OPPORTUNITY FOR A REGIONAL DOMESTIC MARKET FOR OIL AND GAS

EASTERN AFRICA REGION

APPENDIX B

AFREC
African Energy Commission

Executive Summary

Eastern Africa presents a diverse and dynamic landscape characterised by moderate performance across all Political, Economic, Social, Technological, Environmental, and Legal dimensions. Additionally, there is strong interplay between the Strengths, Weaknesses, Opportunities, and Threats in the region. This report synthesises the region's standings, revealing a consistent moderate standing that emphasises inherent limitations hindering a strong performance. An analysis on how Eastern Africa's strengths can offset weaknesses and how opportunities can mitigate threats is explored.

The political dimension reflects a striving toward stability marred by governance challenges. Addressing these challenges will aid in the creation of a stronger foundation for long-term growth and enhance investment appeal. Economically, Eastern Africa exhibits potential, marked by a contrast between its diverse economic activities and the lack of economic resilience and robust growth. The region requires substantial structural reforms to unlock and sustain economic growth, suggesting a landscape ripe with opportunity yet constrained by existing infrastructures. Social disparities manifest in unequal access to essential services, indicating a need for policies that promote equity and enhance the quality of life. The moderate average social standing calls for targeted interventions to address these disparities.

Technologically, the region is in a phase of moderate development. While there is an embrace of digital transformation, significant barriers remain, necessitating increased investment in connectivity, innovation capacity, and technological infrastructure. Environmentally, the region shows mixed sustainability practices, with some areas exhibiting low emissions due to underdevelopment. However, insufficient environmental policies and a reliance on traditional biomass highlight the need for enhanced environmental management practices. The legal standing is characterised by variably effective systems. Issues such as weak enforcement and corruption undermine confidence and heighten business risks, pointing to the need for stronger legal frameworks to support economic activities. While Eastern Africa stands at a moderate baseline across all dimensions, targeted reforms and strategic enhancements are imperative. With a commitment to improving governance, economic conditions, social equity, technological innovation, environmental sustainability, and legal reliability, Eastern Africa has the potential to transcend its current limitations and emerge as a stronger and more integrated region.

The interplay between Strengths, Weaknesses, Opportunities, and Threats within Eastern Africa's oil and gas sector suggests a balanced but challenging landscape. Despite persistent challenges, there are considerable assets and emerging strategies that could fortify the region's resilience. The region's main strength is its abundance of reserves and untapped potential, while its greatest weaknesses are related to infrastructure limitations and governance challenges. Aligning opportunities with the region's strengths could unlock significant energy potential and spur economic growth. This requires robust regional cooperation and investment in local capabilities and innovation to transform opportunities into tangible outcomes, while mitigating threats.

Table of Contents

List of Figures

List of Tables

Abbreviations

CPI	Corruption Perception Index
EPI	Environmental Performance Index
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GII	Global Innovation Index
GPI	Global Peace Index
HDI	Human Development Index
ICT	Information and Communication Technology
IDI	ICT Development Index
IP	Intellectual Property
IPR	Intellectual Property Rights
ITU	International Telecommunication Union
PESTEL	Political, Economic, Social, Technological, Environmental and Legal factors
PPP	Public-Private Partnership
R&D	Research and Development
SWOT	Strengths, Weaknesses, Opportunities and Threats

1. Introduction

Eastern Africa is emerging as a significant player in the oil and gas sector, with several countries in the region possessing substantial untapped reserves. As the industry continues to grow, understanding the current economic, political, and social landscape of these countries is essential for stakeholders aiming to maximise the sector's potential. The region faces unique challenges and opportunities that impact the viability and development of the oil and gas market. This report seeks to provide a foundational understanding of these dynamics, offering insight into how the current standing of Eastern African countries, comprising of Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Sudan, Tanzania, and Uganda, affects their capacity to support a sustainable and competitive regional market.

This report provides a Political, Economic, Social, Technological, Environmental, and Legal ("PESTEL") and Strengths, Weaknesses, Opportunities, and Threats ("SWOT") analysis to evaluate the current state of the Eastern Africa region and the influence of the selected countries on the region's oil and gas market. The purpose of this analysis is to examine the Political, Economic, Social, Technological, Environmental, and Legal factors that shape the conditions for the oil and gas sector. Each element of the analysis will offer insights into how these factors impact the region's potential for sector growth, stability, and resilience.

Through this PESTEL framework, the aim is to capture the key drivers and barriers in the external environment of the oil and gas market. Additionally, a SWOT analysis will highlight internal Strengths, Weaknesses, Opportunities, and Threats present within the regional industry. By understanding the current standing of the region and its constituents, this report provides a foundation to explore strategic approaches that could enhance the sector's growth potential and address challenges unique to the Eastern Africa region.

2. Project Limitations

The study was a desktop review based on information available on the public domain and consultant expertise. Publicly available information was taken as the basis of the project for the PESTEL and SWOT analysis from a quantitative point of view, while information provided by the Member States was used for a qualitative analysis to support the data obtained. Significant challenges in obtaining reliable and comparable data for certain indices were faced, particularly pertaining to Environmental and Legal factors. Hypotheses were posed for the cause of missing data based on the circumstances present in the region and consultant expertise.

3. PESTEL Analysis

To effectively navigate the landscape of the Eastern African oil and gas industry, a thorough understanding of external factors is essential. A PESTEL analysis provides a structured framework for examining the Political, Economic, Social, Technological, Environmental, and Legal factors that influence the industry's development. Each of these dimensions plays a crucial role in shaping the operational environment for oil and gas projects.

By identifying potential opportunities and challenges within each of these areas, stakeholders can develop more informed and adaptive strategies that align with the dynamic context of the Eastern African oil and gas industry. The tailored PESTEL analysis will provide invaluable insights for an Eastern African project by pin-pointing potential risks and opportunities, aligning project goals with external factors, and informing decision-making processes. This comprehensive approach will enhance the ability to design strategies that not only capitalise on available resources but also address the complexities inherent in the regional landscape, ultimately allowing for sustainable development in the oil and gas sector. Figure 1 illustrates the specific factors considered in the PESTEL analysis, offering a visual representation of the multifaceted environment affecting the industry.

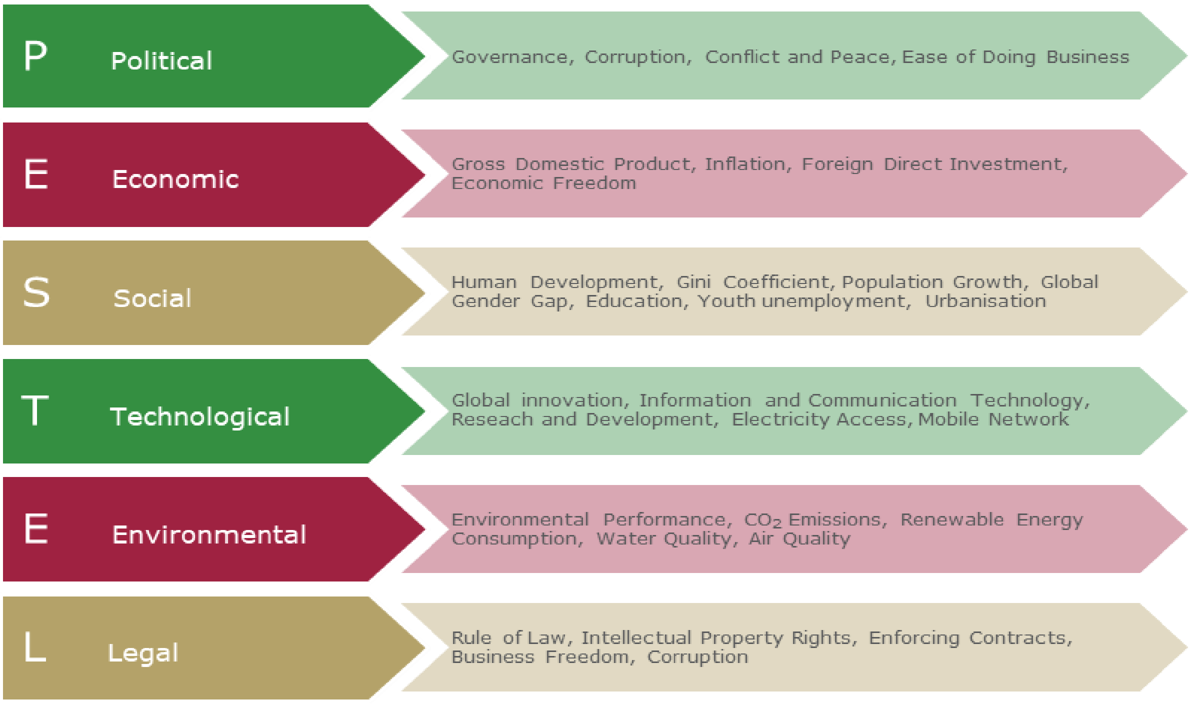

Figure 1: PESTEL Analysis Factors

3.1. PESTEL Methodology

Quantitative data was obtained from reputable and accredited sources such as international institutions that allow for high standards of comparability, transparency, and objectivity. This ensured comparability amongst not only the indices across the PESTEL factors, but the PESTEL factors themselves. These sources are listed in the relevant Appendices. In addition to this, qualitative data was extracted from the information provided by the Member States, where available.

Scores ranging from 1 to 4 were assigned to each individual PESTEL index based on their alignment with market standards. These scores corresponded to the categories used within the indices as follows: “poor” represented by a score of 1, “moderate” represented by a score of 2, “strong” represented by a score of 3, and “very strong” represented by a score of 4. After scoring all the indices, the average score was calculated to represent the overall performance on the PESTEL factors. This overall score was the analysed using percentiles to determine the overall standing as follows: “poor” when scoring in the bottom percentile (<25%), “moderate” when scoring in the second percentile (25% - 50%), “strong” when scoring in the third percentile (50% - 75%), and “very strong” when scoring in the top percentile (>75%). This scoring system allowed for an unbiased weighting of each constituent of the region’s indices to determine the overall standing within the region, allowing for extrapolation of the Eastern Africa’s overall standings. The data was presented and analysed quantitatively to lay the groundwork for a qualitative assessment to ease the interpretation of the data when reading the report.

3.2. Political Factors

The political landscape of Eastern Africa significantly influences the oil and gas industry. Government stability is crucial for investor confidence, as stable administrations attract capital, while political uncertainty can deter investment. Regional cooperation can enhance the potential for a unified oil and gas market, facilitating cross-border investments and infrastructure development.

World Governance Indicators

The Worldwide Governance Indicators (“WGI”), provided by the World Bank, assess governance across six (6) specific dimensions namely, Voice and Accountability, Political Stability and Absence of Violence, Rule of Law, Control of Corruption, Government Effectiveness, and Regulatory Quality.

As shown in Figure 2, three of the countries in the Eastern Africa region reflect positive World Governance Indicators, namely Mauritius, Rwanda, and Seychelles. Majority of the Eastern African countries reflect negative WGIs, with Somalia, South Sudan,

Sudan, and Eritrea facing significant governance challenges. These widespread concerns regarding the quality of governance in the region may impact the ability to attract foreign direct investment ("FDI") and hinder further development of the oil and gas sector.

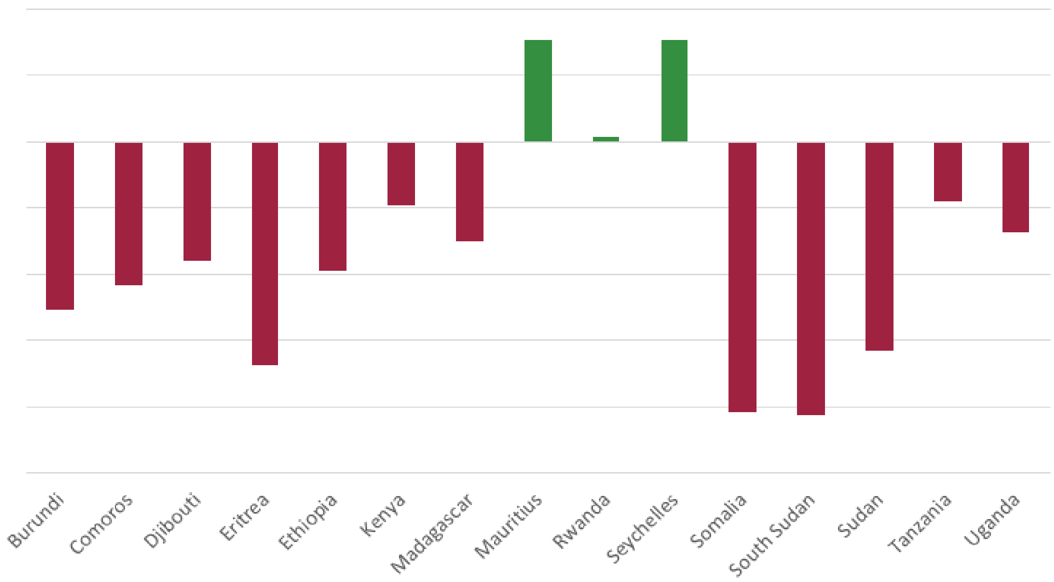

Figure 2: World Governance Indicators

The regional average scores for the WGI influencing factors are presented in Table 1. Based on the regional average scores, it is evident that the Eastern Africa region has poor governance across all six (6) of the WGI influencing factors. The scoring system for the WGI was developed by the World Bank to range from -2.5 to 2.5, where a negative score indicates poor governance, and a positive score indicates good governance. This approach was taken for ease of understanding and approved comparability of the results obtained.

Table 1: Regional WGI Influencing Factors

WGI Influencing Factor	Regional Average Score (score between -2.5 and 2.5)
Voice and Accountability	-0.74
Political Stability and Absence of Violence	-0.87
Rule of Law	-0.81
Control of Corruption	-0.83
Government Effectiveness	-0.85
Regulatory Quality	-0.86
Total Regional Average WGI Score	**-0.83**

The regional average of *Voice and Accountability* is -0.74, reflecting limited public participation in governance, weak protection of civil liberties, and a lack of trust in institutions across the region. This is particularly concerning for the long-term sustainability of the oil and gas sector for which community involvement and transparency is vital.

Political Stability and Absence of Violence reflects a regional average of -0.87, highlighting the region's vulnerability to political unrest, civil conflict, and violence. Countries such as Somalia, Sudan, South Sudan, Ethiopia, and Eritrea have ongoing, highly volatile conflicts on a large-scale which greatly contributes to the prevalence of violence and political instability in the region. Such instability can impede investment, hinder economic growth, and exacerbate poverty, creating a challenging and self-perpetuating cycle.

The *Rule of Law* in the region is poor with an average of -0.81, reflecting weak judicial systems and limited enforcement of the law. This highlights the lack of progress in establishing robust legal frameworks in the region, which could diminish investor confidence in the oil and gas sector.

Control of Corruption in the region is notably weak with a regional average score of -0.83. This indicates pervasive corruption that undermines public trust, misallocates resources, deters investment, weakens governance, and necessitates urgent reforms to enhance institutional integrity, The countries facing the most significant challenges regarding corruption are Somalia, Sudan, South Sudan, and Comoros.

Burundi, Comoros, Eritrea, Somalia, South Sudan, and Sudan contribute majorly to the low *Government Effectiveness* average score of -0.85, underscoring challenges with under resourced public administrations, poor infrastructure maintenance, and effectively implementing policies.

The low regional average of -0.86 for *Regulatory Quality* indicates difficulties with establishing clear and effective regulations, as well as unpredictable regulatory environments. The countries which demonstrate the most severe challenges with the quality of regulatory frameworks are Sudan, South Sudan, Somalia, and Eritrea, where contributions from Burundi, Comoros, and Djibouti are slightly less severe, yet still significantly poor.

Political Corruption Perception Index

The Corruption Perception Index ("CPI") from a political point of view indicates the level of corruption in the public sector as determined by the Transparency International organisation for 2023.

As presented in Figure 3, Burundi, Comoros, Somalia, South Sudan, and Sudan fare poorly with scores at or below 20, indicating public sectors marred by mismanagement, lack of accountability, and weak institutions. Somalia and South Sudan both score extremely low on the CPI, reflecting deeply entrenched corruption which severely hampers economic growth and deters investment. Seychelles leads with a high score, placing it well above others in the region in demonstrating a cleaner public sector.

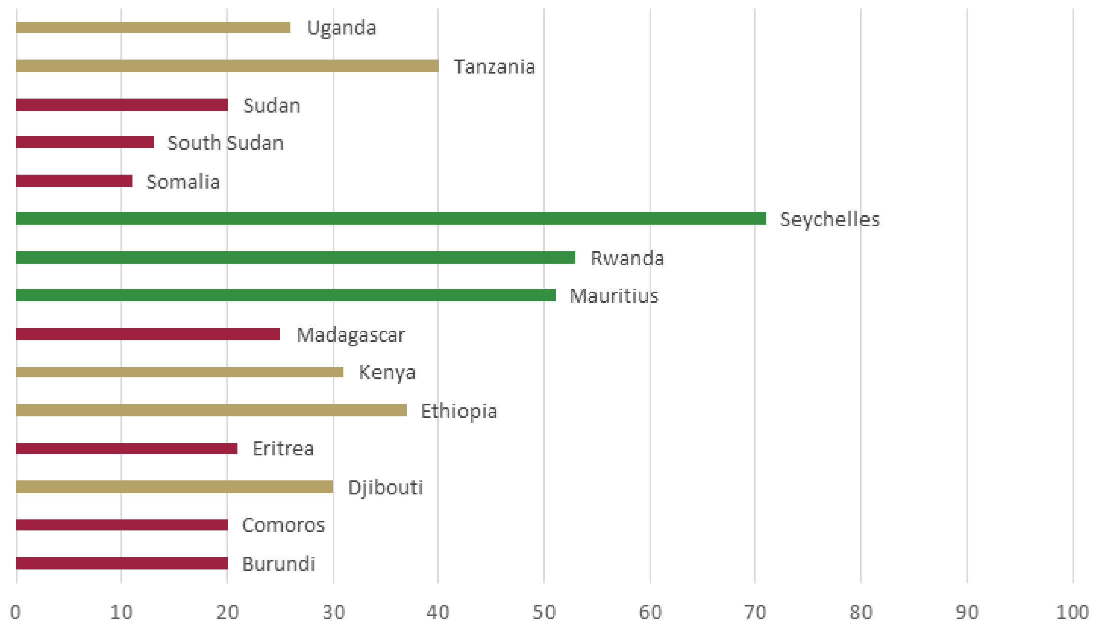

Figure 3: Corruption Perception Index

The regional average CPI score is 31.3, highlighting persistent disparities in government transparency across Eastern Africa. While a few demonstrate strong governance, most countries in the region struggle with substantial public sector corruption, which could undermine regional economic integration and collective development goals. High corruption levels in countries with low CPI scores discourage foreign investment and complicate efforts to secure funding for infrastructure and development projects. The region's overall low scores highlight the need for robust anti-corruption measures and stronger institutional frameworks.

Global Peace Index

The Global Peace Index ("GPI") reveals the level of peace within a country, as published by the Institute for Economics & Peace.

