited (GEL).

Facility A was exclusively 85% of the Engineering, Procurement, and Construction (EPC) contract price, with the EPC contractor as Sichuan Electric Power Design & Consulting Company Limited and Power Construction Corporation of China. In June 2015, ICBC and the syndicate of Power Construction Corporation of China and Electric Power Design Consulting Co., Ltd. signed the financial service agreement for the Lamu coal plant.

The Standard Bank was the mandated lead arranger of the ICBC facility. In the indicative term sheet between Amu Power and Standard Bank, the bank was to provide a second facility of up to US $250 million as a senior secured term loan facility representing the balance between the total senior debt and Facility A, from ICBC[117]. Amu Power was to obtain from the lenders or other financiers additional facilities of US $40 million as the "working capital facility" and a construction security of US $20 million.

Centum appointed Gulf Energy Limited (GEL) to market Centum's commercial interest in Amu Power, thereby authorizing GEL to raise the entire equity funding for the project of approximately US $458.2 million. GEL on its part appointed Stanbic Bank Kenya as its transaction advisor in 28 December 2015. GEL is partially owned by Gulf Energy Holdings, which was recently bought by French multinational Rubis Énergie[118]. It is unclear if the purchase of the company by Rubis included shares to Amu Power.

GEL and Stanbic Bank engaged various investors who expressed interest in investing in equity in the project. As at October 2016, Stanbic Bank had 9 potential investors who signed an non-disclosure agreement with GEL to proceed with the due diligence phase of the process of potentially investing in the project: This included Harith General Partners Proprietary Limited, a South African Private equity firm, Noble Group, Cennergi, China Machinery Engineering Corporation, Blackrhino, China



Resources Power Holdings Co., Ltd., Stanlib, EOSON, Themis Energy (acquired by Abraaj group of United Arab Emirates). Discussions on purchasing equity were also held with China-Africa Development Fund, National Social Security Fund (NSSF), and Powerchina who expressed an interest in acquiring a equity stake in Amu Power from GEL and Centum, which never materialized.

In Nov 2020, Save Lamu announced that ICBC had withdrawn from the Lamu coal project citing extensive environmental destruction and social risks that would be encountered once the project is operational[119]. These new developments came from internal communication between Save Lamu and representatives at ICBC.

While Standard Bank distanced itself from the project in 2017 and clarified they will not be financing and coal projects worldwide[120], Stanbic Bank, which is a division of Standard Bank operating in Kenya, did not clarify its role at it's lead transaction advisor to date.

In May 2018, Amu Power and General Electric announced that they signed a non-binding Ksh 50 billion deal for General Electric (GE) to design, construct and maintain the 1,050 megawatt coal power plant in Lamu through use GE's ultra-super critical technology to deliver superior efficiency and lowest emissions[121]. This claim was however contradictory to plans in the environmental impact assessment of the project to use super critical technology.

While it was suggested that GE would also be gaining shares in the Amu Power, GE did not confirm this claim. Instead, the company wrote back to Save Lamu in February 19, 2019, in response to their complaint to insist that they were undecided about their choice to acquire a 20% share of the project as they awaited an independent environmental and social impact assessment of the project.[122] In September 2020, GE announced its interest to "pursue exit from new build coal power markets", which contradicts its interests in the Lamu coal plant[123].

According to project documents, the African Development Bank (AfDB) was also at one point listed as partial risk guarantee (PRG) provider to cover KPLC's payment obligations under the PPA equivalent to 3 months capacity and energy payments plus 2 months of fuel payment[124]. In 2019, the AfDB announced that it has no plans to finance the coal plant anymore[125]. AfDB President Akinwumi Adesina said at a conference in South Africa that the AfDB took the environmental concerns raised seriously and would be focusing on renewable energy[126]. Just days after the AfDB withdrew their support for the Lamu Coal Plant, project proponent Centum Investment to set aside 2.1 billion in anticipation of a loss from its funding of the distressed multi-billion shillings coal plant in 2019[127].

Since 2012, the World Bank has been supporting the development of public-private partnerships in Kenya. As part of that project, the World Bank has claimed credit for the various early milestones in the development of the Lamu coal plant, including the successful negotiation of the coal plant's power purchase agreement. Although since 2013, it has restricted its financial support for new coal power plants to only "rare" circumstances, they continue to support coal indirectly, through policy and technical support for governments and by providing funds to local banks and other investors who then finance coal projects.

Some conservationists have also claimed that The World Bank, through its private sector arm, the International Finance Corporation, has also been indirectly funding commercial banks, which in turn have supported Amu Power and Centum Investment, and thereby Lamu coal plant in some form. For example, in 2018 and 2019, the Accountability Counsel, found that three International Finance Corporation (IFC) clients, the Co-Operative Bank of Kenya, Kenya Commercial Bank, and FirstRand Bank of South Africa, each provided financing to Centum Investment after receiving IFC funds[128]. Save Lamu filed a complaint to the IFC's accountability office, the Compliance Advisor Ombudsman in 2019 in regards to this.

Community Concerns

Many residents of Lamu County are opposed to the plant due to the negative economic, environmental, and health impacts they will endure as a result of burning coal for electricity, which they argue have not been sufficiently considered, nor mitigated[129].

Controversies against the project have led to the filing of a legal petition with the National Environmental Tribunal of the National Environmental Management Authority (NEMA) in 2016 by Save Lamu organisation on behalf of the local community. Save Lamu is a community-based organization (CBO) in Lamu aimed at creating a culturally, socio-economically, and politically empowered community, striving to secure Lamu's natural resources and sustain a green environment[130].

Opposition for the projects has included senior government officers including the former Women Representative MP, Shakilah Abdallah, and a County Executive Member in the County Government of Lamu, Samia Omar Bwana, who resigned in protest against the project in Aug 2016[131]. Together with Ms. Bwana, Save Lamu went on to partner with like-minded organizations and individuals to form the national movement, deCOALonize, to initiate a national and international awareness campaign on against the project.

Opposing residents have filed complaints that project proponents have not met even minimal requirements to inform and foster participation from the affected communities, while they have been subject to intimidation and allegations when trying to hold community discussions about the project.

Most recently, as of June 26 2019, the project's EIA license was invalidated, when the National Environmental Tribunal (NET) ruled in favour of Appellants (community groups in public interest) in overturning the license[132]. Amu Power has appealed the decision to the Environment and Land Court, although NEMA did not join. This indicates Amu Power's intent to continue to try to develop Lamu coal plant.

Pictured: Community Members in Lamu protesting against the Coal Power plant.

Health and Environment

Lamu County is home to two Biosphere Reserves, 70% of the country's mangroves, a thriving coral reef, significant fishing and farming industries, and a UNESCO World Heritage Site—all of which would be threatened by the plant and related infrastructure. Areas of the Lamu Archipelago and its mainland are internationally recognized and protected as valuable biospheres. If complete, the first coal plant in East Africa, Lamu coal plant would become Kenya's single largest carbon emitter of greenhouse gases and a major source of toxic air pollution.

One is the Boni-Dodori Forest National Reserve, which covers 877 km^2 of indigenous coastal forest vibrant with wildlife and endemic plants. The second is the Kiunga Marine National Reserve, which consists of shoreline and about 50 islands and coral reef in the Lamu Archipelago. According to the LAPSSET Study of 2011, Lamu has a number of large mammal

species including the topi, buffalo, elephant, wild dog, giraffe, buffalo, hippopotamus, Lamu topi, waterbuck and gazelle and rich[133]

Dredging during construction will "cause significant and serious damage" to mangroves and coral reefs, according to the Environmental and Social Impact Assessment (ESIA) undertaken by the project proponent. Cooling water discharged into the sea around the plant will raise water temperatures, further disrupting marine ecosystems and threatening fishing livelihoods. Fly ash, acid deposition, and acid rain could reduce farmers' yields and introduce toxic metals into food and water.

The LCPDP 2018 report notes major environmental impacts such as high emissions of sulphur dioxide, heavy metals and harmful greenhouse gases from coal power plants[134]. According to an air quality modeling study from Greenpeace, the plant would be allowed to emit 5–10 times as much key air pollutants as a new coal-fired power plants in China and the EU. Meaning, if complete, the Lamu coal plant would become Kenya's single largest carbon emitter of greenhouse gases and a major source of toxic air pollution. With that, it is estimated that pollution from the plant will cause 1,600 premature deaths during its operating life, a conservative calculation[135].

The Lamu Project proponents however claim the coal plant will not cause harm, and that its toxic emissions will be minimal or nonexistent. Amu Power claims the plant would use 'clean coal technology' in order to ensure harmful emissions are eliminated up to 99%[136]. To mitigate the impacts of the coal plant, Amu Power stated a commitment to create a large forested area and claims to have already planted 2 million trees as of 2018.

"Clean coal" refers to a process known as carbon capture and sequestration (CCS), or carbon capture and storage, where CO^2 is separated from industrial and energy-related sources, transported to a storage location and long-term isolation from the atmosphere[137]. It is considered a mitigation process for stabilization of atmospheric greenhouse gases. The myth of clean coal has often been debunked as a marketing gimmick to rebrand the technology as environmentally friendly. According to the CEO of Murray Energy, the US's largest privately held coal-mining company "Carbon capture and sequestration does not work. It's a pseudonym for no coal" [138].

Social Impacts

For generations, the indigenous and traditional communities of Lamu, Kenya have managed their land and shared natural resources and cultural traditions, in spite of losses due to insecure land tenure and political marginalization. These include merchants, hunter-gatherers, farmers, pastoralists, fisher folk, boat builders, mangrove harvesters, and more recently tour guides[139]. This system of informal communal management of land has been critical to Lamu maintaining its remarkably pristine and historically and naturally rich ecosystem, including significant forest cover, biodiversity, coral, threatened species like sea turtles, and 70% of the country's mangroves, a notable asset for the country and region, and a carbon sink for the world.

Those opposed to the coal plant cite direct threats to three main economic activities: fishing, farming and tourism, as well as other minor economic activities, including mangrove harvesting, boat building, construction of houses and other buildings and furniture. The importance of these sustainable livelihoods to the communities was detailed in the consultative Bio Cultural Community Protocol (BCP) process that was undertaken and developed by Save Lamu over a period of about 8 years.