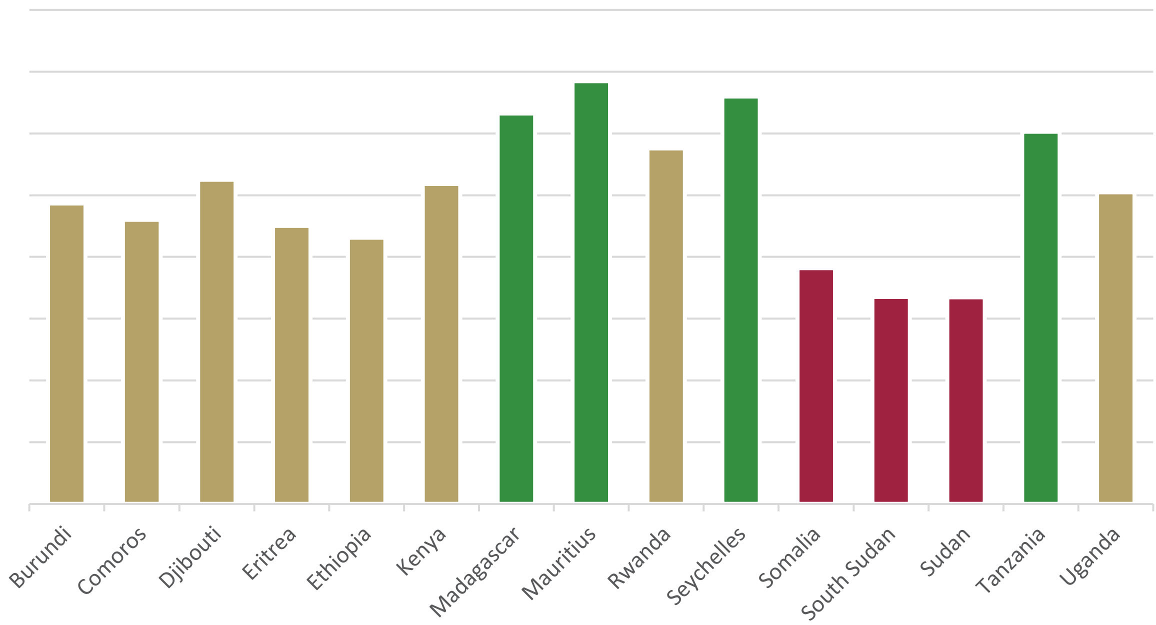

Figure 4: Global Peace Index

The countries in the Eastern Africa region are presented according to their GPI scores in Figure 4. The island countries of Madagascar, Mauritius, and Seychelles have a notable advantage in terms of peace and stability, largely due to geographical isolation, good governance, and lower levels of political tension. Mainland Eastern African countries display a stark divide with Tanzania scoring well on the GPI, while Sudan, South Sudan, and Somalia fare particularly poorly with high levels of conflict in the countries.

The Eastern Africa region highlights a deep divide between more stable, well-governed countries, and those struggling with conflict and governance issues. The region can benefit from targeted governance reforms, regional cooperation, and external aid to promote peace and security in the most conflict-affected areas.

Ease of Doing Business Index

The Ease of Doing Business Index, as provided by the World Bank, evaluates the regulatory environment of a country to determine whether a country has favourable conditions for doing business in 2020.

Eritrea is ranked as having the least conducive environment to business, closely followed by South Sudan. Mauritius and Rwanda demonstrate favourable conditions, followed by Kenya, for business start-up and foreign direct investment, which could drive regional economic integration and development. Somalia was not ranked on the Ease of Doing Business Index, where the attributing factors used to build the Index, itself indicate that reliable data was not able to be obtained at the time of compilation. It is hypothesised that ongoing challenges related to governance challenges in the country contributed to this lack of data, and if the appropriate authorities are identified, then Somalia's standing in the Ease of Doing Business Index may be more accurately represented in the future.

Majority of the countries in the Eastern Africa region are ranked as having poor business environments. This poses substantial challenges in the Eastern Africa region, in terms of further development of the oil and gas industry and the establishment of a regional oil and gas market. The wide disparity between the business environments suggests that a more region-wide effort towards regulatory harmonisation, improved governance, and infrastructure development could benefit the region, promoting more inclusive economic growth and better integration between countries within the region.

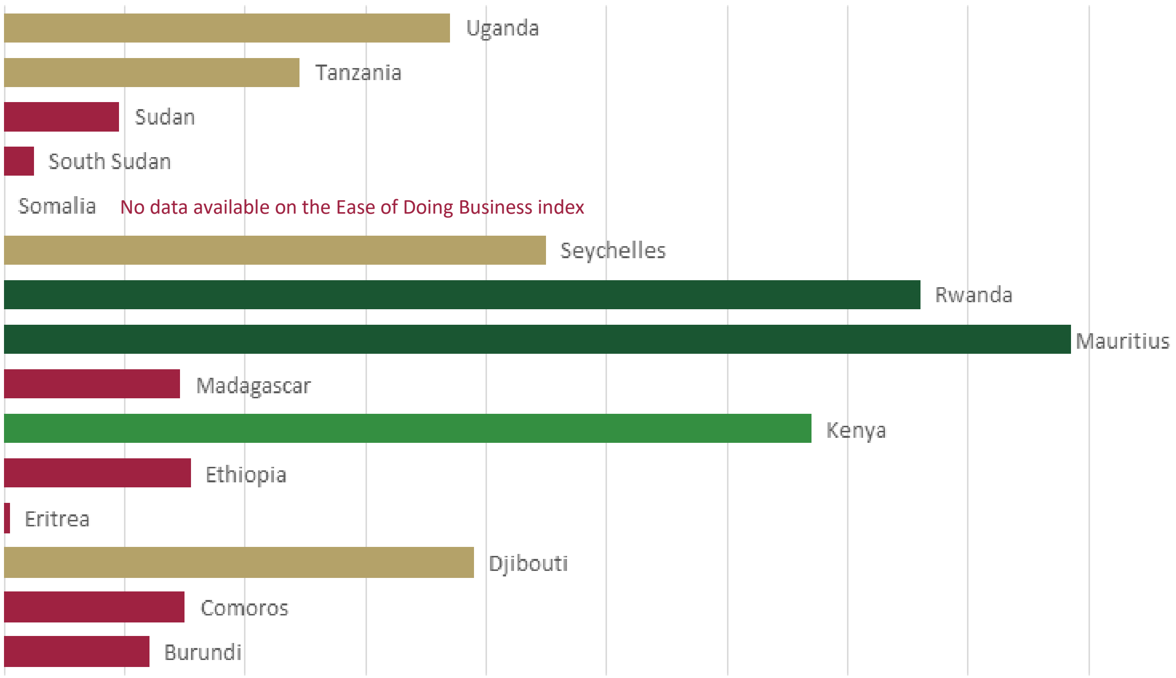

Figure 5: Ease of Doing Business Index

Conclusion

Eastern Africa, as a political entity, presents a complex and diverse governance landscape, characterised by both remarkable strengths and significant weaknesses. The region demonstrates a wide range of political standings, from highly stable and transparent governance systems to those struggling with severe instability and governance issues. This divergence is vividly depicted in the combined political standings map in Figure 6, where the spectrum of political effectiveness, stability, and governance is clearly visible.

At the top of the regional governance structure are countries like Mauritius and Rwanda, followed by Seychelles. These countries showcase robust political stability, effective governance, and a relatively low level of corruption. Their consistent performance across multiple governance metrics contributes to an overall perception of political maturity and reliability, which positively influences their role in regional political affairs.

On the other end of the spectrum, are countries like Burundi, Comoros, Eritrea, South Sudan, Sudan, and Somalia, which face ongoing challenges such as political instability, conflict, and corruption. These countries represent some of the weakest points in the region's political framework, significantly lowering the regional average in terms of political stability, governance effectiveness, and regulatory quality. The chronic conflicts and governance failures in these states highlight the challenges Eastern Africa faces in terms of political cohesion and overall governance.

As a unified region, Eastern Africa demonstrates an average to low political standing when compared globally. The high degree of variability in governance quality between the stronger and weaker political entities creates a fragmented regional political landscape. The region exhibits moderate overall regulatory quality and government effectiveness, as evidenced by recurring instability in several countries and slow progress on governance reforms in others.

However, the region also shows promise. With its stronger political entities, Eastern Africa has the potential to influence positive change across the broader regional framework. The top performers are paving the way for governance reforms and improvements in political stability, and there is potential for regional integration to help address the political fragility seen in the weaker states. While Eastern Africa as a region is marked by political challenges, it also holds the promise of progress, driven by its top-performing countries, with the potential for regional stability and growth if governance issues are addressed cohesively across the board.

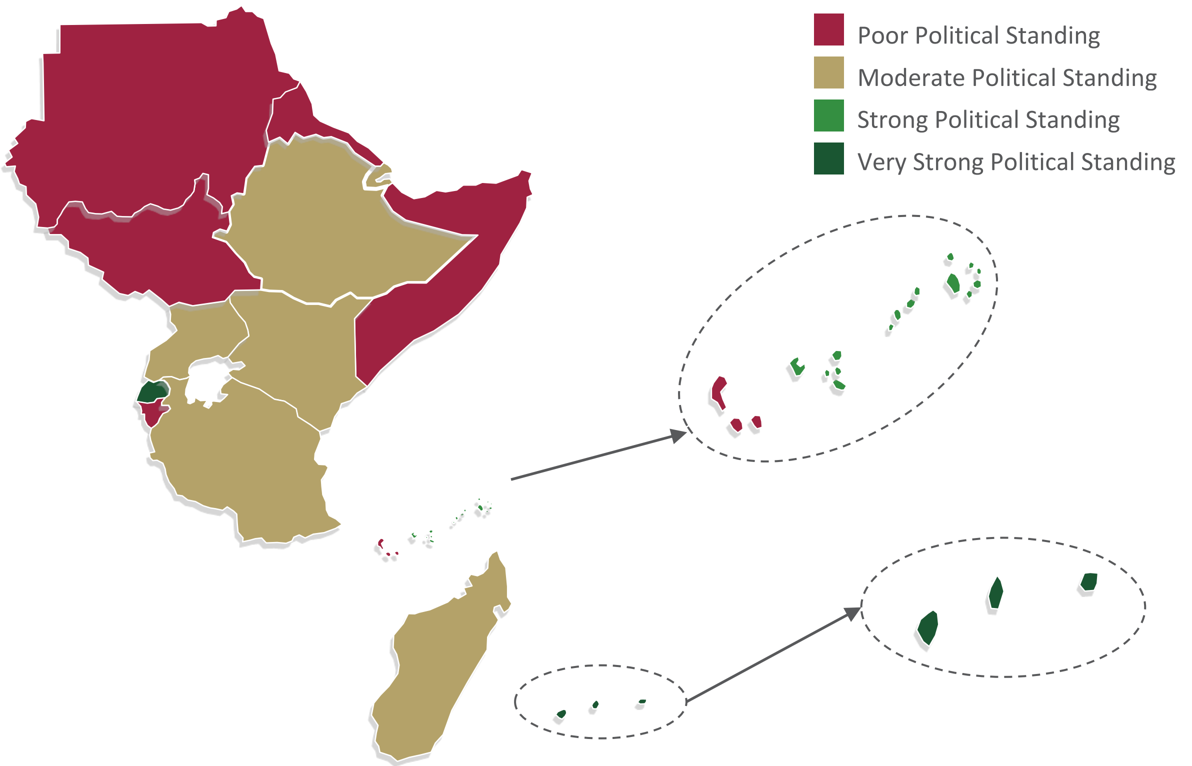

Figure 6: Regional Overview for Political Factors

3.3. Economic Factors

Economic factors are critical in shaping the oil and gas industry in Eastern Africa, influencing investment decisions and project viability. A growing economy often correlates with increased energy needs, making the region attractive for oil and gas investments. Infrastructure development plays a vital role in facilitating the efficient extraction and distribution of resources.

Gross Domestic Product (GDP) and GDP Growth

Gross Domestic Product ("GDP") measures the total value of all goods and services produced within a country over a specific period, reflecting its economic health. A rising GDP indicates economic expansion, suggesting thriving businesses and increased consumer spending, while a declining GDP may signal economic troubles. GDP growth, expressed as a percentage, highlights how quickly an economy is expanding or contracting. Both the GDP and the GDP growth was provided by the World Bank for 2023.

In Figure 7 comparing the total GDP and the GDP per capita, the most striking observation is the disparity between countries with a high GDP but a relatively low GDP per capita, and vice versa. Ethiopia, Kenya, and Sudan demonstrate high total GDP figures, but relatively low GDP per capita, which indicates large populations that dilute individual economic output. Conversely, Seychelles and Mauritius display significantly higher GDP per capita, despite having much smaller total GDP figures, which reflects a smaller population but a higher standard of living on average.

In Figure 8, illustrating GDP versus GDP growth rate, with Sudan being the only country in the region displaying a negative GDP growth rate despite having a relatively high GDP. This reflects economic contractions in the country, likely due to political instability and challenges in governance hampering the economic performance. Overall, the countries in the Eastern Africa region exhibit positive GDP growth, signalling expanding economies.

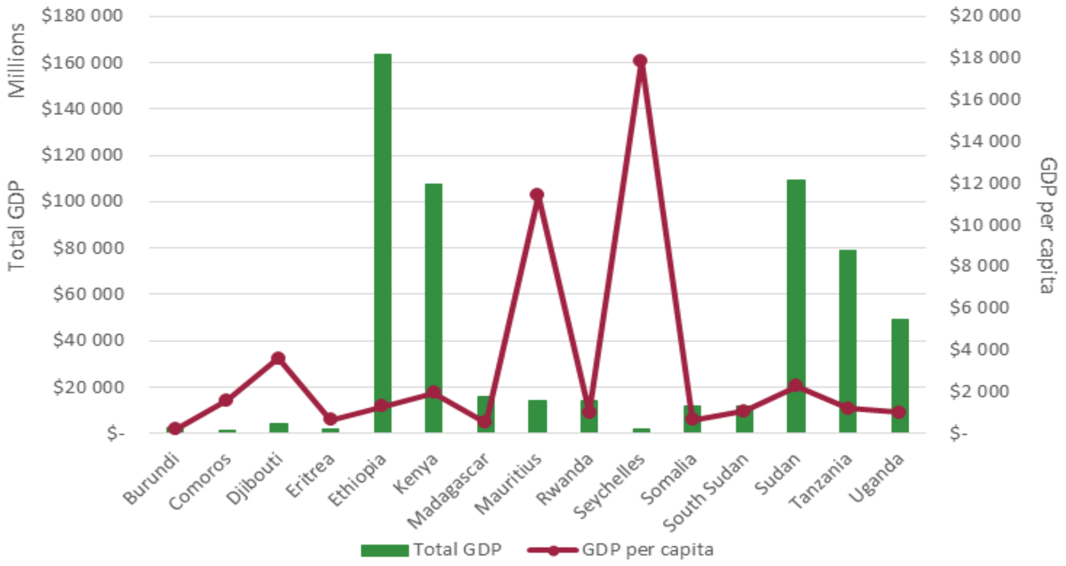

Figure 7: Total GDP and GDP per Capita

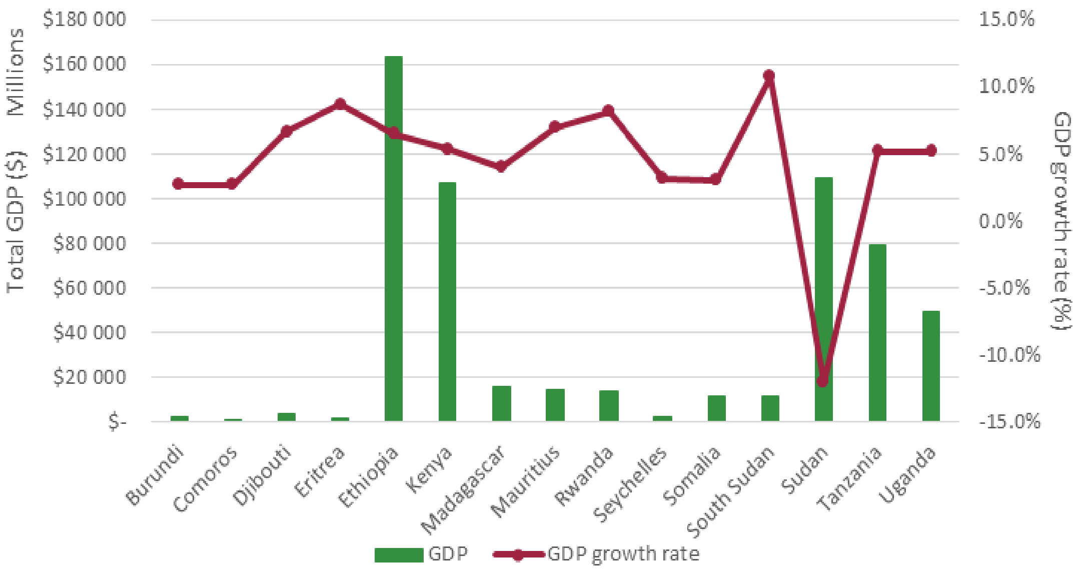

Figure 8: GDP vs GDP Growth Rate

Inflation rate

The inflation rate, provided by the world bank for 2022, measures the percentage increase in prices of goods and services over a specific period, typically a year. A rising inflation rate indicates increasing prices, which can diminish purchasing power and raise living costs. Conversely, low or negative inflation may signal weak demand and potential economic stagnation.

The inflation rates for the countries in the Eastern Africa region are presented in Figure 9, with there being significant disparity in inflation rates across the region. Sudan's overwhelming inflation rate far exceeds the rest of the region. Somalia also exhibits a very high inflation rate, reflecting a deep economic instability and a potential crisis in price control. Seychelles has a negative inflation rate, signifying deflation. Comoros, Djibouti, Eritrea, Kenya, Madagascar, Mauritius, South Sudan, Tanzania, and Uganda fall within a moderate inflation range (2 to 10%), which typically indicates healthy economic growth and controlled inflation.

The vast disparities in inflation across the region highlight that some countries are facing severe inflationary pressures while others maintain economic discipline, managing to control inflation within more sustainable limits. This diverse inflation landscape emphasises the varying economic conditions and challenges faces by countries in the Eastern Africa region.

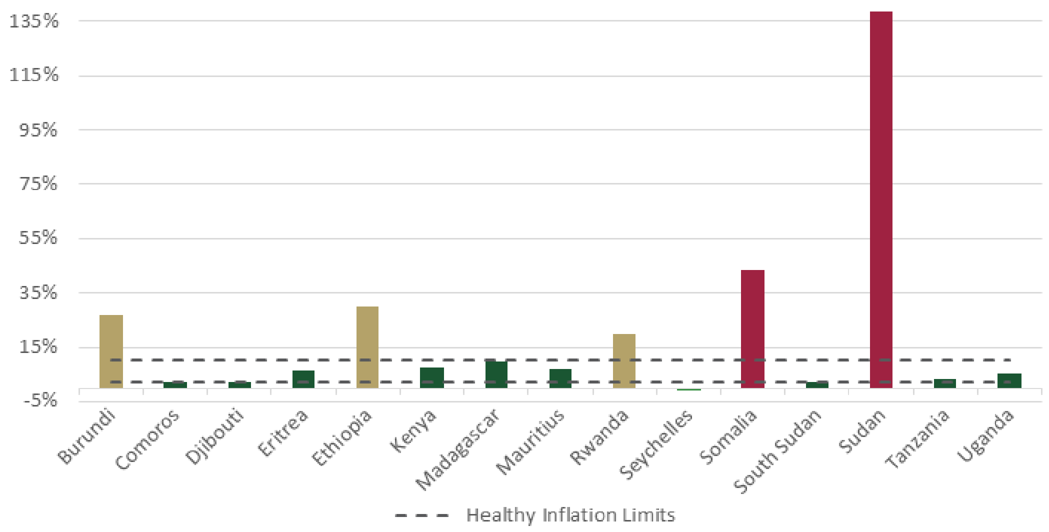

Figure 9: Inflation Rate

Foreign Direct Investment (FDI) Inflows

Foreign Direct Investment ("FDI"), as provided by the World Bank for 2023, inflows refer to investments made by foreign entities in a country's economy, such as establishing businesses or acquiring assets, while the FDI net provides an indication of whether the country is a net recipient or a net provider of foreign direct investment. High FDI inflows indicate investor confidence and can lead to job creation and technology transfer, while low inflows may signal economic instability. High FDI net indicates that the country is n net recipient of foreign investment while a low FDI net indicates that the country is a net provider of foreign investment.

The inflows, outflows, and net FDI of the countries are shown in Figure 10. Burundi, Comoros, Eritrea, and South Sudan show limited FDI activity, indicating stagnation in investment. Alarming levels of outflows without sufficient inflows are shown for Djibouti, Ethiopia, Rwanda, Seychelles, Sudan, Tanzania, and Uganda, indicating domestic capital is leaving the country or that countries are not receiving adequate foreign investment to offset outflows. Mauritius is the only country in the region with a net positive FDI, indicating its strong appeal to foreign investors.