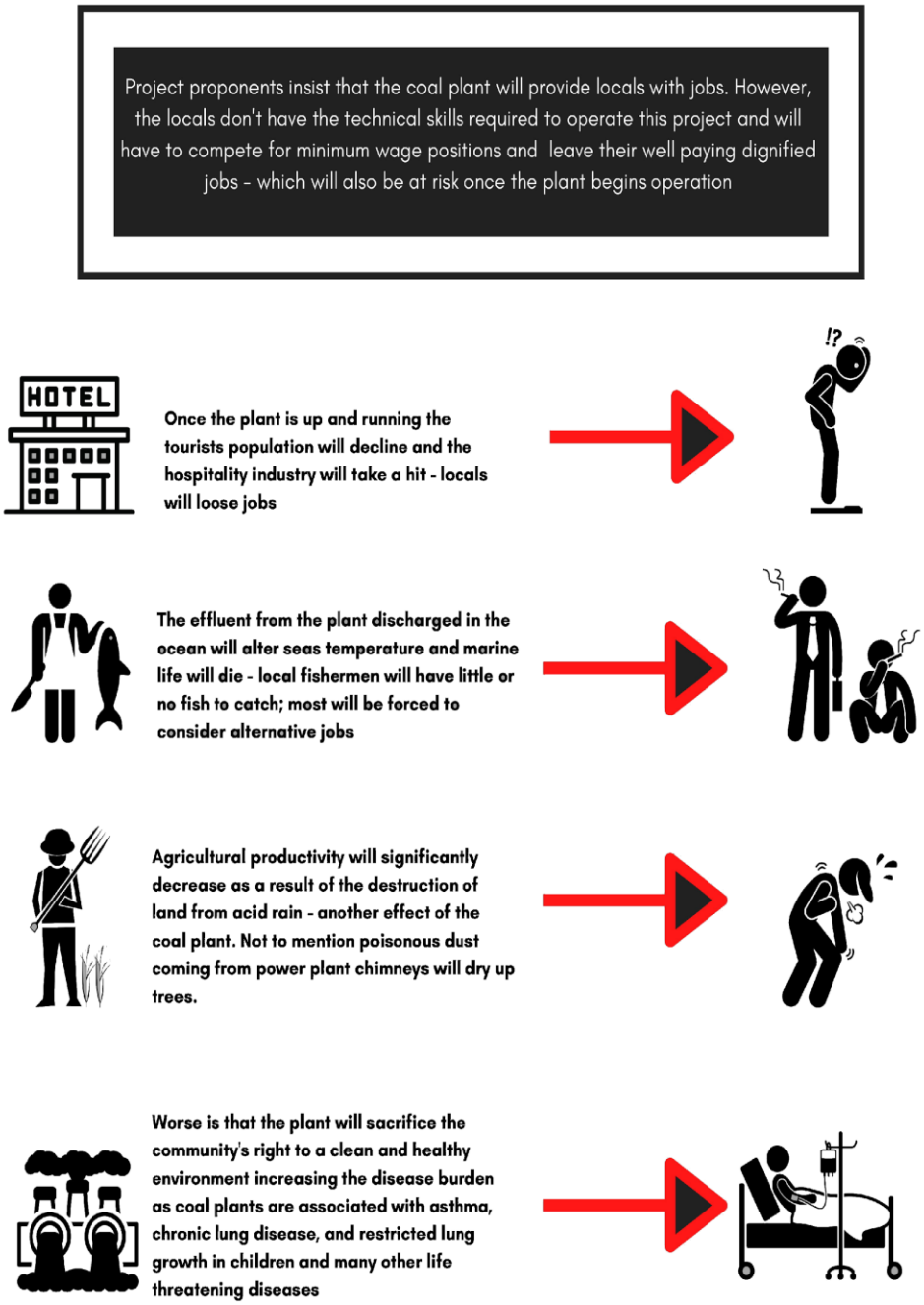
According to Save Lamu, the BCP is a tool instrumental for "guiding state actors and communities on best traditional and indigenous good practices in natural resource management and sustainable utilization to up keep the socio-economic well being of every creature within the ecosystem". The Save Lamu 2019 BCP cited serious threats to local community livelihoods because of its ash waste and air pollution that would threaten farming, the cooling system that warm the fishing nesting grounds and harm the fishing industry, overall pollution and impacts on the ecosystem that would affect tourism. These industries have injected millions of shillings into the local economy.

To persuade communities, private and government actors are offering significant promises of environmental mitigation, desalinated clean water for the entire county, and small compensation for leased land, capitalising on the community's perceived lack of agency or voice, limited economic opportunity, and relative desperation from decades of marginalisation.

Amu Power worked with the Government of Kenya, County Government of Lamu to equip local fishermen with fishing gear and equipment, as well as undertook other various social development projects including water and relief food supply, ice making equipment, education projects, among other projects as part of their corporate social responsibility[140].

As part of its justification, the coal power plant has been designated as the major source electricity that could be used for the Lamu Port, South Sudan, Ethiopia Transport project (LAPSSET)[141]. LAPSSET is a grand plan to link Kenya, Ethiopia and South Sudan with a rail, road, fibre-optic and pipeline corridor. According to the Lamu Coal plant EIA, the original LAPSSET Study done in 2011 recommended a coal fired power plant to be situated in Shindakazi Island, in Lamu's Manda Bay. This was however changed and the Kwasasi location in Hindi/Magogoni sub-county was preferred.

Social Impacts of the Lamu Coal Plant



While not stipulated in the LAPSSET Strategic Environmental Assessment (SEA), the two projects are highly interlinked. Thus justifying the demand from communities and the World Heritage Committee for a revised LAPSSET SEA[142]. UNESCO has called for Kenya not to proceed with Lamu coal plant project until it submits a revised LAPSSET SEA, and a heritage impact assessment and EIA of the Lamu Coal project that considers the impacts on the outstanding universal value (OUV) of Lamu Old Town.

The proposed Lamu coal plant site is 20km from Lamu's islands and historic Old Town, a UNESCO World Heritage site. UNESCO designated Lamu town, on Lamu Island, as a Cultural World Heritage site. It is the oldest living Swahili Settlement and, which led it to be declared a World (Cultural) Heritage Site by UNESCO in 2001.[143]

In 2015, a UNESCO World Heritage Committee reactive monitoring mission first documented and predicted unavoidable and irreparable harm to come from the LAPSSET port project, harms which could not be adequately mitigated.[144] The mission noted that construction was moving forward, and that Kenya had failed to honour the body's repeated requests that the project be halted until its likely impacts could be properly assessed. Construction of LAPSSET has continued for several years, despite a Kenyan High Court decision finding rampant violations in Lamu Port construction.[145]

Displacement

Since Kenya won its independence in 1963, the communities of Lamu have faced significant economic and political marginalisation. A key element of this marginalisation is a continued denial of the Lamu community's property and rights. In Kenyan law, land is defined broadly, including marine & terrestrial, and includes all natural resources.[146]

Following Kenya's independence, Lamu County was designated as government land, an implicit recognition of longtime informal communal use. But the national government soon privatised land for new agricultural settlers. Lamu's traditional communities further lost access to their lands through illegal privatisation schemes, including national government settlement policy in the 1970s allocating title deeds to previously government land and worsening land grabbing by local and national elites, while weak government institutions had little political interest or will to address injustices. Speculation over those projects has also caused major land tenure challenges and environmental impacts.

In the case of the coal plant, the government, through the National Land Commission (NLC), for the LAPSSET Development Authority, was to acquire the land through compulsory acquisition and compensate hence the same cannot be equated to private land in the hands of a project proponent. The NLC is a public institution mandated to manage public land on behalf of the National and County Governments.

The LAPSSET Authority published their intention to compulsorily acquire land for the LAPSSET development project through two notices in the Kenya Gazette dated 21st October 2016 and 15th February 2019[147], seven years after farmers had already been displaced by LAPSSET, and three years after land at Kwasasi village was acquired for the coal plant, including the alienation of public land[148]. In the gazette notices, the Government provided a list of coordinates identifying the pieces of lands to be acquired across different counties including Lamu, Garissa, Laikipia, Meru, Isiolo, Baringo and Turkana and Marsabit, for the various components of the LAPSSET project, which also included the land proposed for use by the coal plant.

Before the farmers were compensated, Amu Power already invested in immovable property in the site and location and where acquisition of the property remained pending. A total of 975 acres of land had in 2016 was acquired after an earlier NLC review that each landowner would get a capped payment of Sh800,000 per acre as compensation for the land[149]. The National Lands Commission has only identified 675 people who will be directly affected by the project, sitting on approximately 505 plots of land.

Five years on in 2020, the farmers at Kwasasi still remain with no compensation or provision of alternative land despite having moved from their land five years ago.[150] Most recently, in Aug 2020, owners of land earmarked for the coal plant demanded their property citing lack of information on the progress of compensation.

Cost of Coal

The project proponents claim the biggest incentive for the plant is that it will provide cheap power, estimated at USD 7.5-7.81¢ per kWh.[151] This number is an underestimate as the project proponents have failed to consider the cost of production, the accurate cost of imported coal, the infrastructure required for the plant, the fixed capacity charges, as well as overestimating the plant operating efficiency.

When considering the fixed capacity charges resulting from this excess power production, the 2020 LCPDP predicts that the highest Levelised cost of electricity would see as spike by 2027 at 12.68USDCent/kWh, largely attributable to commissioning of the Lamu Coal power plant[152].

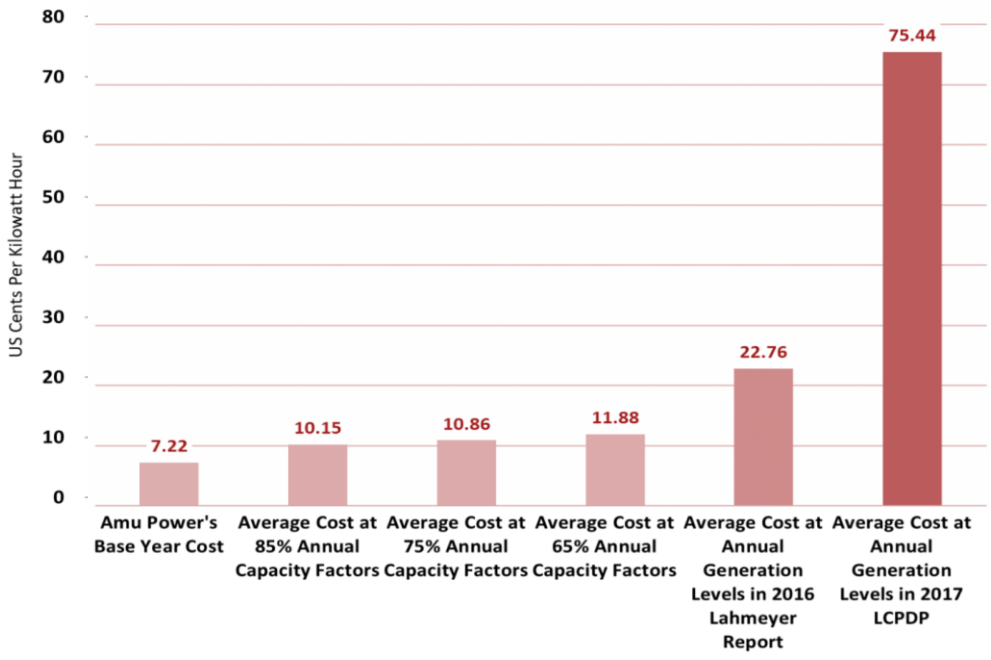
According to independent experts, Amu Power's claims for the cost of electricity generated by the coal power plant are unrealistically low. The Institute for Energy Economics and Financial Analysis (IEEFA), an American think-tank that examines issues related to energy markets, trends and policies, highlighted a more realistic assumption of the cost of coal electricity from the Lamu coal plant being as much as US 75 cents/per kilowatt-hour (KWh) during the years 2024 to 2037[153].

The cost is more than 10 times what the plant's proponents have claimed. The lower estimated price is based on costs for the imported coal that are outdated and inaccurate, and also based on an optimistic assumption of generating, which the plant is unlikely to reach of 85% annual capacity.

The project's estimated cost for coal is based on low-standard and inefficient coal potentially available at US $50 per tonne, presumes world's-best coal plant operating efficiencies, and excludes the costs of the additional infrastructure necessary for the plant to deliver electricity to Kenyans.