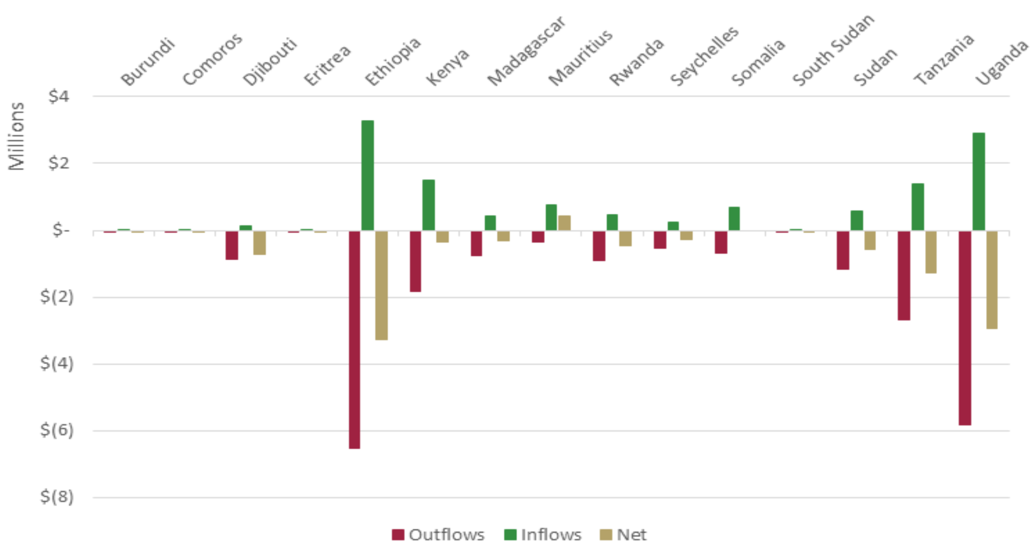

Figure 10: Foreign Direct Investment - Inflows vs Outflows vs Net

In Figure 11, the FDI inflows as a percentage of the country GDP is presented. Seychelles is extremely dependent on foreign investment, and Mauritius, Somalia, and Uganda are highly dependent, posing a threat to the economic stability of the country unless they maintain their attractiveness to investors. Ethiopia, Kenya, and Tanzania attract substantial foreign investments but are less dependent on them, as their economies are more diversified. The contribution of FDI to the GDP for Comoros and South Sudan are very low, reducing the feasibility of major infrastructure development. The region holds significant potential to attract the level of foreign direct investment needed to support the expansion of the oil and gas sector.

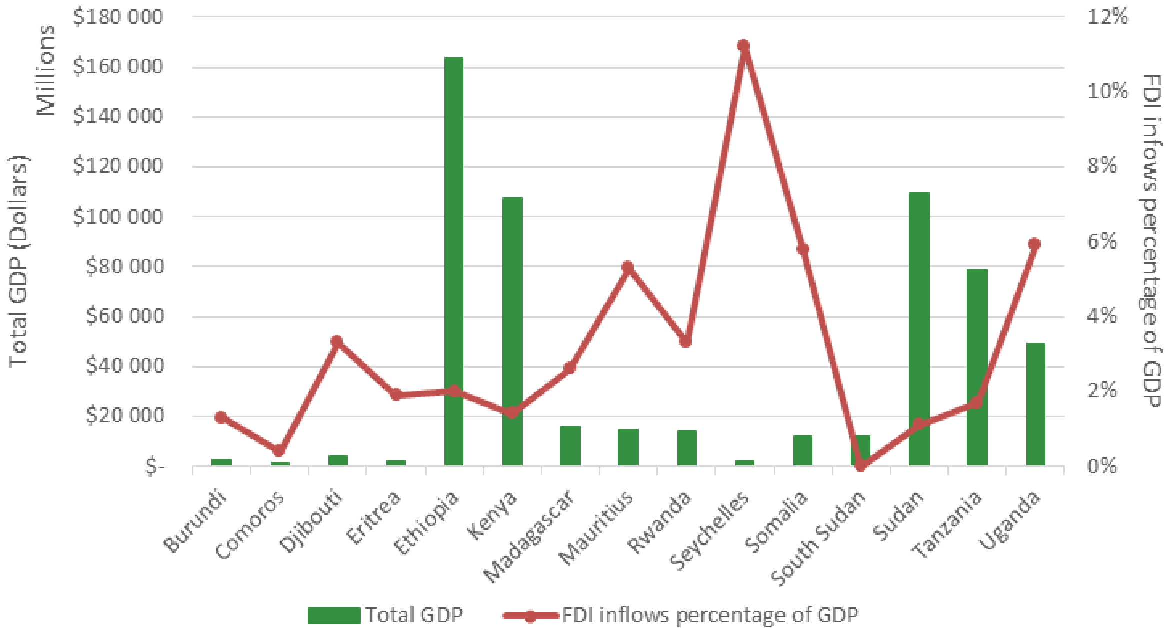

Figure 11: GDP and FDI Inflows as a Percentage of the GDP

Economic Freedom Index

The Economic Freedom Index, as published by The Heritage Foundation for 2024, measures the level of economic freedom in a country. A high score indicates a favourable environment for entrepreneurship and investment, often linked to economic growth, while a low score suggests excessive government intervention.

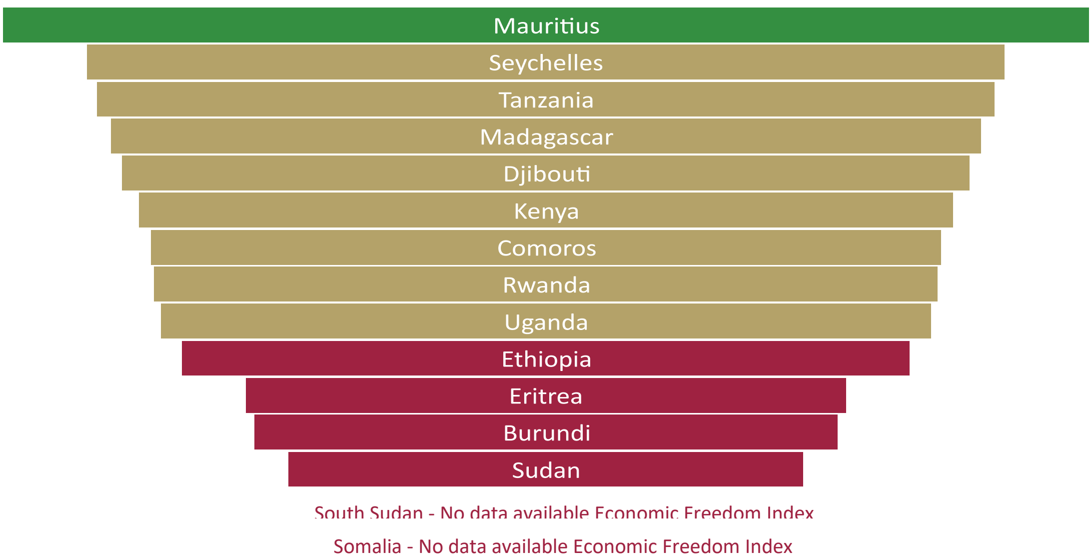

Figure 12: Economic Freedom Index

Figure 12 presents the Economic Freedom Index for the countries in the Eastern Africa Region. The region is dominated by moderate freedom, with Mauritius being the only country ranked as mostly free. Ethiopia, Eritrea, Burundi, and Sudan are economically unfree, facing substantial barriers to growth. No data was available for the economic freedom of Somalia and South Sudan in the Heritage Foundation Report, indicating a deep-seated instability in economic opacity in these countries. While internal data from Somalia indicates improvements since the post-government collapse in 1991, the comparative analysis provide by the Heritage Foundation indicates difficulties in obtaining the relevant statistics necessary for a complete evaluation. As Somalia continues improving its regulatory frameworks in coming years, it can be expected that this standing will also improve concurrently.

As a region, Eastern Africa is characterised by uneven economic freedom, with a clear divide between countries moving towards market openness and those that remain tightly regulated or controlled. Countries with moderate freedom can capitalise on reforms to increase competitiveness, while those that economically unfree will require more fundamental changes to unlock their economic potential.

Conclusion

The Eastern Africa region, when viewed holistically, reveals a complex economic landscape marked by substantial disparities. The region presents both significant challenges and opportunities, with certain areas showing economic strength and resilience, while others struggle with structural issues that inhibit growth.

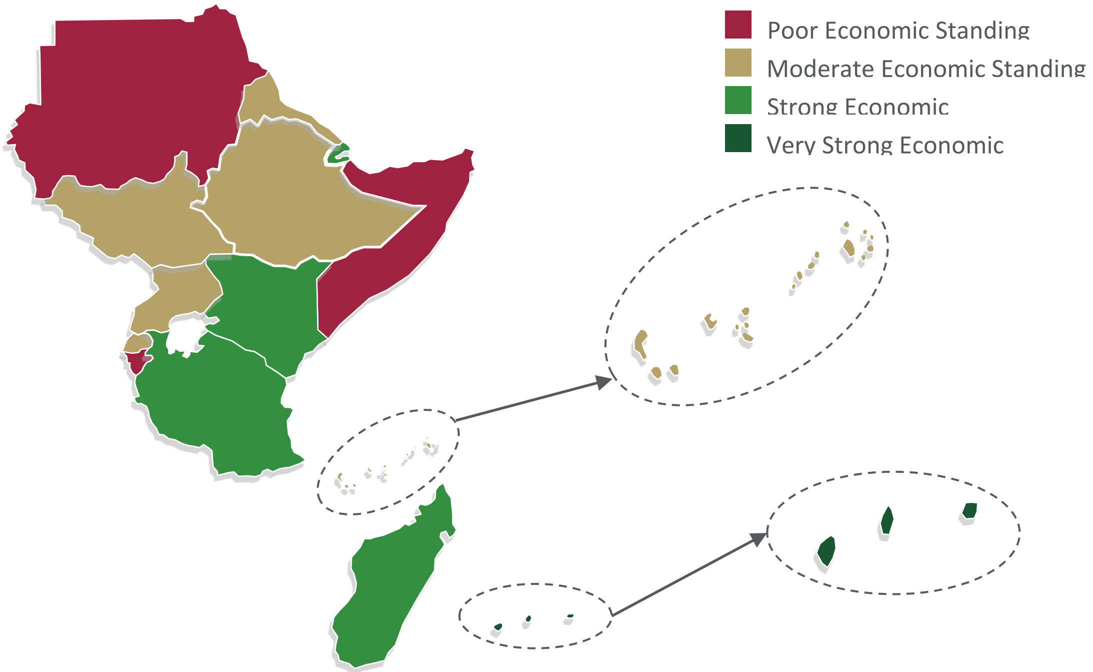

Figure 13: Regional Overview for Economic Factors

At the upper end of the economic spectrum, as shown in Figure 13, Mauritius emerges as the most stable and developed economy, followed by Djibouti, Kenya, Madagascar, and Tanzania. These countries can be characterised by relatively diverse economic activities, which provide a degree of resilience against economic shocks. These countries serve as pillars of economic stability in the region, offering models for growth and governance.

In contrast, the bottom end of the region, represented by Burundi, Somalia, and Sudan, grapples with ongoing economic difficulties. These economies face significant barriers such as underdevelopment, high inflation, and political instability, which impede growth. The region is burdened by varying degrees of poverty, reliance on narrow economic bases, and limited industrialisation, making sustained economic development difficult without targeted reforms.

Despite these disparities, the region has considerable potential for economic growth, particularly through regional integration, investments in infrastructure, and improvements in governance. Overcoming the existing challenges will require a concerted effort to address the political and economic barriers that currently divide the region's countries.

Eastern Africa's economic outlook reflects both resilience and fragility, underscoring the need for collective action to unlock the region's full potential. The contrast between stronger and weaker economies highlights the importance of targeted economic policies, investment, and regional collaboration to bridge the existing gaps and encourage long-term development.

3.4. Social Factors

The current social state in Eastern Africa plays a vital role in shaping the oil and gas industry. The region's demographic trends, including population growth and urbanisation, create shifting demands for energy and resources. Social stability and community cohesion are essential for maintaining an environment conducive to development, as areas grappling with unrest or inequality may face significant challenges. Understanding these social dynamics provides a clearer picture of the context in which the oil and gas industry operates, influencing its potential for growth and sustainability.

Human Development Index (HDI)

The Human Development Index ("HDI"), published by the United Countries Development Programme for 2023, measures a country's average achievements in three basic aspects of human development: health (life expectancy at birth), education (mean years of schooling and expected years of schooling), and standard of living (gross national income per capita). In the context of the oil and gas industry, higher HDI scores often signal a more educated and healthier workforce, as well as improved social stability, which can positively impact market conditions.

The HDI chart in Figure 14 reveals wide disparity in human development levels across the region. As a region, Eastern Africa presents a mixed landscape in human development, with only a few countries achieving high scores that align with a potentially skilled, stable workforce, namely Mauritius and Seychelles. Low performing countries demonstrate human development factors that lag significantly.

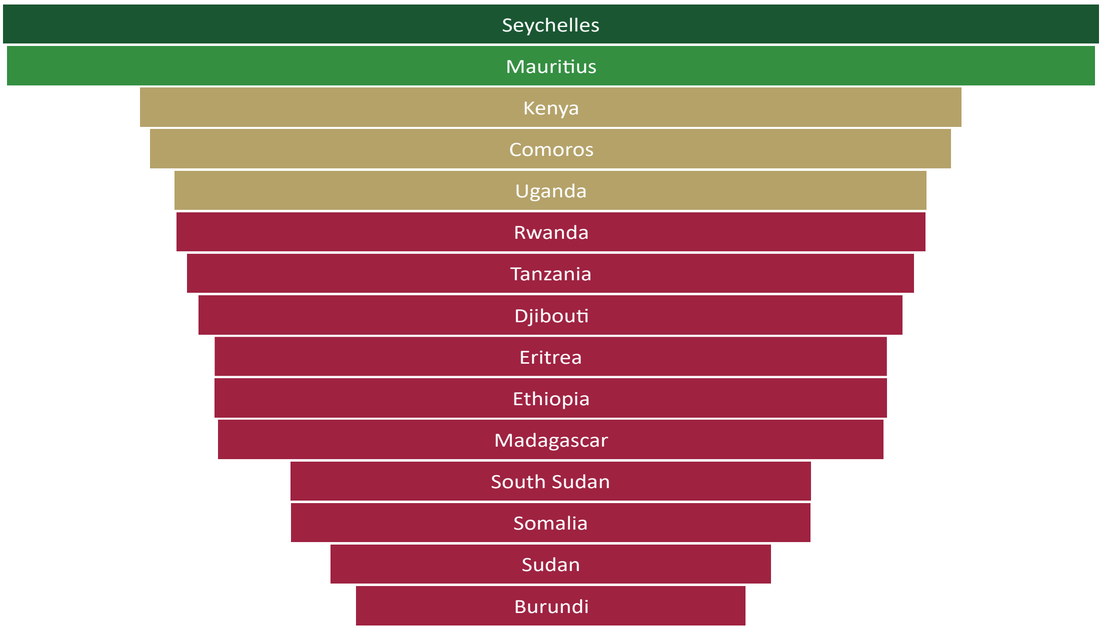

Figure 14: Human Development Index

The region presents a diverse social landscape with areas of relative advancements alongside significant developmental challenges. These disparities highlight internal regional challenges in creating an equitable, skilled, and healthy workforce essential for the oil and gas industry, which requires stability and technical proficiency.

Given the varying HDI across the region, Eastern Africa would be moderately positioned in terms of readiness for industry. The highest scoring countries could provide hubs of relatively educated and healthy populations with the potential to empower the lower-performing countries and assist in supporting industry needs. The region would face significant challenges in creating a universally supportive environment for the complex oil and gas industry which requires developed skills, infrastructure, and socio-economic stability for expansion.

Gini Coefficient

The Gini Coefficient, as provided by the World Bank for 2024, is a measure of income inequality within a country, where 0 represents perfect equality and 100 signifies maximum inequality. A high Gini Coefficient indicates significant income disparity, which can lead to social tensions and political instability, factors that may influence the investment climate in the oil and gas sector. Conversely, a lower Gini Coefficient suggests a more equitable distribution of wealth, contributing to a more stable social environment.

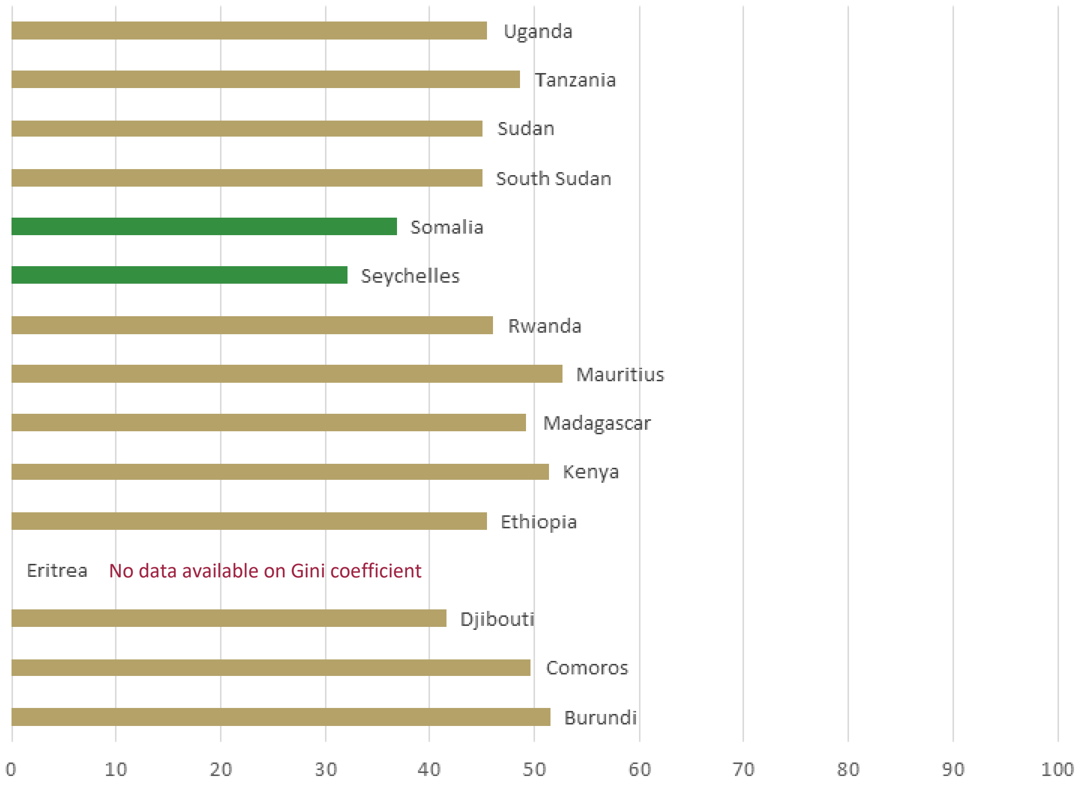

Figure 15: Gini Coefficient Index

The Gini Coefficient, As provided by the World Bank for 2023, Index shown in Figure 15 for the Eastern Africa region reveals varying levels of income inequality, with the majority of countries displaying moderate inequality, marked by scores between 40 and 59. Seychelles and Somalia are outliers in this index, exhibiting lower Gini scores, indicating a more equitable income distribution. Most countries in the region fall in the moderate inequality bracket, suggesting an uneven distribution of wealth but not at levels that would typically provoke severe social unrest. Countries with scores closer to the high inequality threshold, such as Mauritius, Kenya, and Burundi, face greater risks of social tensions. No data is available for the Gini Coefficient of Eritrea where the government rarely releases data on income distribution and poverty levels, due to high levels of governmental control and lack of transparency.

Overall, while income inequality remains a concern in Eastern Africa, it is possible to cultivate an environment that, while not ideal, is relatively stable for economic activities in sectors sensitive to social stability.

Population Growth Rate

The Population Growth Rate, as provided by the World Bank for 2023, indicates how quickly a country's population is expanding, based on births, deaths, and migration patterns. This rate is a key factor in determining the future availability of labour and potential market size for goods and services. High population growth may suggest a young, growing workforce, which can be beneficial for labour-intensive industries like oil and gas, though it may also strain resources and social services if growth outpaces economic development. On the other hand, low or negative population growth may indicate an aging population and future labour shortages.