By presuming a higher capacity, the project proponents are able to bill for higher fixed capacity charges than plausible. Under the project's Power Purchase Agreement (PPA), which has been signed but does not gone into effect yet, Kenya Power and Lighting Company (KPLC) and thus the regular Kenyan taxpayer would be contractually obligated to pay for the power produced (or not produced) for 25 years.[154] Minimum capacity charges would amount to at least $362 million per year, not including energy and fuel charges, as calculated by former ERC Chairman Hindpal Jabbal Singh, based on the terms of the coal plant tender.[155]

Average Cost of Power from Lamu Coal Plant (IEEFA, 2019)



In order to justify the coal plant, the Kenyan government has significantly inflated energy demand growth, in stark contrast to recent lags that slowed other energy projects. This is a significant factor into increasing the cost of power and transferring it to the consumer.

Using the current demand growth rate according to the most recent 2020 LCPDP, it is predicted that the average annual excess energy would be 6%, as share of generation in the period 2020-2030, and ranging between 300-800 MW in 2024 to 3031 largely due to the Lamu coal plant.

Given these two factors, the price of Lamu coal plant electricity would be much higher than estimated, and likely higher than renewable alternatives, even more so in coming years. As a consequence of the oversupply, it is expected that Kenya would pay at least $360 million in annual capacity charges according to the existing 25-year Power Purchase Agreement for the Lamu Coal plant, even if no power is generated at the plant.[156]

For this reason, the Kenyan government's 2018 LCPDP, recommended that in order to ease the cost of the coal plant to the consumer, the implementation of Lamu coal should be phased to constitute smaller units of 150MW each[157]. The predicted that large-scale power projects, in particular Lamu coal plant, "will be grossly underutilized" and "aggravate the projected supply-demand imbalance" even if it were introduced in 2024[158]. The 2018 LCPDP recommended that the government should renegotiate PPAs for large power plants, including for the Lamu Coal so as to reduce reserve requirements and minimise energy costs.

This was reiterated in the 2020 LCPDP, which also suggested a phased out approach of the Lamu coal plant in three units of 327MW each as the optimised case scenario generation expansion. The report suggested that the coal plant should commence in 2037 at the earliest, followed by an addition in 327MW in 2039, and the last unit in 2040 to make more economic sense.

What Amu Power says about the Economics of the Lamu Coal Plant Vs the Facts

Access to Information

The community has sustained concerns and complaints on the low level of public awareness of the project plans among Lamu residents. The main concerns being that also the process of consultation during the EIA process was unprocedural. The petition to NET echoed these concerns, which was decided in favour of the community citing that "there was a failure of effective public participation and the procedure for the issuance of the ESIA License by the [The Ministry of Energy] was in violation" of the procedures set out in the Environmental (Impact Assessment & Audit) Regulations and the Constitution of Kenya[159].

Amu Power however discounted this and stated that it has continuously consulted and engaged the communities of Lamu County by visiting various communities and groups in the County to consult, engage, and sensitise them about the coal plant. Amu Power organised a 3-month door-to-door campaign where each household in the islands was visited to consult, engage and sensitize them about the Lamu Coal Fired Power Plant before the finalization of the Environmental Study Report (ESR).

However this ignores the procedures required in the EMCA Act (1999) where the public participation must occur before and after the ESR is published.

Climate Change

Lamu coal plant would worsen climate change in two ways: first by measurably reducing forest cover and marine mangrove and sea grass areas, which are currently reducing climate change by providing a carbon sink, and more significantly through the direct ramifications of emissions from a 1050MW supercritical coal processing plant, from toxic particulate matter causing air pollution.

First, the coal plant would destroy terrestrial and marine life in the area through toxic waste, emissions, and high-temperature water releases. This is especially considering that Lamu has the highest mangrove cover in Eastern Africa. As UNEP notes, mangroves are important in the fight against climate change that is making mangroves the "new superstars of coastal conservation efforts" as they are incredibly efficient at storing carbon.[160]

Second, with Kenya currently emitting about 0.4 metric tons per capita in carbon dioxide[161], Lamu coal plant would become Kenya's single largest carbon emitter and a major source of toxic air pollution, releasing 8.8 megatonnes of CO2 equivalent into the atmosphere each year[162]. The proposed Lamu coal plant would thus increase Kenya's total annual emissions by 13% and make very difficult, if not impossible, Kenya's ability to meet its international climate change commitments, including the Paris Agreement.

According to Environmental Law Alliance Worldwide (ELAW), climate change damages associated with the Lamu project may be as high as $1.3 billion per year by 2030. Its predicted emissions of nearly 9 $MtCO_2e$ per year would set Kenya far from its goal to meet the 2030 emissions target. Lamu coal plant may therefore potentially violate Kenya's National Climate Change Plan and its Intended Nationally Determined Contribution (INDC) under the United Nations Framework Convention on Climate Change (UNFCCC).

In its June 2019 ruling, the NET also found that the project ESIA was incomplete and inadequate regarding its consideration of climate change[163]. Despite the project ESIA author Sanjay Gupta being contracted by Amu Power, he conceded in his court testimony to NET that there was a failure to consider and comply with the provisions of the Climate Change Act, 2016.

The coal plant could thus be vulnerable to climate change litigation in Kenyan courts. Kenya's Climate Change Act of 2016 allows for citizens to sue entities that interfere in efforts to reduce the impacts of climate change, even before harm is incurred. Further, the coal plant could also compromise climate change funding, which is a high priority for the government.[164]

The Kenya governments' continuous support of the Lamu coal plant contradicts the public position on climate change by the Office of the President. Recently, President Uhuru Kenyatta noted that climate change is "the foremost emerging security challenge of our time. It acts as a 'multiplier' of existing threats to international peace and security."[165]

LEGAL FRAMEWORK

This section considers the policy and legal framework under which this constitutional objective is to be achieved in the processes of coal mining and coal power generation. It sets out provisions touching on the rights of affected persons. This includes land and property rights, benefit-sharing, rights to a clean environment, compensation and resettlement assistance, amongst others.

Kenya Constitution

Article 260 of the Constitution recognizes energy as part of the natural resources in Kenya. It provides that natural resources mean the physical non-human factors and components, whether renewable or non-renewable, including inter alia rocks, minerals, fossil fuels and other sources of energy.

The Constitution distributes the functions and powers between two levels of government, the National and the County Governments. This is detailed in Chapter Eleven and the Fourth Schedule. The Fourth schedule vests the "protection of the environment and natural resources with a view to establishing a durable and sustainable system of development", which includes control and management of mineral resources (including coal), which holds it in trust for the people of Kenya. Whereas the national government is mandated with leading energy policy, the County governments are assigned with planning and development of electricity and gas reticulation, and energy regulation.

The Constitution also requires the government to ensure sustainable exploitation, utilisation, management and conservation of the environment and natural resources and ensure the equitable sharing of the accruing benefits.

Energy Laws

The National Energy Policy 2018

The National Energy Policy sets out the national policies and strategies for the energy sector. Its overall objective is to ensure affordable, competitive, sustainable and reliable supply of energy at the least cost. To this end, it integrates coal as a source of energy in Kenya.

National Government Functions	County Government Functions
Formulation of the National Energy Policy Preparation of an Integrated National Energy Policy incorporating coal, renewable energy and electricity master plans	Preparation of county energy plans incorporating coal, renewable energy and electricity master plans.
Regulation and licensing of importation, transportation and storage of coal for electricity generation.	Provision of land and rights of way for energy infrastructure.
Provision of land and rights of way for energy infrastructure	Regulating and licensing the retail supply of coal products

Coal is considered an affordable, competitive, reliable and easily accessible source of energy, especially for energy generation under the policy, which consequently commits the government to: (a) promote efficient utilisation of coal resources while minimising the environmental impacts associated with its use; and (b) create a conducive investment environment for coal power generation by providing fiscal incentives to attract investment in the sector.

Recognising the importance of land in the development of energy infrastructure and the competing interests in land utilization, the policy requires the government to formulate a National Resettlement Action Plan Framework for energy-related projects. The framework is to include livelihood restoration in the event of physical displacement of communities as well as facilitate access to land where exploration blocks fall on private land, community land and cultural heritage areas including game parks/reserves.

Energy Act no.1 of 2019

Among the objectives of the Energy Act no.1 of 2019 is to provide for the regulation of midstream and downstream petroleum and coal activities. The Energy and Petroleum Regulatory Authority (EPRA) is established with functions, which include the regulation of exploration, extraction, production, processing, transportation, storage exportation, importation and sale of coal bed methane gas and other energy forms. The Act requires a person who wishes to carry out the production of energy from coal to obtain a license or permit. Further, a person wishing to generate electricity using coal and/or to transport for the same is to obtain a license and a permit from the Authority.

Compliance with the environmental, health, safety, planning, maritime and other relevant legislations and guidelines are listed as some of the conditions to be met before one is granted a license or permit. In reviewing an application for a license, the Authority is required to take into consideration the impact of the undertaking on the social, cultural or recreational life of the community, the need to protect the environment and to conserve natural resources in accordance with the environmental, health and maritime laws and international maritime treaties ratified by Kenya as well as other guidelines developed by the Authority among others.

The application for a license must be accompanied with an environmental liability policy as shall be prescribed by the Cabinet Secretary. These provisions are yet to be made by the Cabinet Secretary as at February 2020.

A person intending to construct a facility that produces energy using coal shall apply for a permit for the same before commencing construction. The application should be accompanied by a Strategic Environment Assessment and Social Impact Assessment licenses as discussed above under the EMCA. Further, a person engaged in the production of energy utilizing coal is mandated to comply with the applicable environmental, health and safety laws.

Finally, the Act establishes the offences as regards coal. The offences attract a fine of two hundred thousand shillings or one million shillings or an imprisonment term of one year or both depending on the offence committed.

Land Laws

The Land Act 2012 revised and consolidated land laws so as to provide for the sustainable administration and management of land and land-based resources. The Act was followed by amendments in the Land Registration Act 2012 and the National Land Commission Act 2012 to give effect to the changes resulting from the new Constitution of Kenya 2010.

With the Land Act 2012, the National Land Commission was given authority in the management and administration of public, private and community land. It was also given the powers to reserve public land to be done in consultation with the national government and the county governments. The Commission is required to make rules and regulations to govern the sustainable conservation of land-based natural resources, and put in place measures to ensure benefit-sharing to the affected communities.

Part VIII of the Land Act, 2012 deals with compulsory acquisition of interests in land by the National Land Commission (NLC). The new land act the process of compulsory acquisition of land more transparent, just and fair to the owner of land. In the Land Act 2012, the award of compensation is supposed to be made prior to the Government taking possession of the land.

The NLC Commissioner is expected to publish in the Gazette to give notice that the Government intends to acquire the land, and serve a copy of the notice to every person who may have interests in the land. The act also places a required for the Commissioner to hold an inquiry for the hearing of claims to compensation by persons interested in the land. The amount of the compensation is payable whether the persons interested in the land have or have not appeared at the inquiry. Where the amount of any compensation is not paid before the taking of possession of the land, the Commissioner is expected to pay interest on the amount awarded not be less than six per cent per annum from the time of taking possession until the time of payment.

Coal Mining and Land Rights

Other than public land, which vests in the government, the Constitution recognizes community and private land. Community land is land held by communities identified on the basis of ethnicity, culture or similar community interest. Private land is land registered and held by a corporate body or natural person. What happens when a mineral like coal, which vests in the government is found on land that is either community or private land?
The right to acquire and own property of any description and in any part of Kenya, either individually or in association with others is guaranteed by the Constitution (Article 40(1) of the Constitution). Under Article 40(2) of the Constitution, Parliament is also prohibited from enacting any law that allows the State to arbitrarily deprive a person of any property or limit the enjoyment of the right to property on the basis of the grounds specified in Article 27(4).