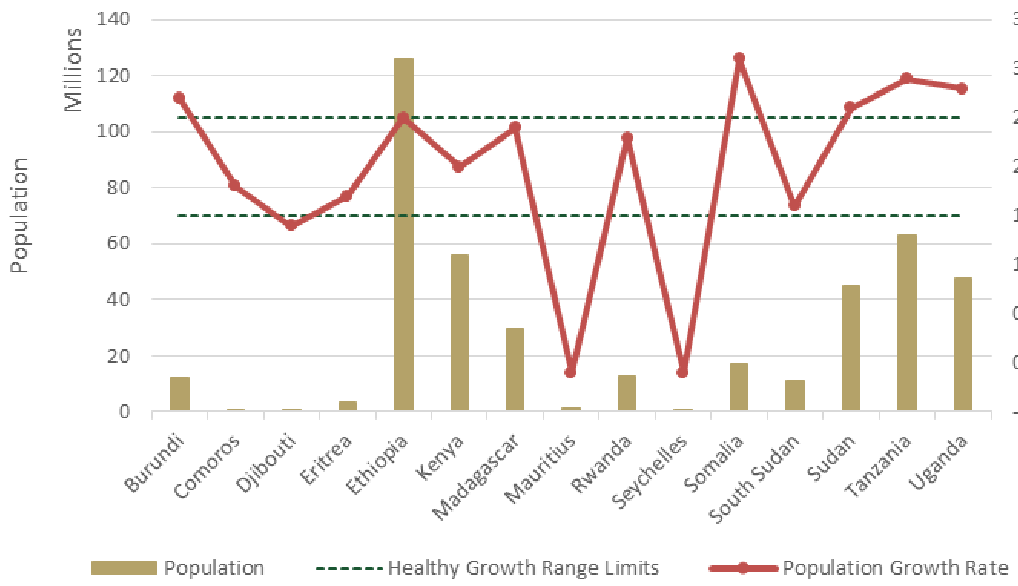

Figure 16: Population and Population Growth Rate

The population growth rate in countries in Eastern Africa, as depicted in Figure 16, shows significant variation across countries. The graph reveals that countries like Burundi, Somalia, Sudan, Tanzania, and Uganda, have population growth rates exceeding the healthy range, indicating rapid population expansion. This high growth can be advantageous for labour-intensive industries, by supplying a young and expanding workforce.

Countries that display moderate growth rates, within the healthy growth rate range, suggest a more balanced and sustainable population increase. These rates may support steady workforce availability without excessive strain on resources. The growth rate of Seychelles and Mauritius is negative, indicating an ageing population, which introduces a potential risk of future labour shortages.

Ethiopia, Kenya, Tanzania, and Uganda emerge as the most populous countries in the region, providing a large domestic market for good and services. Countries with smaller populations may face limitations in terms of labour market size but might benefit from more manageable social service demands. For the oil and gas industry, the diversity in population growth rates underlines the importance of tailoring strategies to local demographics and assessing potential resource and labour impacts in different countries.

Population growth and economic development must be considered together, as rapid population growth without proportional economic progress can strain social services, infrastructure, and resources, creating challenges for stability and resource management. The correlation between population growth, GDP growth per capita, and HDI reveal significant disparities amongst the Eastern African countries. Burundi, Madagascar, Somalia, South Sudan, Sudan, and Uganda face difficulties in achieving proportional economic development, resulting in pressure on public services and infrastructure. Comoros, Ethiopia, and Kenya demonstrate moderate economic development and can sustain their growing populations with continued investment in infrastructure and social development. Meanwhile, Djibouti, Eritrea, Mauritius, Rwanda, Seychelles, and Tanzania exhibit a strong balance between population growth and economic development, positioning them to effectively sustain and leverage their growing population for further progress.

Education Index

The Education Index, as provided by the World Population Review for 2024, is a key metric that assesses the level of educational attainment in a country, combining mean years of schooling for adults and expected years of schooling for children. A higher Education Index score indicates a more educated population, which is crucial for industries requiring skilled labour, including oil and gas. Countries with a higher index typically have better prospects for innovation, technology adoption, and workforce efficiency, making them more attractive for long-term investments.

The education index for the countries in the Eastern Africa region are presented in Figure 17. Education levels vary widely, impacting each country's readiness to develop their oil and gas industries, which relies heavily on a skilled and knowledgeable workforce for technology adoption and innovation, operation efficiency, and policy development. Countries such as Seychelles and Mauritius benefit from a well-educated workforce, positioning them favourably for complex economic sectors. Somalia has the lowest Education Index score in the region, where the limited education infrastructure is marred by political instability and sources of conflict. Countries with low educational attainment present conditions that hinder the development of the oil and gas industry which relies on a stable, educated labour force.

Eastern Africa presents a mixed picture in terms of education, with a few countries demonstrating high readiness for skilled industries, while others lag significantly. Improving education levels across the region would not only enhance economic resilience but also create a more conducive environment for industries requiring specialised knowledge, such as oil and gas.

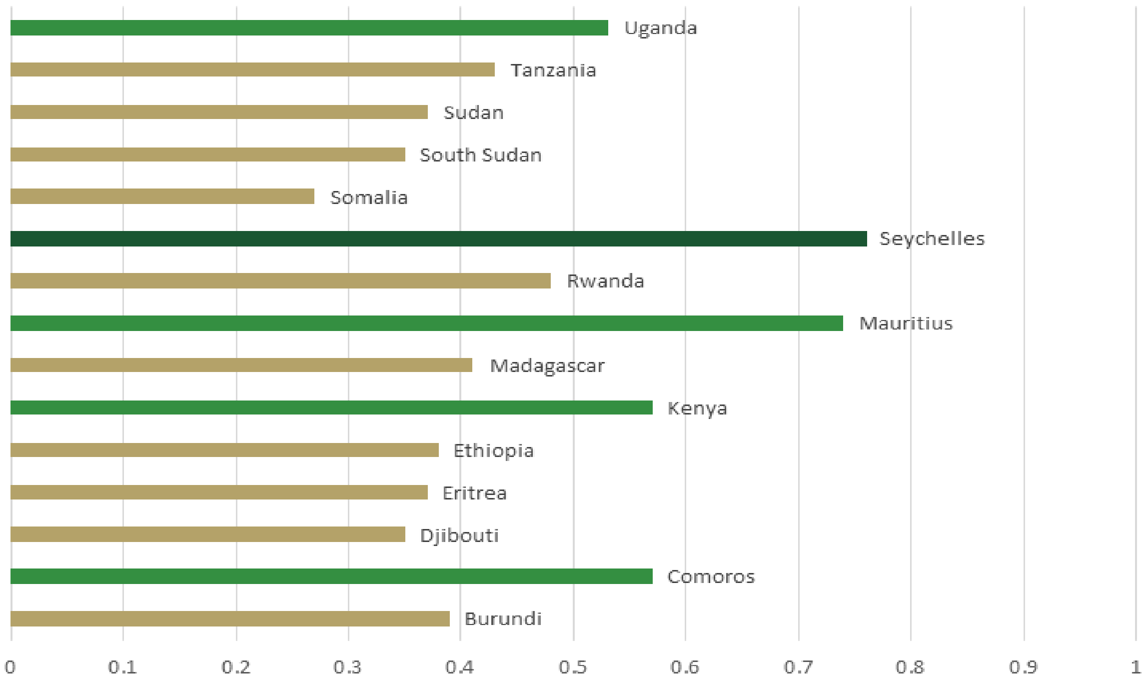

Figure 17: Education Index

Urbanisation Rate

The Urbanisation Rate refers to the portion of a country's population that lives in urban areas. A higher urbanisation rate often signals the availability of infrastructure and services, which are critical for the development of industries like oil and gas that require reliable transport, communication, and workforce access. Urbanisation can also lead to increased energy demand and economic growth, providing further opportunities for oil and gas sector development. Conversely, low urbanisation rates may indicate underdeveloped infrastructure and limited market potential.

Figure 18 presents the urbanisation rates of the countries in the Eastern Africa region. The urbanisation rate provides insight into the infrastructure and economic potential of countries in the region. Countries like Djibouti and Seychelles, which have the highest urbanisation rates in the region, may benefit from more developed infrastructure, including transportation and energy services, which supports the oil and gas industry by enabling efficient logistics and access to a skilled labour pool. This urban concentration also reflects a more readily accessible consumer base, aligning with higher service demands in urban environments. In contrast, countries with lower urbanisation rates, such as Burundi, Rwanda, South Sudan, and Ethiopia face challenges associated with dispersed rural populations and limited infrastructure.

Majority of the countries in the region fall within the “mostly rural” or “mostly urban” categories, reflecting a transition where populations are increasingly moving to cities but with significant portions still in rural areas. This trend indicates gradual urbanisation, which, while beneficial for long-term industrial development, suggests that substantial infrastructure investments are still needed to fully support demands of energy and industrial sectors.

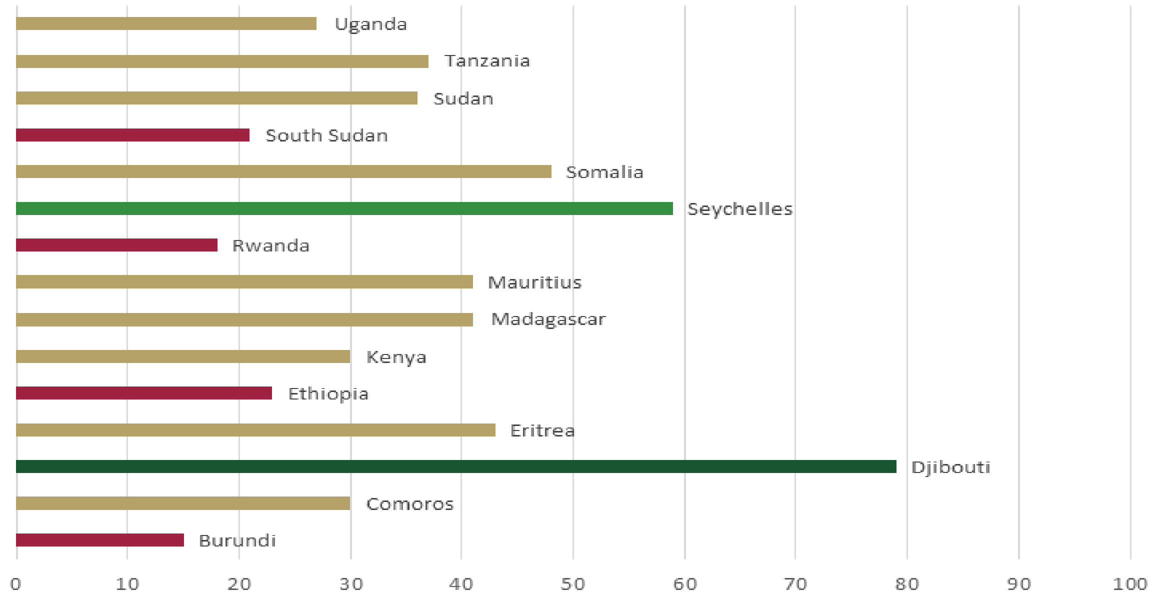

Figure 18: Urbanisation Rate

Unemployment

The unemployment rate, as provided by the World Bank for 2023 measures the percentage of the labour force actively seeking work but unable to find jobs. A rising rate indicates economic distress and reduced consumer spending, while a low rate suggests a healthy economy with ample job opportunities.

The Youth Unemployment Rate measures the percentage of the labour force aged 15 to 24 who are actively seeking employment but are unable to find work. This age range was selected by the World Bank as it aligns with international standards set by organisations such as the International Labour Organisation. High levels of youth unemployment can contribute to social unrest, emigration, and economic inefficiencies, which are concerns for industries relying on a stable and productive workforce, such as oil and gas. On the other hand, low youth unemployment rates may reflect a robust economy and workforce, which can support industry growth and reduce social risks.

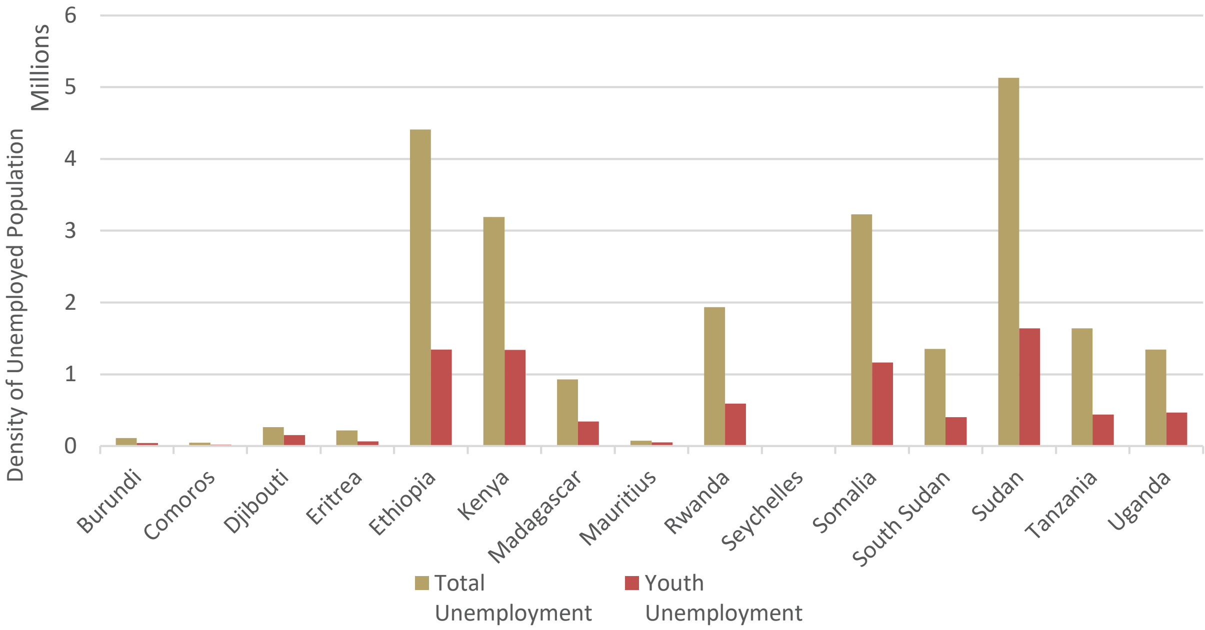

Figure 19: Total and Youth Unemployment

Total unemployment and youth unemployment are presented in Figure *19*. There are significant challenges across many Eastern Africa countries, with high rates of total and youth unemployment. Countries such as Ethiopia, Kenya, Somalia, and Sudan exhibit particularly high levels of unemployment with Sudan standing out as the highest in the region. These high rates suggest persistent structural issues in the job market, which can hinder economic growth and stability. Youth unemployment reflects limited opportunities for young adults. High unemployment rates, particularly among the youth, imply a surplus of labour, which could be advantageous for workforce availability, but also suggests underlying economic issues that may impact social stability. The disparities in employment rates across the region reflect a mix of challenges and opportunities, as countries with high unemployment may benefit from targeted industry growth, while those with lower rates demonstrate greater economic resilience.

Conclusion

The social landscape of the Eastern Africa region, as presented in Figure 20, has a moderately stable social structure with pockets of both robust and underdeveloped social indicators. Seychelles emerged as a top performer considering the social indices, with a well-developed education system, relatively high urbanisation, and low unemployment. Comoros emerged as a country with a strong social standing with a moderate but improving education index and urbanisation rate. Djibouti also has strong social standing, notable for its high urbanisation rate which facilitates efficient infrastructure access and service provision essential for industries which depend on reliable logistics and workforce access.

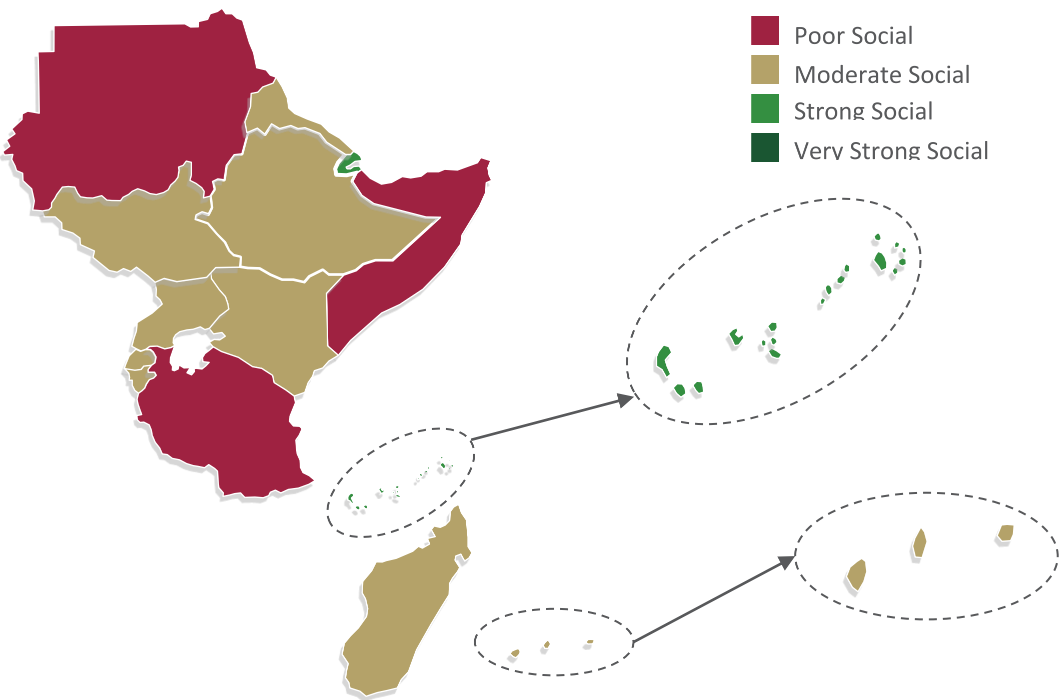

Figure 20: Regional Overview for Social Factors

In contrast, Somalia, Sudan, and Tanzania face significant social challenges, resulting in their poor social standing. Somalia experiences pervasive issues with education and urbanisation, coupled with one of the higher unemployment rates in the region. Sudan faces high levels of unemployment and moderate income inequality, which limit social cohesion and economic stability. Low educational attainment and limited infrastructure further hinder the nation's ability to provide a reliable labour force. Tanzania ranks low due to limitations in education, a moderate level of urbanisation, coupled with equality issues and a very high population growth rate, furthering strain on resources.

Eastern Africa presents a highly varied social landscape, demonstrating moderate social development potential. This uneven social dynamic amplifies a need targeted interventions to elevate lower performing countries. The higher-ranked countries have the potential to act as regional leaders, enriching talent and supporting stability that could benefit neighbouring countries. The mixed social profile has direct implications for industries requiring a skilled and stable workforce, as required by the oil and gas industry. Addressing inequalities in education, infrastructure, and economic opportunities is essential in ensuring a robust and functional workforce. By investing in skill development and social cohesion, governments and industry leaders can align the social profile with the technical and operational needs of the oil and gas industry, driving sustainable growth and development.

Eastern Africa's social profile as a collective region suggests both resilience and vulnerability. While there is a foundation of human capital that can be harnessed for industrial growth, achieving sustainable development will require comprehensive social investments, particularly in education, urban infrastructure, and employment generation. Bridging these gaps could strengthen Eastern Africa's social stability, making it a more attractive environment for growth-oriented and socially responsible investments.

3.5. Technological Factors

Technological factors are crucial in shaping the oil and gas industry in Eastern Africa, impacting everything from exploration and extraction to refining and distribution. Advances in technology can enhance operational efficiency, reduce costs, and improve safety measures, making it essential for the region to adopt innovative practices. Understanding the technological landscape helps clarify the opportunities for modernisation and growth within the industry.

Global innovation index (GII)

The Global Innovation Index ("GII"), published by the World Intellectual Property Organisation ("WIPO"), assesses the innovation capabilities of countries across various sectors, including technology, research, and business sophistication. The GII ranks countries based on their ability to generate innovative outputs. High rankings suggest a conducive environment for technological advancements, which can significantly impact the oil and gas sector's efficiency, exploration capabilities, and environmental impact mitigation. A strong innovation ecosystem is crucial for adapting to new challenges in the industry, including sustainability and energy transitions.

The GIIs for the countries in the Eastern Africa region are presented in Figure 21.