Furthermore, the State is prohibited from depriving a person of property unless the deprivation is for public purpose or in the public interest. Even in these circumstances, the deprivation is subject to the State providing prompt payment in full of just compensation for the property and allowing any person who has an interest or right over that property a right of access to a court of law (Article 40(3)(b) of the Constitution). Specific provisions for acquisition of land by the government are set out under the Land Act, 2012.

Mining Laws

The Mining Act, 2016 also contains provisions touching on land rights. The Act requires any person to obtain the express consent of the registered owner(s) of private and community land before they are granted prospecting or mining rights. (Section 6 Mining Act, 2016) However, the Cabinet Secretary may initiate the process of compulsory acquisition where consent is denied (Section 40 Mining Act, 2016).

The Act also affirms to the right to information and at Section 112 requires all mineral agreements to be made accessible to the public pursuant to Article 35 of the Constitution whose principles are further set out by the Access to Information Act, 2016. Under the Access to Information Act, 2016, there is a presumption in favour of government disclosure of information. Disclosure is only limited where it is likely to, among other things, substantially prejudice commercial interests or undermine the ability of public or private body to give judicious consideration to an issue under active consideration. (See Section 6(1) of the Access to Information Act, 2016).

The Mining Act also makes the grant of an environmental impact assessment license, social heritage and environmental management plan as prerequisites for the grant of a mineral right or mineral license (Section 176 of the Mining Act, 2016).

Environmental Management Laws

According to he Environmental Management and Coordination Act (EMCA) no. 8 of 1999, the impacts of coal mining and coal power production require the conduct of impact assessment processes prior to any project activity. The objective of

these processes is to evaluate the environmental impact of these activities, bearing in mind the related socioeconomic, health and cultural impacts, both positive and negative.

EMCA 1999 and the Environmental (Impact Assessment and Audit) Regulations, 2003 govern the conduct of impact assessment processes leading to the grant of an Environmental Impact Assessment (EIA) License by the National Environment Management Authority (NEMA) The Second Schedule of EMCA specifically requires a full EIA study and submission of the same to the Authority (NEMA) prior to being issued with any license for any project specified in the Second Schedule of the Act. Coal is listed as one of the projects, which require the carrying out of an EIA. It is provided that EIA shall be conducted in accordance with the Environmental Impact Assessment Regulations, guidelines and procedures issued under the Act.

Under the regulations the proponent of a project is mandated to carry out public participation in consultation with the Authority by seeking views of the persons who may be affected by the project. The process involves publicizing the project and its anticipated effects and benefits through posters, publishing notices in a newspaper with nationwide circulation and making announcements of the notice in both official and local languages in a radio with nationwide coverage for at least two consecutive weeks.

The proponent is also expected to hold at least three public meetings with the affected parties and communities to explain the project and its effects and receive their oral or written submissions. The notices about the meetings are to be sent out at least one-week prior stating convenient venue and times of the meetings for the communities. The proponent is to further ensure that a suitably qualified coordinator is appointed to receive and record both oral and written comments as well as any translations received during the public meetings.

Under Section 59(1) upon receipt of the EIA, NEMA is required to be publish the same in the Gazette in at least two newspapers circulating in the area or proposed area of the project and over the radio a notice stating the summary of the project, its location, where the EIA study, evaluation and review report may be inspected and time limit within which oral and written comments on the study, review and report can be submitted.

The Act also provides for the undertaking of Strategic environmental assessment (SEA) of all policies, plans and programmes to be implemented. Plans, programmes and policies are defined to include those that have been determined by NEMA as likely to have significant effects on the environment. A SEA report is to then be submitted to the Authority for approval.

The principle of public participation plays a key role in the carrying out of EIA as it has been held by Courts in Kenya. In *Mui Coal Basin Local Community & 15 Others vs Permanent Secretary Ministry of Energy and 17 others*, the Court laid out what it considered the basics of public participation as follows;

- It is the duty of the government agency or public official to develop a programme of public participation that corresponds to the nature of the subject matter. In doing so they must consider the quantity and quality of the governed to participate in their own governance.
- The Court was of the opinion that public participation ought to be flexible depending on the nature of the subject matter, culture, logistical constraints among others. According to the Court the only test is one of effectiveness in the conducting of public participation.
- Access to and dissemination of relevant information must be included in whatever programme of public participation is developed.
- Although public participation does not dictate that everyone must give their views, it must however show intentional inclusivity and diversity as any clear and intentional attempts to keep out bona fide stakeholders would render the programme ineffective and illegal.
- The government agency or public officer is to take into consideration, in good faith, all the views received as part of the public participation programme.
- The right of public participation is to cross-fertilize and enrich the views of the technical or democratic role of the office holders and views of those who will be most affected by the decision or policy.

In *Save Lamu and 5 others vs Nema and Another* The Tribunal relied on the basics set out on the Mui Coal Basin Case regarding public participation. The Tribunal was of the view that public participation is the oxygen by which the EIA study and report are given life. In the absence of public participation, the EIA study report is stillborn and deprived of life.

Climate Change

Further, save for the above discussed laws, the country also enacted the Climate Change Act with the objective of providing a regulatory framework for enhanced climate change as well as to provide for mechanisms and measures to achieve low carbon climate development. The Act thus attempts to mainstream climate change actions in all the sectors of the economy. The Act sets the stage for the creation of Kenya's National Climate Fund as the key mechanism for raising and allocating funding from development partners to go towards climate change activities.