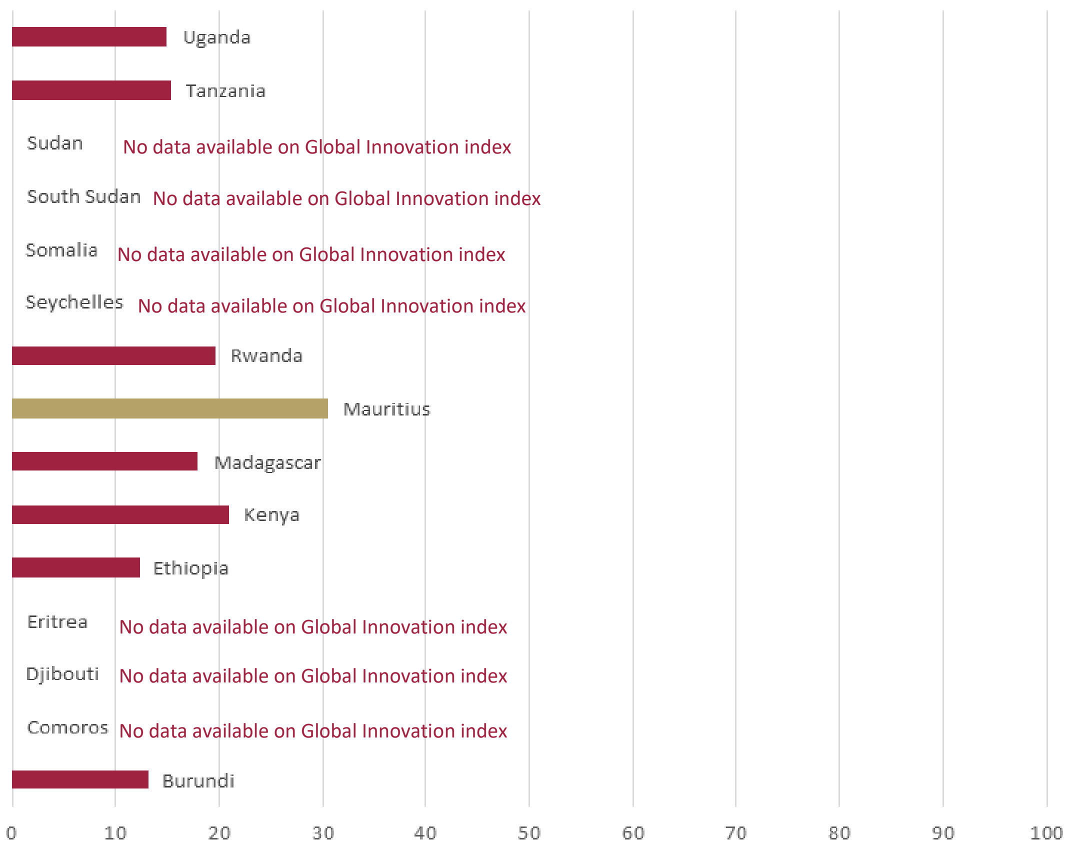

Figure 21: Global Innovation Index

The innovation landscape in Eastern Africa faces substantial challenges, with most countries in the region either ranking low or not being ranked at all in the GII. Given the limited data and relatively low scores on the GII across Eastern Africa, the region's innovation landscape does not broadly support a thriving technological environment. Several countries in the region have no available data, which indicates gaps in data collection and perhaps challenges in creating an environment conducive to innovation for majority of these countries.

Out of the countries for which there is no data available, the following hypotheses are posed:

- Seychelles is a primarily tourism driven economy with limited emphasis on high-tech industries, research institutions or innovation-driven sectors, and may lack the structured data or broad-based innovation activities required for a GII ranking.

- Somalia, South Sudan, and Sudan face considerable challenges in building innovation ecosystems due to ongoing political instability, conflict, and economic constraints. Innovation infrastructure remains underdeveloped, hindering their capacities for technological advancements and knowledge-based economic growth.

- Djibouti has a smaller economy which is heavily service-oriented and may lack investment in innovation industries such as those considered by the GII. However, Djibouti has made strides in technological innovation linked to its strategic trade and logistics position, with infrastructure development like port expansion.

- Comoros and Eritrea experience limited innovation primarily due to economic and infrastructural constraints, and their primary economic focus is on basic industries rather than advanced technological, research-based industries.

Out of the countries ranked on the GII, all countries ranked poorly, apart from Mauritius, which only ranked moderately. The region's economies are largely based on agriculture and primary services with limited diversification into knowledge-intensive industries, further limiting demand for innovation. Eastern Africa's low integration in global innovation networks means that knowledge transfers and international partnerships are scarce, preventing local industries from benefiting from global advances. The innovation potential remains underdeveloped, significantly limiting the region's ability to diversify economically and drive sustained growth in the oil and gas industry.

ICT Development Index

The ICT Development Index ("IDI"), provided by the International Telecommunication Union ("ITU"), measures the level of Information and Communication Technology ("ICT") infrastructure, access, and usage across countries. It highlights a country's digital readiness and capacity to integrate technology into various sectors, including oil and gas. Higher scores on the ICT Index indicate better internet access, mobile network coverage, and technological infrastructure, all of which are essential for improving operational efficiency, communication, and data management in the oil and gas industry. By design IDI has two distinct pillars: universal connectivity and meaningful connectivity. The universal connectivity pillar contains indicators on people, households, communities and businesses, covering the main places where people can connect, namely at home, in schools and community centres, and at work. The meaningful connectivity pillar contains indicators on the five enablers of connectivity: infrastructure, affordability, device, skills, and safety and security.

The IDI scores for the countries in the region are presented in Figure 22. Seychelles and Mauritius stand out as the top performers, indicating a high level of readiness for digital integration in various sectors, including the oil and gas industry. Their high scores in universal and meaningful connectivity showcase strong infrastructure, widespread internet access, affordable connectivity, and skill development, all of which are crucial for industries which depend on technology. The low scores across multiple countries indicate challenges such as limited access to high-speed internet, lack of affordable connectivity, and underdeveloped technological infrastructure. This disparity impacts the capacity of the oil and gas industry in these areas to leverage digital tools for effective operations, data management, and communication. The lack of data for the IDI for Eritrea, South Sudan, and Sudan may highlight broader digital divide in the countries, and challenges in data collection and reporting.

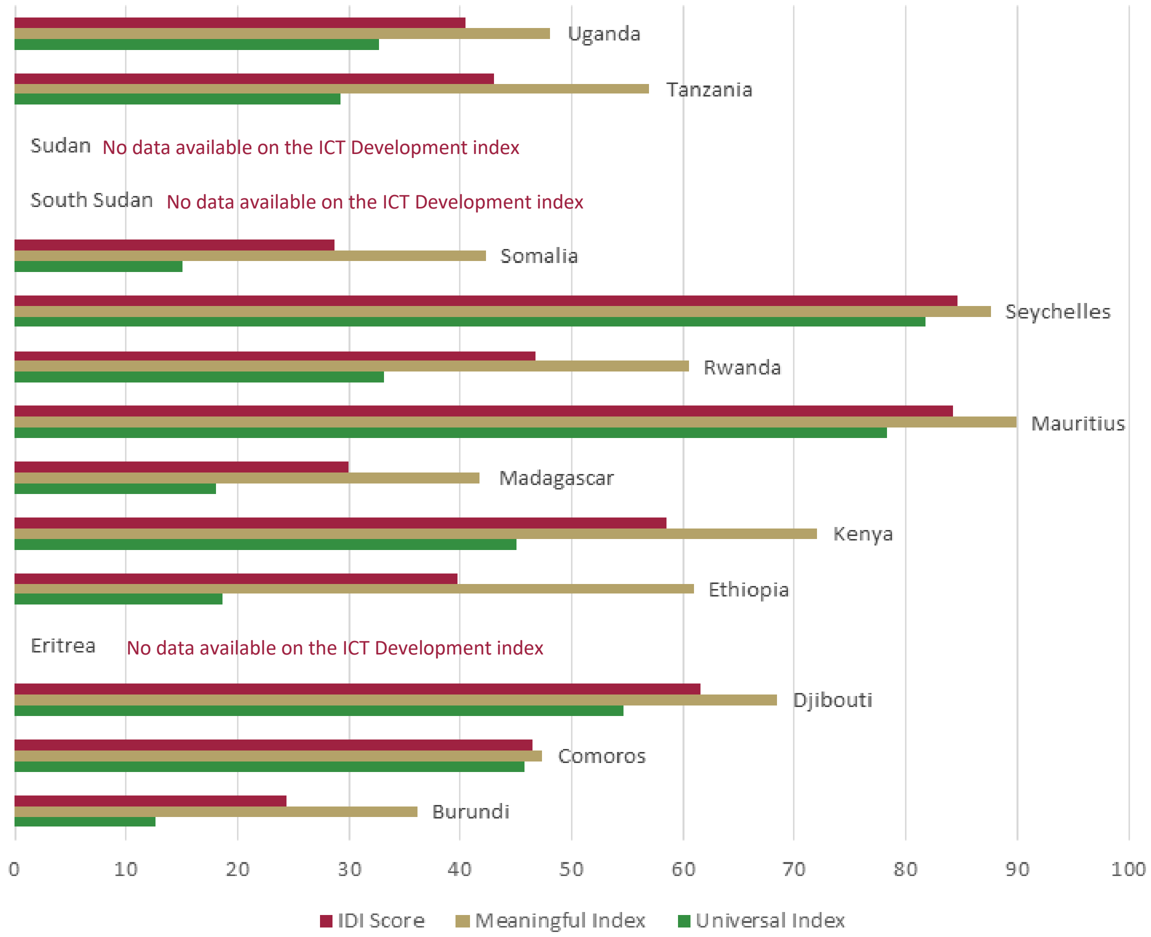

Figure 22: ICT Development Index

The IDI scores in the Eastern Africa region are highly impacted by the universal index, indicating that although connectivity is available, the overall quality of the connectivity tends to be deficient. While some countries show potential for digital integration, the region faces substantial challenges in achieving comprehensive ICT development essential for the expansion of the oil and gas sector, which is highly dependent on digital monitoring.

Research and Development

Research and Development ("R&D") expenditure, as provided by the World Bank for years ranging between 2015 and 2022, is a critical indicator of a country's commitment to technological advancements and innovation. It refers to the proportion of a country's GDP spent on developing new technologies, processes, and services. In the oil and gas sector, R&D investment can lead to more efficient exploration techniques, better resource management, and improved environmental practices. Countries with high R&D expenditure are more likely to develop innovative solutions that enhance energy production while reducing environmental impacts.

Figure 23, showing the percentage of the GDP spent on R&D, highlights that none of the Eastern Africa countries invest over 1% of their GDP on R&D, placing all countries below the lower threshold for moderate R&D spending, which ranges from 1% to 3%, with the Organisation for Economic Co-operation and Development benchmark set at 2.4%.

Rwanda emerges with the highest proportion of GDP allocated to R&D, placing Rwanda slightly ahead in regional innovation potential, though still low by global standards, which averages at 2.2% of the GDP.

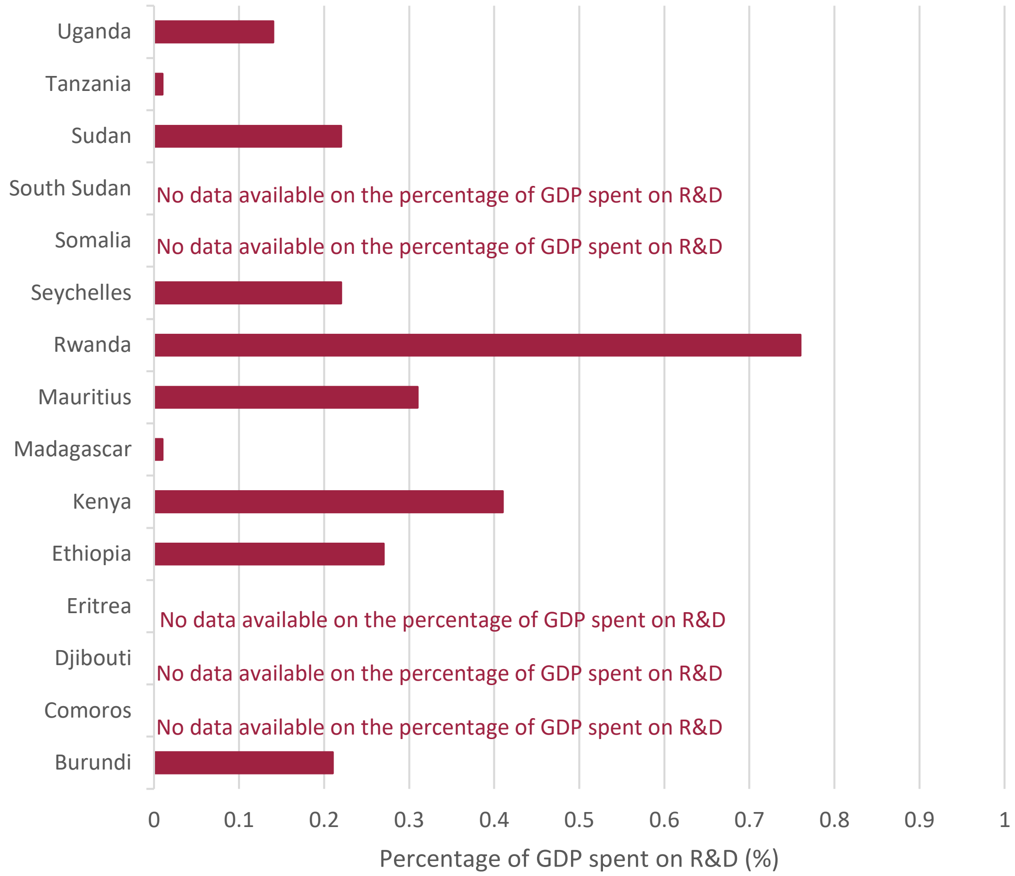

Figure 23: Percentage of the GDP spent on R&D

This low level of R&D spending across the region reflects the limited emphasis on technological advancement and innovation infrastructure in Eastern Africa. Such underinvestment suggests that the region may struggle to encourage innovation, improve efficiencies, or develop homegrown technological solutions. The lack of data for several countries, such as Comoros, Djibouti, Eritrea, Somalia, and South Sudan, further suggests either a lack of established R&D systems or difficulties in data reporting, both of which highlight challenges in tracking and encouraging R&D activity across the region. In some cases, such as in Somalia, it is noted that R&D is still in its infancy with a range of key sectors being addressed, showing promise for more growth in the coming years as the R&D sector becomes more integrated into their economies.

Overall, R&D play an important role in the expansion of the oil and gas industry by driving innovation, improving efficiency, and ensuring sustainability. Through R&D advanced technologies can be developed for exploration, extraction, and refining, enabling access to untapped reserves and operational efficiency. By investing in R&D, the oil and gas sector can remain competitive, meeting growing energy demands, and transition towards a more sustainable future.

Internet Penetration Rate

The Internet Penetration Rate, as provided by the UN Agency for Digital Technologies for 2024, measures the percentage of a population that has access to the internet. High internet penetration reflects a country's level of digital connectivity, which is increasingly important for industries like oil and gas that rely on advanced data analytics, real-time communication, and remote monitoring systems. A well-connected digital infrastructure supports technological innovation, improves operational efficiencies, and enhances global competitiveness in the oil and gas sector. The percentage of the population covered by at least a 3G mobile network is used to indicate the internet penetration rate.

The percentage of the population covered by at least 3G network, as an indication of the internet penetration rate, is presented in Figure 24. The 3G mobile network coverage across Eastern Africa shows generally high to very high connectivity for all countries with available information, which indicates robust mobile infrastructure. This high rate of mobile network coverage is particularly beneficial for industries reliant on digital communication and real-time data access, such as the oil and gas sector. A strong mobile network infrastructure enables more seamless access to innovation, remote monitoring, and effective communication, supporting day-to-day operations. The absence of data for countries such as Sudan, South Sudan, and Eritrea highlight potential regional disparities or data limitations which could point to underdeveloped infrastructure in those areas, or a lack of comprehensive reporting.

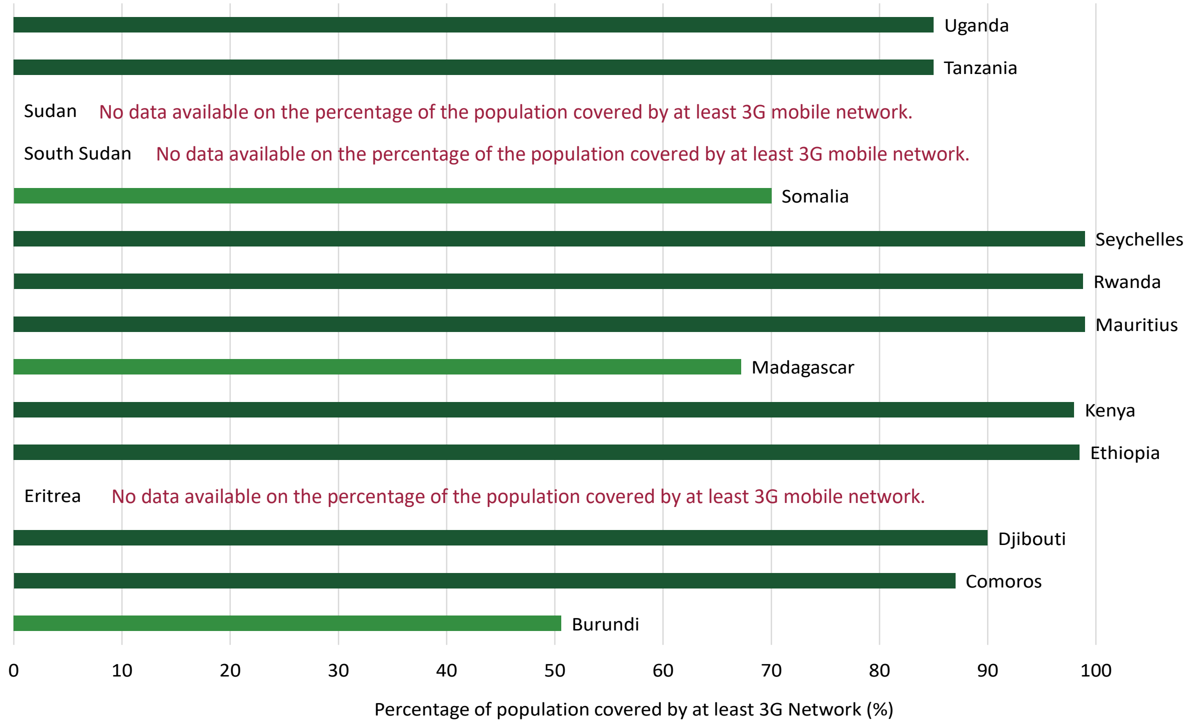

Figure 24: Percentage of population covered by at least 3G network

The region demonstrates a solid potential for digital connectivity, with mobile networks laying a foundation for further internet access expansion. This widespread coverage can help Eastern Africa strengthen its digital economy and support industries requiring consistent and reliable connectivity.

Electricity Access

The Electricity Access Rate, as provided by the World Bank for 2022, measures the percentage of a population that has reliable access to electricity. In the context of technological progress, access to stable electricity is fundamental for driving industrial growth, supporting technological innovation, and enabling modern infrastructure. For the oil and gas sector, especially in remote locations, reliable electricity access is essential for the operation of extraction, transportation, and refinement facilities. Countries with higher electricity access rates tend to have better-developed infrastructure and can more effectively support high-tech industries.

Figure 25 presents the electricity access rate for the countries in the Eastern Africa region. Electricity access rates across Eastern Africa vary widely, with some countries such as Mauritius, Seychelles, Comoros, and Kenya achieving very high access rates. These countries benefit from more established infrastructure, allowing them to support development in sectors such as the oil and gas industry, which rely on consistent power for operations. Burundi and South Sudan have significantly lower access to electricity, highlighting substantial infrastructure challenges. This lack of reliable electricity access limits opportunities for industrial growth and restricts technological advancements.

Eastern Africa presents a complex picture with certain countries well-positioned for growth due to high electricity access, while others face barriers that will require significant improvements to drive similar progress.

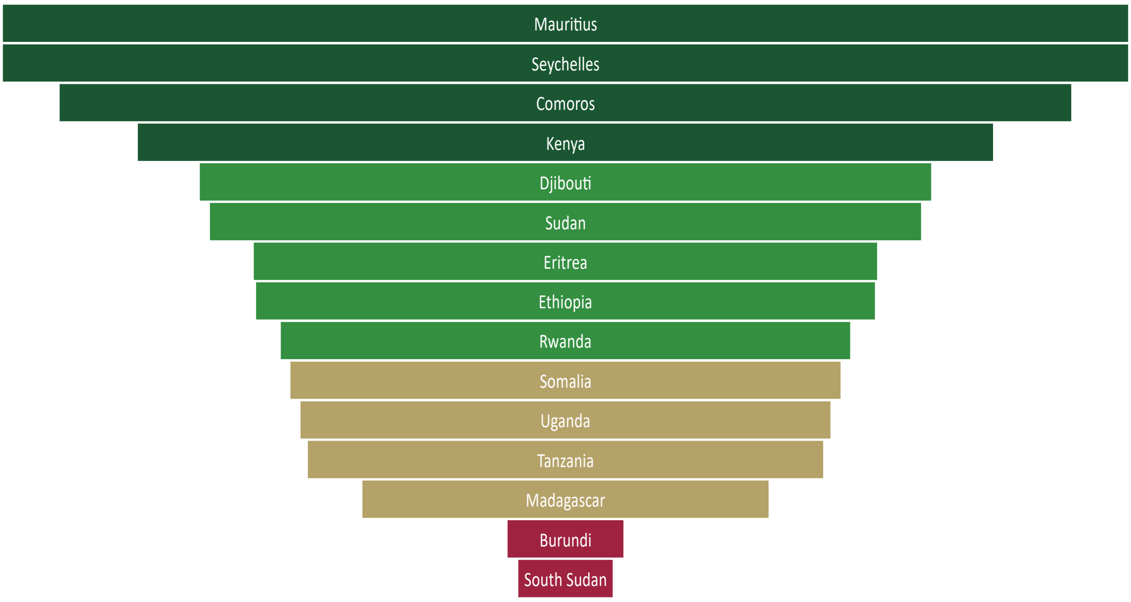

Figure 25: Electricity Access Rate

Conclusion

The technological landscape in Eastern Africa is shaped by contrasting levels of development which together reflect a mixed, but generally challenging environment for advancing modern industries, as presented in Figure 26. Countries like Kenya, Mauritius, and Seychelles rank relatively high due to stronger digital infrastructure, higher electricity access rates, and better internet penetration. These countries provide a conducive environment for technology dependent industries such as the oil and gas sector. Although innovation levels are still modest, the better ICT and energy frameworks better position these countries to attract investment.

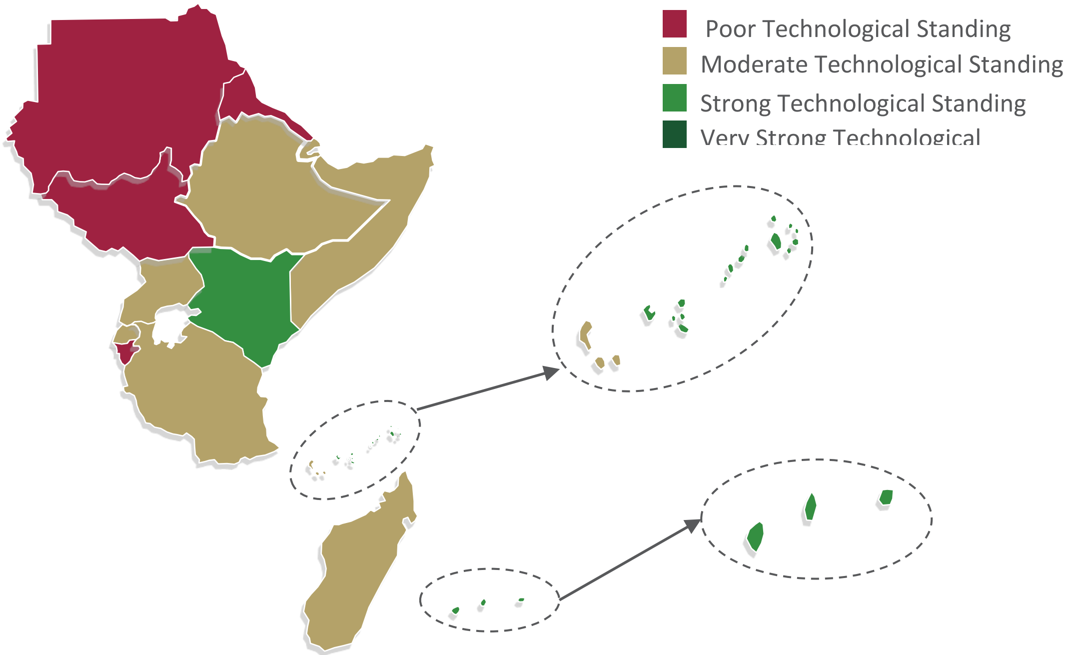

Figure 26: Regional Overview of Technological Factors

Burundi, Eritrea, South Sudan, and Sudan face fundamental infrastructure challenges, creating substantial barriers to technological adoption. These conditions severely restrict the ability of industries to use modern digital tools, maintain operational efficiency, and engage in remote communication, which is essential for obtaining investments and initiating trade. The lack of data on certain metrics further indicates a lack of resources or institutional frameworks to undergo technological advancements for the further development of the oil and gas sector.

The overall landscape remains underdeveloped, with most countries struggling to establish the technological backbone for sustainable growth in their oil and gas industry. Over half the region ranks as "poor" across key technological indicators, indicating fundamental deficits in infrastructure and innovation support. This reflects widespread gaps in areas such as internet access, electricity coverage, research investment, and overall digital readiness.

Based on the heavy skew towards poor rankings in the technological overview, the focus should be on reducing the dependency on external technology and encouraging domestic solutions that are better suited to the region's unique needs and challenges. The Eastern Africa region requires coordinated investments focused on digital connectivity, power access, and foundational R&D capabilities.

3.6. Environmental Factors

Environmental factors play a critical role in the oil and gas industry in Eastern Africa, influencing both operational practices and regulatory frameworks. The region's diverse ecosystems and natural resources require careful consideration to mitigate the impact of exploration and production activities. Understanding these environmental dynamics is essential for navigating regulatory requirements and reinforce responsible development that balances economic growth and ecological preservation.

Environmental Performance Index (EPI)

The Environmental Performance Index ("EPI"), developed by Yale University for 2024, provides a data-driven summary of the state of environmental health and ecosystem vitality across countries. It ranks countries on various metrics, including air and water quality, biodiversity, and climate change mitigation efforts. For the oil and gas industry, a high EPI ranking suggests a strong regulatory framework and commitment to sustainable practices, while a lower ranking may indicate significant environmental challenges.

The EPI scores for the countries in the Eastern Africa region are presented in Figure 27. Eritrea stands out as the only country in the region with a good score of above 60, suggesting the country has a relatively strong environmental performance compared to its regional peers. This is seen by the strides made towards the preservation of their natural ecosystems and forests scoring 1st in the world on the tree cover loss index. On the other hand, majority of the countries score poorly, with scores at or below 39, implying challenges in environmental governance, population control, and resource management.

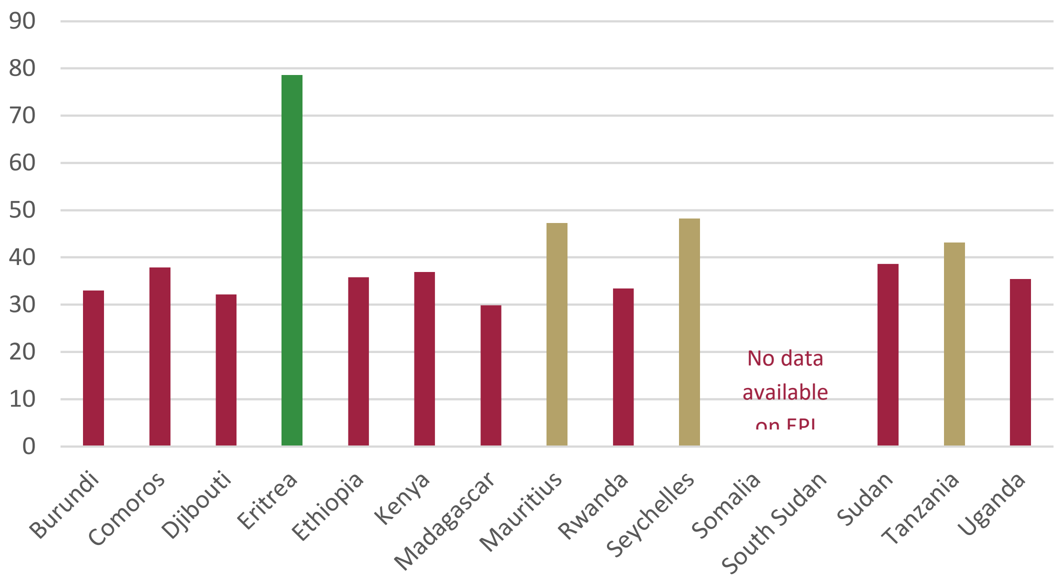

Figure 27: Environmental Performance Index

There is no data available for the EPI scores of Somalia and South Sudan. Both countries have experienced prolonged periods of conflict and political instability, with this instability disrupting government functions, including environmental monitoring, data collection, and policy enforcement. Conflict zones make it challenging for researchers and data collectors to access the region safely, thus limiting access to obtaining reliable environmental resources. Online sources in Somalia have improved since the environmental directorate was made into a ministry, and this migration is expected to improve the data availability required to more accurately evaluate the environmental performance of the country in the future.

The overall low EPI scores across the region highlight significant gaps in infrastructure, regulatory frameworks, and enforcement of environmental standards critical for oil and gas development. Without robust oversight, expanding oil and gas projects could aggravate environmental degradation, harming ecosystems and local communities. Establishing a regional oil and gas market demands the implementation of minimum environmental standards to prevent cross-border pollution and ensure sustainable development. To attract responsible investment and mitigate risks linked to ecological harm, the region must prioritise strengthening environmental policies and regulations specific to the oil and gas industry.

CO_2 Emissions per capita

CO_2 emissions per capita, as provided by the World Bank for 2020, measure the amount of carbon dioxide emitted by a country on a per-person basis, reflecting the environmental impact of economic activities. This metric is crucial in understanding the contribution of industries like oil and gas to global climate change. Countries with higher emissions per capita may face increasing regulatory pressures to reduce carbon footprints, which can influence policy decisions and investment in cleaner technologies. Conversely, countries with CO_2 emissions may have more sustainable energy practices in place.

In Figure 28, the CO_2 emissions per capita for the countries in the Eastern Africa region are presented. Most Eastern African countries have extremely low per capita emissions, generally well below the global average of 4.5 metric tons per capita. This low baseline provides an advantage for sustainable development as the region is not yet locked into a high carbon economy. The introduction or expansion of oil and gas activities in the region could lead to a sharp rise in emissions, especially if the infrastructure, regulatory frameworks, and environmental safeguards are not adequately developed.

The highest per capita emitter in the region, Seychelles, has emissions above the global average. This figure, driven by tourism and fossil fuel dependency, is concerning for a small island nation highly vulnerable to climate change impacts. If Seychelles were to consider oil and gas development, the emissions impact would likely worsen, exacerbating the island's carbon footprint and climate risks. Also, higher than the regional average, Mauritius faces similar challenges with tourism and fossil fuel reliance. Both Seychelles and Mauritius would benefit from renewable energy investments as a strategy to counterbalance their emissions.

All other countries presented low emissions, below the 1 metric ton per capita threshold. Those with ultra-low emissions (0-0.2 metric tons) have an opportunity to serve as models for sustainable development by maintaining their low emissions while prioritising renewable energy investments, efficient technologies, and climate-smart policies. Similarly, countries with slightly higher but still low emissions, such as Comoros, Djibouti, Kenya and Sudan, could benefit from targeted strategies to curb emissions as they develop. By enhancing energy efficiency, expanding renewable energy use, and implementing emissions-reducing policies, these countries can prevent emissions from rising sharply. There is an absence of CO_2 emissions data for Somalia in many sources. It must be noted that ,while there is data available for Somalia in some instances, this disparity on average amongst available data reflects a combination of political, economic, and logistical barriers, including conflict, limited institutional capacity and a lack of necessary technology and investment, and is thus represented as such in this report.

The low CO_2 emissions per capita in Eastern Africa reflect limited industrialisation and fossil fuel reliance, giving the region a favourable baseline for sustainable growth. However, as the region looks to expand its oil and gas industry, careful planning and the adoption of strict sustainability measures will be essential to manage potential increases in emissions. Prioritising environmentally responsible practices can help avoid reliance on high-emissions infrastructure and aid in the movement towards sustainable development. By integrating sustainability into the energy development strategy, Eastern Africa can enhance its ability to attract climate funding and remain competitive in an increasingly low-carbon economy.

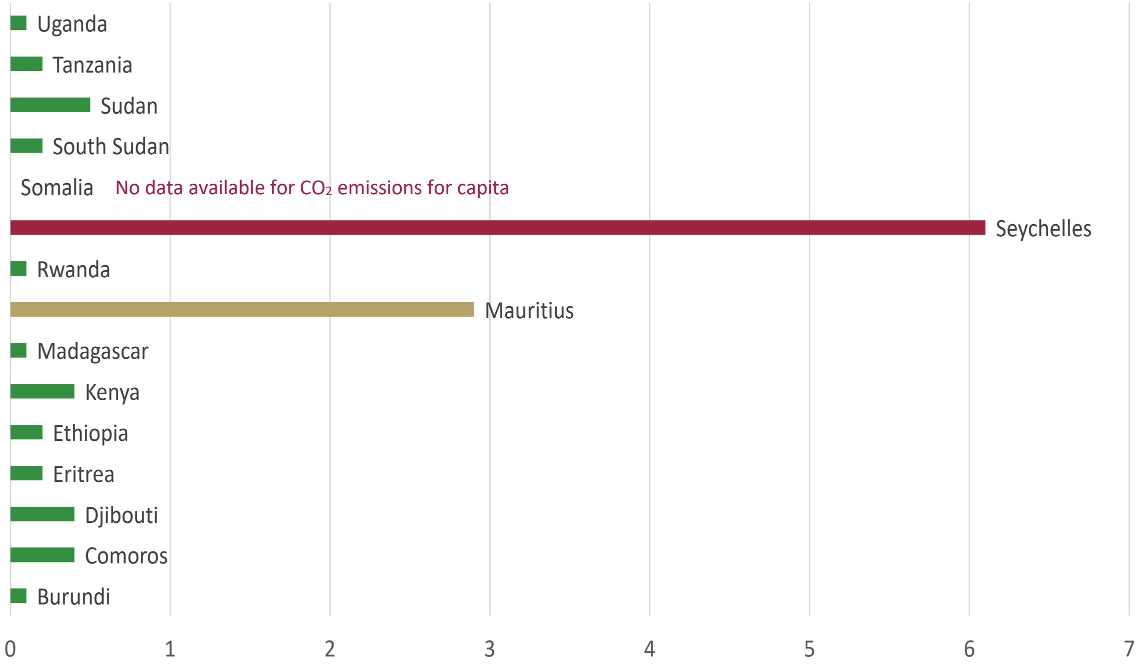

Figure 28: CO_2 emissions per capita

Renewable Energy Consumption

Renewable Energy Consumption, as provided by the World Bank for 2022, reflects the share of a country's total energy supply that comes from renewable sources, such as biomass, solar, wind, geothermal, and hydropower. This metric is particularly important for assessing a country's commitment to transitioning to cleaner energy sources. A higher percentage of renewable energy consumption indicates greater sustainability in energy production or reliance on traditional energy sources, which can shape the future landscape of the oil and gas market. Understanding renewable energy trends can help the industry adapt to evolving market demands.

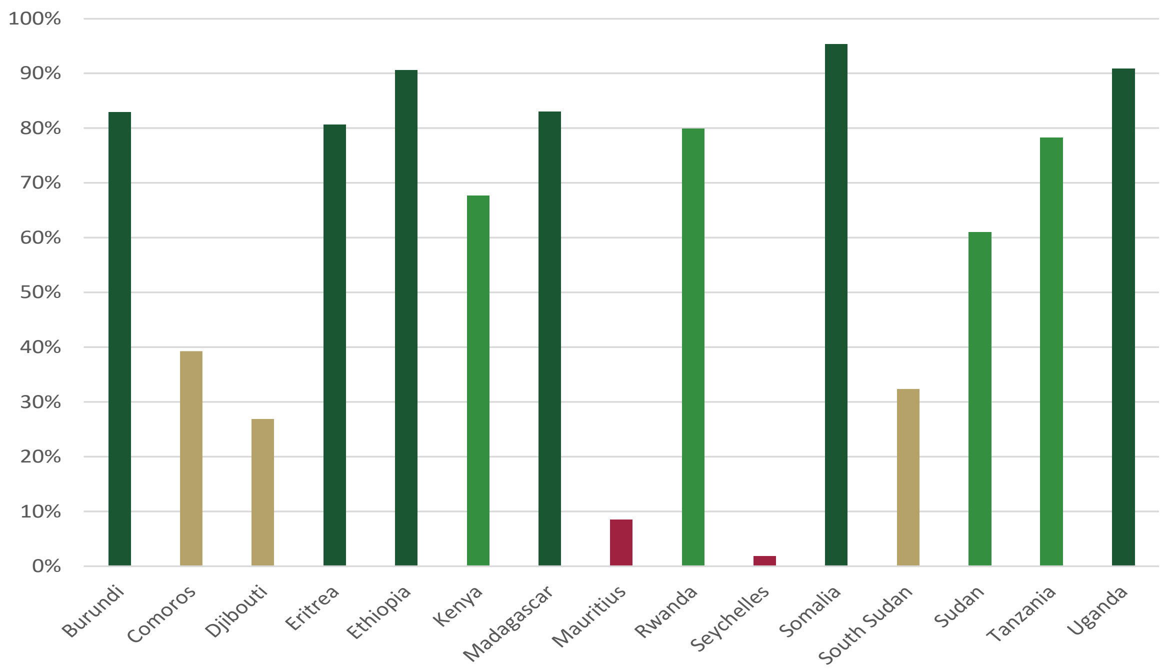

Figure 29: Renewable Energy Consumption

The renewable energy consumption for the countries in the Eastern Africa region is presented in Figure 29. Mauritius and Seychelles exhibit very low levels of renewable energy consumption, indicating heavy reliance on fossil fuels for their energy needs. These low values indicate limited adoption of renewables, and they would need significant investments in renewable technologies to reduce dependency on imported fuels.

Djibouti have incorporated renewables into their energy mix with focus on geothermal resources and imported hydropower from Ethiopia, while still heavily dependent on fossil fuels due to insufficient infrastructure and capacity for generating renewable energy. Comoros and South Sudan rely more on traditional biomass, however, both countries face barriers to renewable energy adoption due to infrastructure limitation, economic constraints, political instability, and reliance on fossil fuels.

Majority of Eastern African countries present high or very high renewable energy consumption, however, a significant portion of this is due to the use of traditional biomass rather than modern renewable technologies. While biomass is not a renewable energy source, it is included in the analysis done by the world bank as traditional biomass such as wood, charcoal, and animal dung are derived from organic materials that can be replenished relatively quickly compared to conventional fossil fuels. Modernising energy systems would be key to improving the sustainability and health outcomes.

Conclusion

Eastern Africa's environmental profile presents a mix of strengths and vulnerabilities that will be pivotal as the region considers expanding its oil and gas sector. While some countries demonstrate strong environmental performance, high renewable energy usage, and low CO_2 emissions, much of this is due to limited industrialisation rather than advanced sustainability measures. The reliance on traditional biomass, though categorised as renewable, does not fully align with modern clean energy standards, underscoring the need for modernisation across the energy sector.

Without strong regulatory oversight there is a risk of environmental degradation, particularly as oil and gas operations expand. Countries with moderate to low environmental standings could face challenges in meeting climate commitments, attracting responsible investment, and managing environmental impacts of industrial growth.