International Treaties

According to Article 2(6) of the Constitution, any treaty or convention ratified by Kenya shall form part of the law of Kenya. The country has ratified various multilateral treaties and agreements, which include: The Kyoto Protocol, which mandates state parties such as Kenya to reduce greenhouse gas emissions; Montreal Protocol which mandates state parties to eliminate substances that deplete the ozone layer; and the Paris Agreement, which aims to strengthen the global response to the threat of climate change by keeping global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

The move by Kenya to include coal in its energy mix is viewed as controversial against the backdrop of increased climate change and the country's obligations under the Paris Agreement as well as the Nationally Determined Contributions (NDC) of the country. Under the NDC, which Kenya submitted to the UNFCCC, it undertook to abate greenhouse gas emissions by 30% (14MtCO_2e) by 2030.

RECOMMENDATIONS

This report summarises all economic, social and technical discourses within the coal debate in Kenya that highlights the economic fallacy of the pursuit of coal as being a cheaper alternative to energy production. While the report presented justifications of coal exploration and extraction in Kenya, it contrasts them with the realities of the negative impacts of coal power production and exploration, which outweighs the social, environmental, and economic costs. This document hopes to provoke a new set of conversations that will seek to bring alternative viewpoints and solutions to the question of how we are approaching energy provision in Kenya, and to point out why coal is not the answer.

Considering that Article 69 (2) of the Constitution places a duty on every person to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources, it is the duty of the authors of this report to recommend as below to **Policy makers, Energy Production Agencies,** including the Ministry of Energy, ERC, KPLC, KETRACO and KenGen, as well as to the NEMA, Ministry of Environment, the Kenya Climate Council, **and other Environmental Protection Agencies:**

- Given that the exploitation of coal comes with a high cost to the communities around the area and the environment, the government is mandated to eliminate processes and activities that are likely to endanger the environment and utilize the environment and natural resources for the benefit of the people of Kenya. Any plans to produce coal power or extract coal in Kenya should therefore be cancelled and reconsidered. Furthermore, with the ongoing trends on the increasing costs of coal, especially following COVID-19, Kenya should exclude coal from its economic development strategies, and develop long-term strategies of renewable energy sector production. Future energy production decisions should consider all the various impacts including economy, health, sustainable livelihoods, and environmental sustainability.

- Looking at the projections on the untapped energy potential in the renewable energy sector, coal is not the only or best alternative for Kenya. Compared to other African countries, Kenya has the largest geothermal reserves, and the market for renewable energy sector in solar and wind is growing by the day. Following the drastic increase in the price of energy in Kenya that is ballooning the cost of living, the Government of Kenya should work together with the private sector to explore opportunities for local manufacturing of renewable technologies. Due to several bureaucratic and political hurdles faced by renewable energy projects in Kenya, there needs to be a development of clearer and stable policy frameworks and incentives that enable the private sector to invest with confidence in renewables. To plan ahead of the fast changing times, there needs to be increased mapping and research on renewable energy that have previously been unexplored in Kenya such as offshore wind, biomass etc., as well as site diversification of geothermal energy, on-shore wind, solar etc. Kenya already has very strong institutions such as the REREC and the National Climate Fund, which can serve as great drivers into the future of the renewable energy sector if supported and developed adequately.

- Under the functions of the different levels of government, the Constitution mandates the County governments with implementing specific government policies on natural resources and environmental conservation, including energy development. However, as we have seen in this report, this has not been the case. Instead, the national government is seen to both develop the policies and implement the energy projects. Kenya therefore needs to develop of a power production strategy and rural electrification projects that mirror the spirit of devolution as envisioned in the Constitution. This is through more locally developed projects, decentralised, small-scale, rapidly deployed projects rather than mega-scale projects that are likely to have greater environmental and social impact. This would not only be a means to increase sustainable energy production, but will also help reduce capital costs and create local employment.

- Based on the lack of a clear policy guidance for investors and their environmental responsibility towards climate change, the Government of Kenya needs to provide clear investment policy on how the private sector can mitigate on climate change and achieve Kenya's commitments to reaching the Paris Agreement goals of limiting global warming to well below 2°C. The country needs to realign these guidelines with the National Climate Change Action Plan and Climate Change Act, which are aimed at enhancing climate change resilience and low carbon development for the sustainable development of Kenya.

- Considering the recent drastic decrease in demand for energy in Kenya due to COVID-19, new research and policy frameworks should be developed based on new and more accurate projections of energy demands to help map out the needs of energy development and production in Kenya. Furthermore, we call upon the government of Kenya to implement projects based on these projections and follow through with the resulting recommendations of conservative energy plans, rather than shelve them as basic suggestions such as witnessed with the LCPDP.

- Despite Kenya having such elaborate laws that intend on the conservation of the environment and abating climate change, it is worrying to note that the National Environmental Management Authority (NEMA), which is the first line of defense, has been found to have flouted the law it is mandated to uphold by granting licenses for projects with adverse effects on the environment. A case in point is the National Environment Tribunal decision *in Save Lamu and 5 others vs. Nema and Another* where the Tribunal sitting on appeal on a decision by NEMA to grant an EIA license to Amu Power found that the Authority had failed to ensure that a substantive public participation had been carried out by the project proponent. The Tribunal then proceeded to cancel the license but the community members remain displaced to date. As a deterrent, the government and financiers should enforce exclusive liability principles in Law such as polluter pays principle, precautionary principles to regulate and hold corporations fully responsible for any pollution or damage arising from their activities. More efficient, transparent and alternative mechanisms for upholding environmental procedures, and legal support should be provided to allow for affected communities to obtain their right to justice when aggrieved by environmental impacts resulting from energy production projects. Considering how long legal process for the communities have taken when raising objections towards large scale projects such as the Lamu and Kitui projects, it leaves the community vulnerable to economic influence, intimidation and also advocacy fatigue.

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