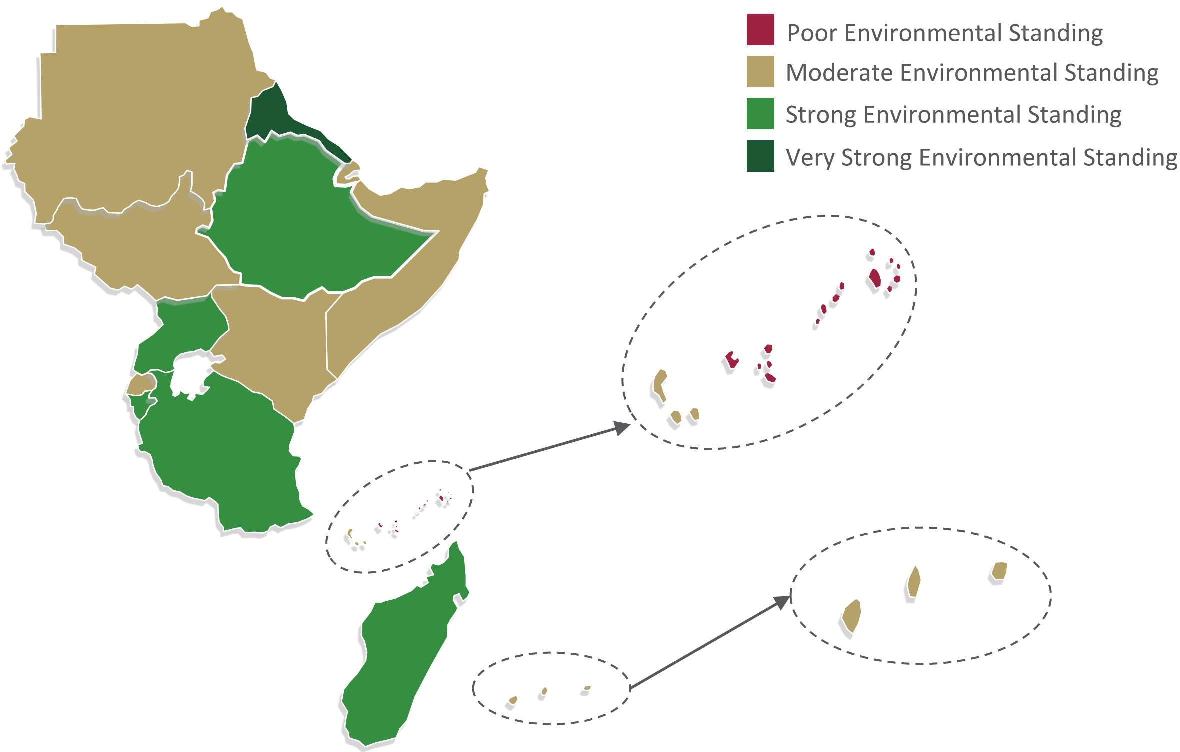

Figure 30: Regional Overview of Environmental Factors

As shown in the regional overview in Figure 30, Seychelles has the lowest overall environmental ranking in the region, primarily due to its high CO_2 emissions per capita, heavy reliance on fossil fuels, and limited renewable infrastructure. Additionally, the tourism and transportation sectors heavily impact the environmental footprint. Given the island nation's vulnerability climate change, these factors are particularly concerning and suggest an urgent need for transition to renewable energy sources.

High-ranking countries like Burundi, Eritrea, Ethiopia, Madagascar, Tanzania, and Uganda have favourable environmental profiles mainly due to low emissions, renewable energy reliance, and limited industrialisation. However, there is a need for modernisation of their energy systems to ensure long-term sustainability.

To position Eastern Africa as a sustainable and competitive player, it is crucial to invest in renewable energy infrastructure, enhance governance and environmental policies, and implement sustainable practices. This approach will allow the region to leverage its lower emissions profile as a strategic advantage in developing the oil and gas industry responsibly. By integrating sustainable practices into resource extraction and energy production, the region can position itself as a leader in balancing economic growth with environmental stewardship. Achieving this vision will require cohesive regional collaboration, the adoption of forward-thinking policies, and a strong commitment to minimising the environmental impact of oil and gas activities by focusing on sustainable practices.

3.7. Legal Factors

Legal factors are fundamental to the functioning of the oil and gas industry in Eastern Africa, as they encompass the regulatory frameworks that govern exploration, extraction, and distribution. Each country in the region has its own set of laws and regulations that dictate resource ownership, environmental protection, and labour rights. Compliance with these legal requirements is essential for operational integrity and risk management. Understanding the legal context helps clarify the obligations and protections in place, guiding industry participants in navigating the complexities of the regulatory environment effectively.

Rule of Law Index

The Rule of Law Index, published by the World Justice Project for 2023, assesses how effectively countries adhere to laws, promote accountability, and ensure fair legal systems. This index measures several key dimensions, including constraints on government powers, absence of corruption, and the protection of fundamental rights. For the oil and gas sector, a strong rule of law ensures that contracts and property rights are respected, regulatory frameworks are clear, and legal disputes are resolved fairly, making the environment more predictable and secure for long-term investments.

The Rule of Law index, as presented in Figure 31, indicates a severe lack of data with Burundi, Comoros, Djibouti, Eritrea, Seychelles, Somalia, and South Sudan having no data available for the Rule of Law index. In some countries, there may be low levels of transparency in governance where information on legal processes, governmental accountability, and corruption is not publicly accessible. For instance, since the start of the process of building a government in Somalia since 2012, there has been an ongoing construction of government organisations - which may contribute to the difficulties in obtaining the necessary data during this phase. This lack of openness makes it difficult for external organisations to assess Rule of Law conditions, as much of the data relies on self-reporting, government cooperation or surveys of legal practitioners. In some cases, governments may be unwilling to share or facilitate access to this information, especially where governance issues are severe. The implication of the lack of data introduces significant uncertainty for investors, especially in high-risk sectors like oil and gas. Without clear information on legal standards, contract enforcement, or property rights protections, investors face unpredictable regulatory environments which can deter foreign direct investments due to opaque legal processes, limited recourse in disputes, and higher exposure to corruption risks.

Mauritius and Rwanda lead the region with scores above 0.5, indicating stronger adherence to the rule of law, including effective legal systems, lower levels of corruption, and better protection of rights and accountability. For the oil and gas sector, these higher scores mean a more predictable and secure investment environment where investors can expect contracts and property rights to be respected, and legal disputes resolved fairly.

Ethiopia, Kenya, Madagascar, Sudan, Tanzania, and Uganda score moderately on the Rule of Law index, indicating some adherence to the rule of law, but with room for improvement. While these countries exhibit some level of legal structure and accountability, moderate scores suggest inconsistencies in enforcing laws, constraints on government powers, or vulnerabilities to corruption. This can mean a somewhat stable environment, though potential investors in the oil and gas sector may encounter uncertainties around regulatory enforcement or experience delays in legal processes.

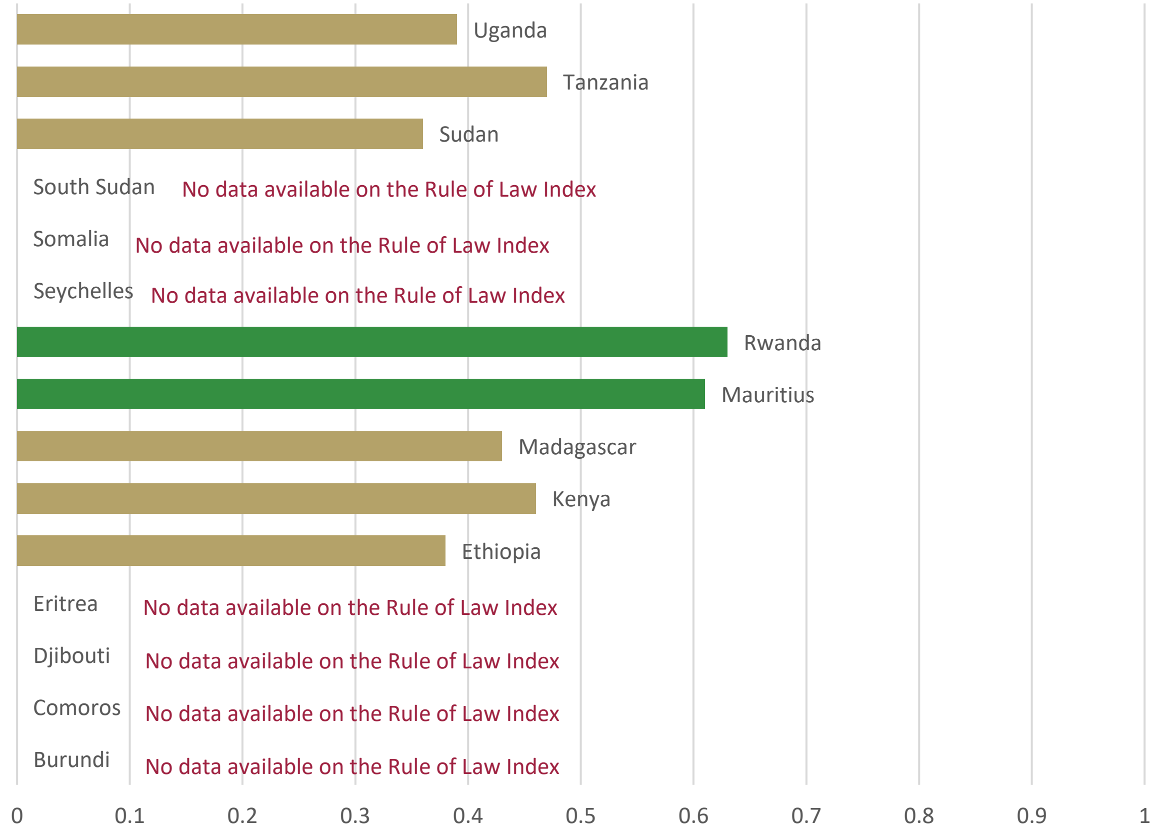

Figure 31: Rule of Law Index

The region faces challenges related to inconsistent legal frameworks, varying degrees of transparency, and significant gaps in enforcement and institutional capacity. Both the strengths and vulnerabilities within Eastern Africa's governance structure, can be seen with this uneven Rule of Law environment, creating a mix of opportunities and risks for sustainable development and foreign investment, particularly in sectors such as oil and gas.

Intellectual Property Rights Index

The Intellectual Property Rights ("IPR") Index, as provided by the Property Rights Alliance for 2023, evaluates the protection of intellectual property ("IP") in a country, focusing on the legal framework, enforcement mechanisms, and overall respect for IP rights. Strong IP protections are crucial for innovation in the oil and gas industry, particularly for technological advancements in exploration, extraction, and environmental protection. A high score on this index suggests that companies can confidently invest in research and technology without fear of intellectual property theft, facilitating a climate of innovation.

The Intellectual Property Rights Index for the countries in Eastern Africa are presented in Figure 32, which reflects a significant portion of the countries lacking data. The absence of data for several Eastern African countries, namely Comoros, Djibouti, Eritrea, Seychelles, Somalia, South Sudan, and Sudan, reflects deeper challenges in the countries related to governance, legal infrastructure, and data transparency. This lack of data can be a result of political instability or conflict, intellectual property frameworks not being prioritised, and the primary focus being on basic governance functions. Additionally, countries may lack the resources or expertise to implement and enforce IP protections effectively, resulting in a lack of measurable data. It is noted that the Intellectual Property Rights in Somalia is under construction and will soon be enacted, which will go a long way towards protection of IP within the country and further innovation in the Oil and Gas industry within the country. The other countries for which there is data reflect only moderate IP protection, indicating some legal frameworks and enforcement mechanisms have been established.

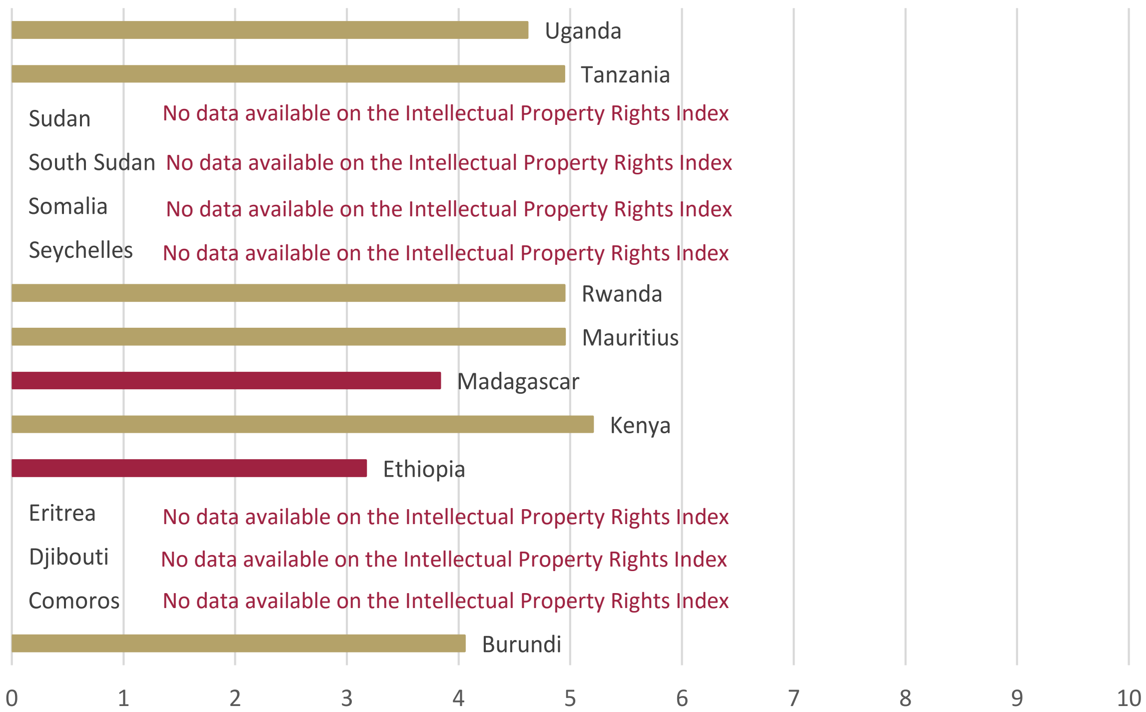

Figure 32: Intellectual Property Rights Index

Eastern Africa displays an uneven landscape for IP rights protection, with limited areas showing developing protections but a predominant pattern of weak or non-existent IP frameworks. With weak IP protections, companies may be hesitant to invest in advanced technologies for exploration and extraction as there is a higher risk of IP theft and insufficient legal recourse to protect their innovations. Overall, this reflects a broader trend in which IP protections have not yet become a priority for many governments. Developing a more cohesive approach to IP protection would not only enhance regional competitiveness but also support long-term economic resilience as Eastern Africa seeks to become independent of the global market.

Ease of Enforcing Contracts

The Ease of Enforcing Contracts, a sub-index within the World Bank's Ease of Doing Business Index for 2020, measures the efficiency of a country's judicial system in resolving commercial disputes. This index evaluates how long it takes to enforce contracts, the cost of legal proceedings, and the overall effectiveness of dispute resolution mechanisms. A high ranking in this index signifies that businesses in the oil and gas industry can rely on timely and cost-effective enforcement of agreements, reducing the risks associated with legal conflicts.

The Ease of Enforcing Contracts for the countries in the Eastern Africa region are presented in Figure 33. Mauritius and Rwanda lead the region, reflecting efficient and effective legal systems that provide timely dispute resolution and reasonable costs. For businesses, especially in contract-heavy industries such as oil and gas, this reliability reduces the risk of lengthy or costly legal disputes, encouraging investment.

Burundi, Comoros, Djibouti, and Sudan face significant challenges in enforcing contracts. With weak judicial systems, high costs, and inefficient legal processes, these countries struggle to provide businesses with reliable mechanisms for dispute resolution.

Eastern Africa demonstrates a highly varied landscape in terms of contract enforcement. While Mauritius and Rwanda have established legal systems that support efficient contract enforcement, most of the region struggles with inefficiencies, high costs, and delays. The range of scores highlights a lack of uniformity in legal effectiveness, which can create challenges for cross-border trade and investment. For the oil and gas sector, which relies heavily on enforceable agreements to secure long-term projects, these inconsistencies introduce significant risks, which could deter investment across the region.

The overall regional profile emphasises the need for judicial reforms and standardisation to create a more stable environment for business. Establishing regional frameworks or shared best practices could help bridge the gap between high and low performers, supporting a more integrated and stable business environment.

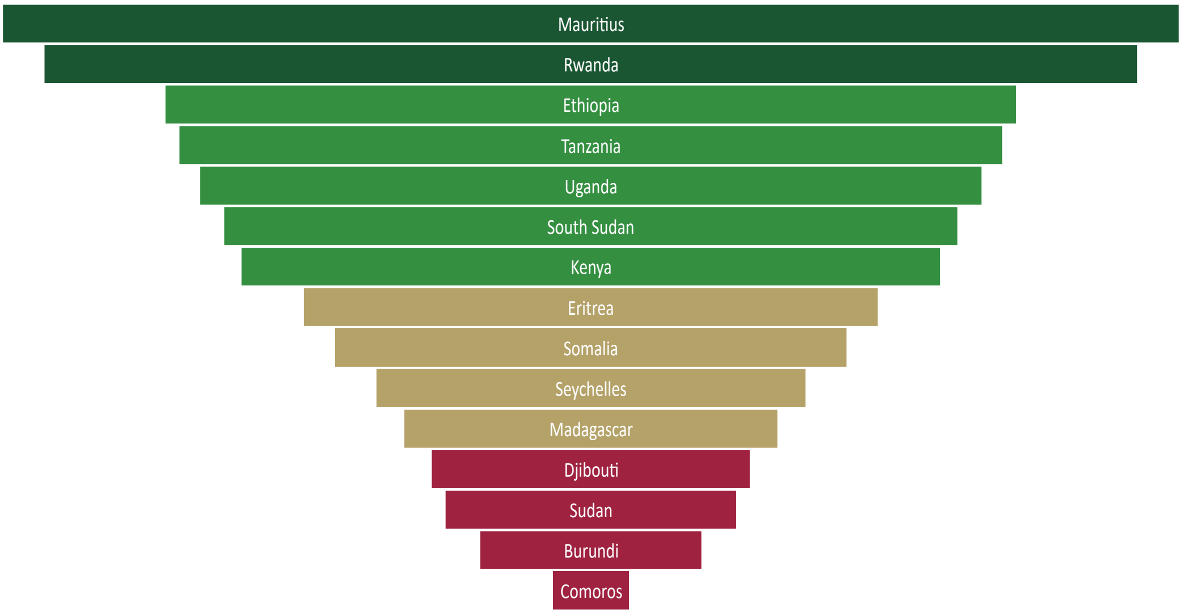

Figure 33: Ease of Enforcing Contracts

Business Freedom Index

The Business Freedom Index, part of the broader Economic Freedom Index provided by the World Bank for 2020, evaluates the regulatory environment of a country in terms of how easy it is to start, operate, and close a business. This index considers the efficiency of government regulations, licensing procedures, and other bureaucratic hurdles that can impact business operations. A high score on the Business Freedom Index suggests fewer regulatory barriers and a more open environment for enterprises, which is critical for the capital-intensive and heavily regulated oil and gas industry.

The Business Freedom Index of the countries in the Eastern Africa region are presented in Figure 34, with Mauritius and Seychelles leading the region in Business Freedom with scores above 75. These countries have developed more efficient regulatory frameworks reducing bureaucratic hurdles and making it easier for businesses to operate. Mauritius is known for its investor-friendly policies, stream-lined licensing procedures, and supportive regulatory environment, making it a popular destination for foreign investment in the region. This highlights why Mauritius is currently known as a global financial hub.

Somalia and South Sudan have experienced prolonged conflict and political instability, which disrupts the establishment and operation of basic governmental institutions. This instability makes it challenging for external organisations, such as those calculating the Business Freedom Index, to assess business regulations, licensing processes, and government efficiency, explaining the lack of data. It is noted that the practice of utilising PSAs and licensing rounds, currently forming a large part of Somalia's business economy, are taking place currently within the country. These types of business ventures are also considered to improve a country's business freedom, and as Somalia continues to grow and expand in this industry, this will likely soon be shown better on a grander scale, demonstrating the country's commitment to improving their business freedom.

While a few countries have made strides in creating efficient regulatory environments, majority of the region continues to grapple with bureaucratic inefficiencies and regulatory barriers that hinder business operations. These differences highlight a lack of uniformity in regulatory standards across the region, creating an uneven playing field for businesses, especially for industries like oil and gas that rely on clear and supportive regulatory frameworks.

The overall regional profile indicates that, despite progress in some areas, Eastern Africa still requires substantial reforms to enhance its business freedom landscape. Simplifying licensing processes, increasing transparency, and reducing bureaucratic hurdles would create a more attractive environment for investors, contributing to greater economic integration and regional growth.

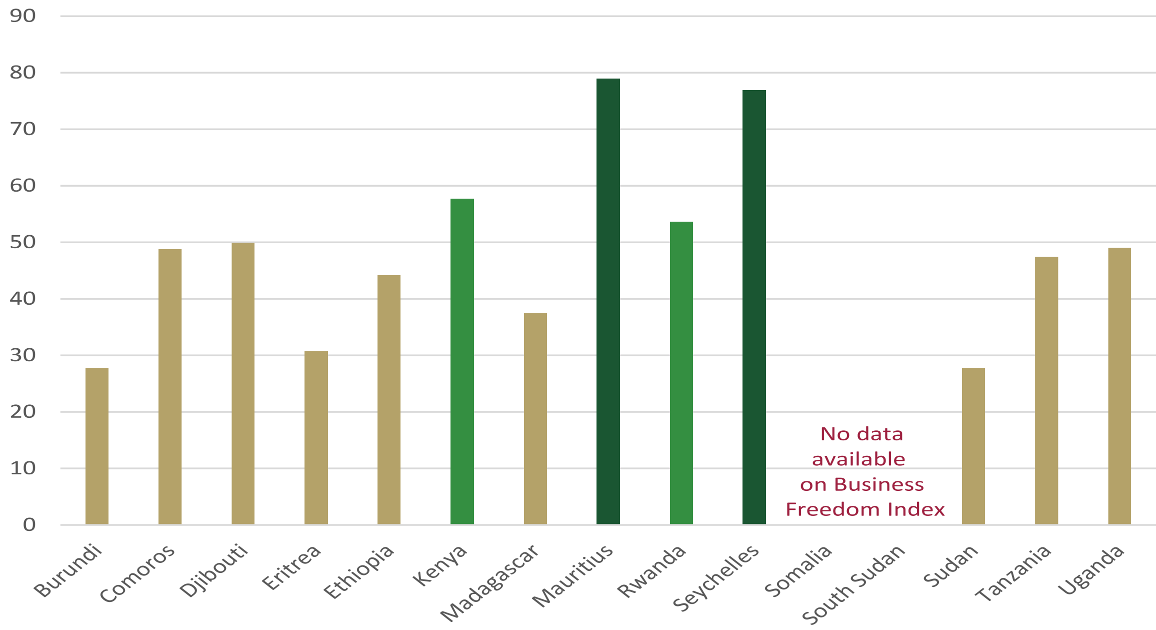

Figure 34: Business Freedom Index

Legal Corruption Perception Index

The Corruption Perception Index ("CPI") from a legal point of view, published by Transparency International for 2023, measures perceived levels of public sector corruption in countries worldwide. It is a critical indicator for assessing the transparency and accountability of government institutions. In the oil and gas sector, high levels of corruption can lead to unfair practices, increased costs, and risks to investment.

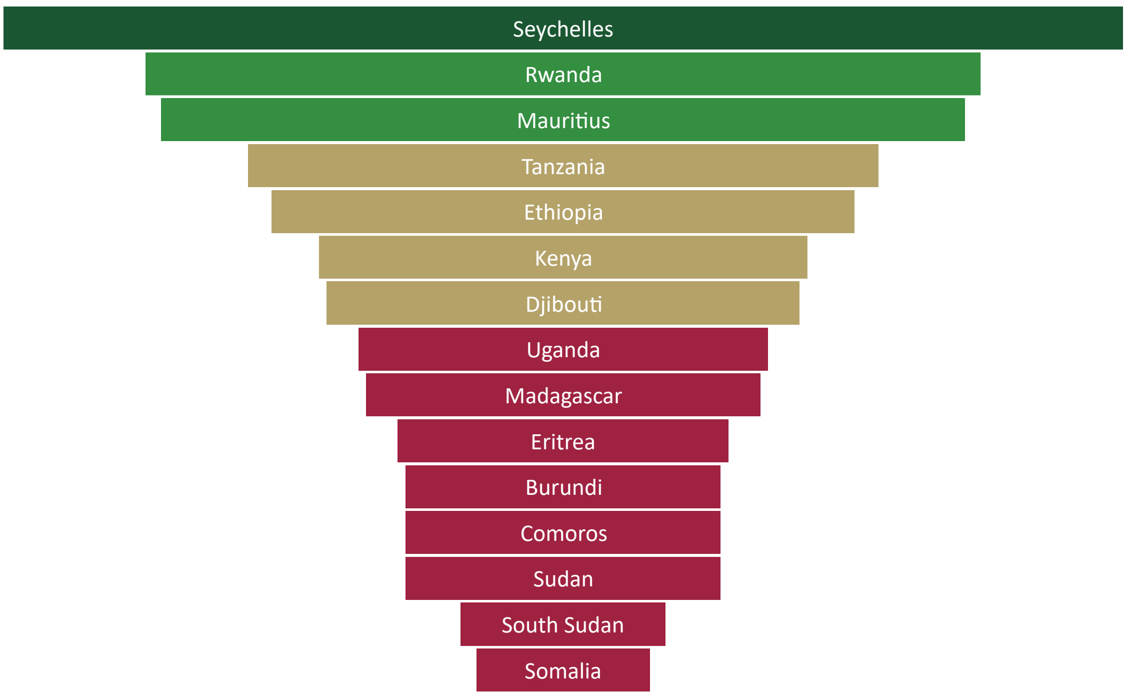

Figure 35: Corruption Perception Index

The Corruption Perception Indices for the countries in the Eastern Africa region are presented in Figure 35. In Mauritius, Rwanda, and Seychelles, public institutions are seen as more reliable, which strengthens the legal sector's effectiveness. For the oil and gas industry, this implies a more stable and predictable environment for securing approvals, following regulatory procedures, and enforcing contracts. The high-performing countries provide better protection for businesses against corruption risks, contributing to a more attractive investment climate.

Burundi, Comoros, Eritrea, Madagascar, Somalia, South Sudan, Sudan, and Uganda rank low on the CPI, reflecting high levels of perceived corruption. In these countries, corruption is often deeply entrenched within public institutions, leading to unreliable legal processes and frequent regulatory loopholes. This creates significant challenges, as companies may face irregular costs, risks of unfair practices, and unpredictable contract enforcement. In such environments, the lack of transparency and accountability can deter investors, as they may encounter difficulties in obtaining fair treatment or protection from arbitrary government actions.

Eastern Africa exhibits a diverse but generally challenging landscape regarding corruption perception, with a few high performers balanced by several low-ranking countries. The prevalence of perceived corruption in many Eastern African countries weakens the overall integrity of the legal sector, compromising the enforcement of contracts and the impartiality of judicial processes. This environment creates obstacles, particularly in heavily regulated sectors like oil and gas.

For Eastern Africa to enhance its regional attractiveness to investors, especially in capital-intensive sectors, tackling corruption will be critical. Corruption undermines the rule of law by allowing certain players to bypass legal procedures, leading to unequal treatment and increasing operational risks.

Conclusion

The legal landscape of Eastern Africa presents a complex and often challenging environment, as presented in Figure 36, for industries like oil and gas that require stability, transparency, and predictability. This variability reflects an uneven distribution of institutional strengths and weaknesses that impact both local business operations and foreign investment decisions.

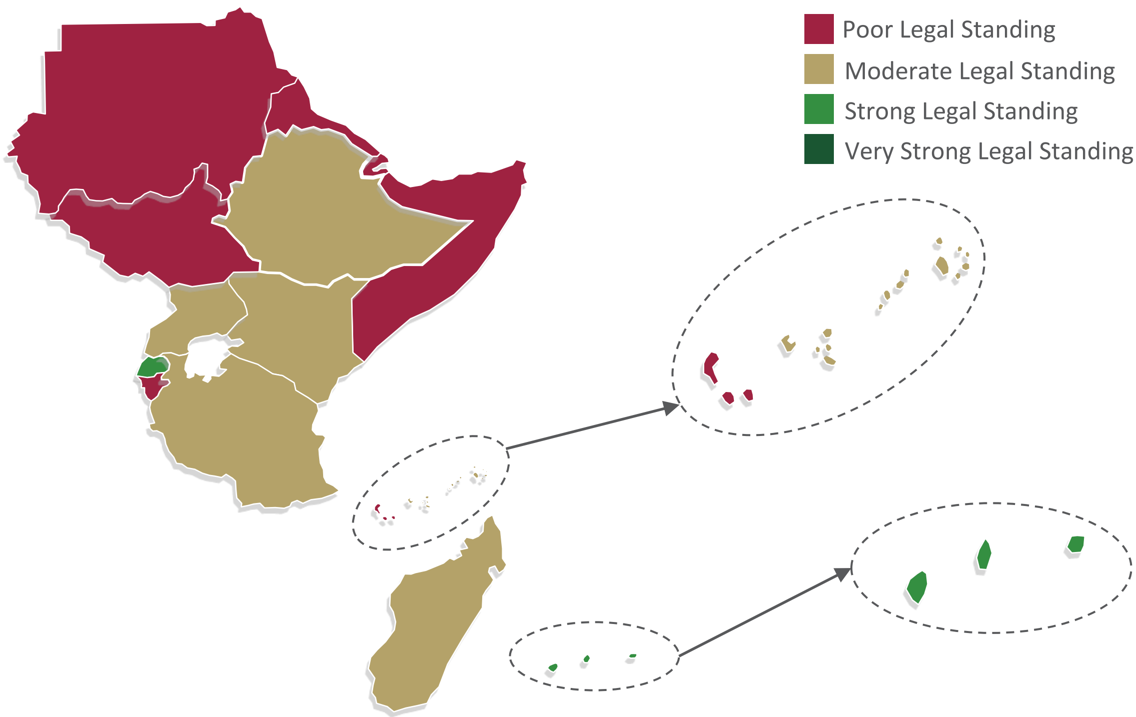

Figure 36: Regional Overview of Legal Factors

Mauritius and Rwanda score high across multiple legal indices, indicating that these countries have developed more robust legal frameworks, stronger anti-corruption measures, and more efficient judicial systems. Mauritius is particularly known for its business-friendly regulatory environment, establishing itself as a financial and investment hub in the region. Rwanda had undergone significant reforms aimed at reducing bureaucratic barriers and enhancing transparency, making it one of the most reliable environments for business in Eastern Africa.

Burundi, Comoros, Djibouti, Eritrea, Somalia, South Sudan, and Sudan represent the lowest legal standings in Eastern Africa, facing significant issues across almost all legal indices. For these low-performing countries, the legal landscape is heavily influenced by weak governance, lack of institutional support, and high levels of corruptions. These factors introduce substantial risks for investors, making the legal environment challenging and unattractive for sustainable, capital-intensive industries.

While a few countries set positive examples of legal stability, transparency, and regulatory efficiency, most of the region faces structural issues that reduce legal predictability and increase risk. For Eastern Africa to become a competitive and stable region for investment, particularly in industries that rely heavily on secure legal frameworks, coordinated efforts are needed to enhance institutional capacity, streamlined regulatory processes, and address corruption.

Overall, the legal factors across Eastern Africa present both promising opportunities in higher-ranking countries and significant challenges in low-ranking ones, underscoring the importance of careful risk assessment. It is recommended for Eastern Africa to build a regional approach to legal standards, perhaps through shared best practices, regional cooperation on anti-corruption, and standardised business regulations, could help bridge the gap between high and low performing countries.

3.8. Overall PESTEL analysis

Contributing Factors to Individual Standings of Countries

The contributing factors to the overall regional PESTEL overview in Figure 38 are shown in Figure 37, allowing for analysis of the contribution of each individual factor to the overall standing of each country in the region.

Somalia and Sudan stand out as the region's lowest performers, with consistently poor scores across nearly all PESTEL factors. Despite some isolated moderate PESTEL rankings, these country's overwhelming challenges in political stability, economic development, legal structure, and social infrastructure have cemented their low overall position.

Burundi, Comoros, and Eritrea generally exhibit moderately poor performance across most PESTEL factors, yet each has a distinct strength that slightly raises their average standings. Burundi and Eritrea display relatively high environmental standings, while Comoros shows a higher-than-average social position. However, the moderately poor performance overshadowed these rankings, resulting in an overall moderate performance for these countries.

South Sudan maintains moderate to low scores across all factors, reflecting a mix of challenges without any standout strengths. This uniformity of South Sudan's standings indicates consistent, albeit low, performance across the PESTEL dimensions.

Djibouti, Tanzania, and Seychelles show moderate to high performance across most of the PESTEL factors, yet each has a specific weak spot that brings down their overall rankings. Djibouti demonstrates poor legal standings, Tanzania poor social standings, and Seychelles poor environmental performance. All three countries lacked a significant strength, which when coupled with their weak spots resulted in their overall moderate standing.

Ethiopia, Kenya, Madagascar, and Uganda have consistently ranked in the moderate to high range across all PESTEL factors, demonstrating a balanced profile with room for improvement, therefore reflecting an overall moderate standing.

Rwanda achieves a high overall standing, despite predominantly reflecting moderately across majority of the PESTEL dimensions. Rwanda's stronger factors, particularly in political stability and legal frameworks, contribute significantly to the country's elevated position.

Mauritius emerges as a top performer, with predominantly high to very high scores across the PESTEL factors. The country's strength in political standing, economic freedom, legal protections, and technological readiness solidifies its high overall position.

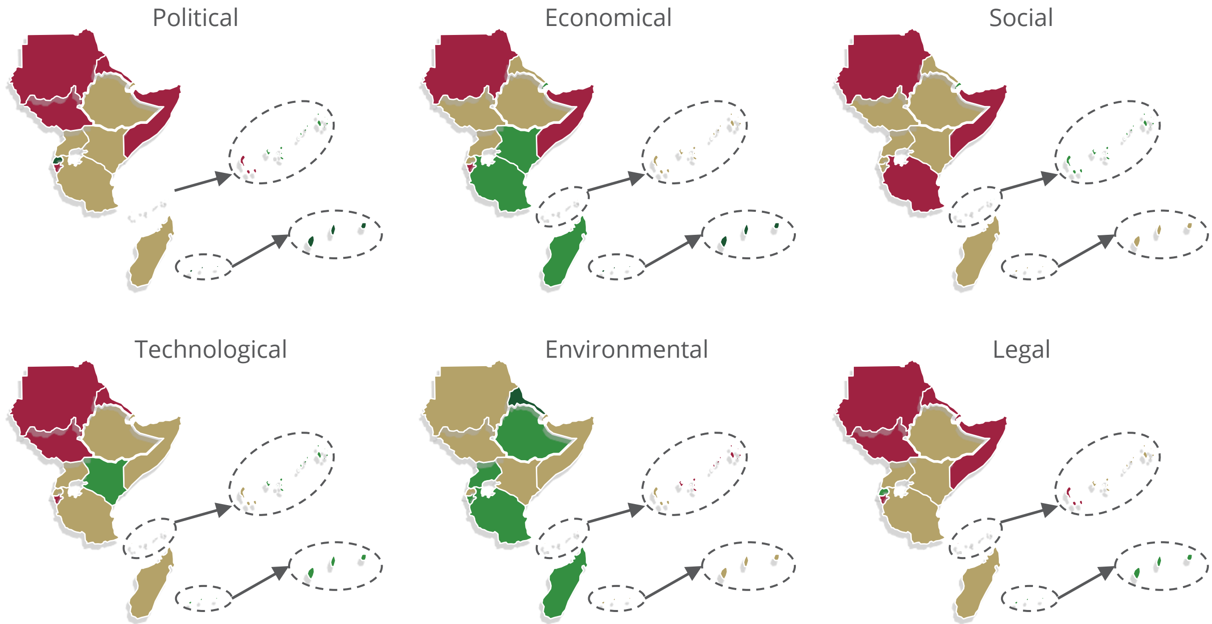

Figure 37: Summary of PESTEL Factors

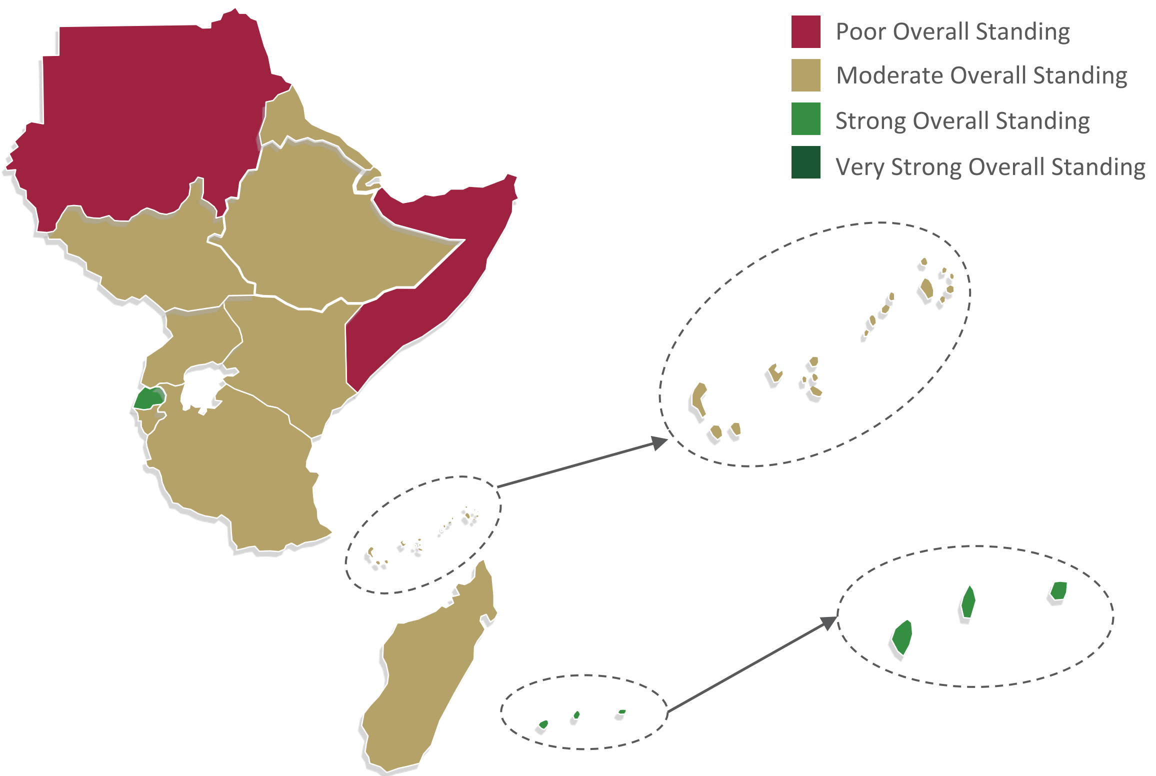

Figure 38: Regional Overview of PESTEL Factors

Regional Overview of the PESTEL Factors

The regional overview of the PESTEL Factors, as presented in Figure 38, show that the region predominantly falls into moderate standings, with only a few countries standing out as particularly strong or weak across these dimensions. This diversity highlights both opportunities and challenges for regional integration, with some countries poised for growth and investment, while others face more fundamental obstacles.

Mauritius and Rwanda are the only two countries with strong overall PESTEL standing, demonstrating high levels of readiness across governance, economic policies, and legal frameworks. Mauritius is known for its business-friendly regulatory environment, robust financial sector, and efficient legal systems. Rwanda has emerged as a model of governance reform, particularly in reducing corruption and cultivating a favourable business environment.

Somalia and Sudan are ranked as the only two countries with poor overall PESTEL standing, reflecting high levels of instability, governance challenges, and economic vulnerability. Somalia has been marked by decades of conflict, which has severely weakened its institutional capacity and infrastructure. High corruption levels and limited governance make it difficult for businesses to operate predictably, while basic services and regulatory frameworks remain underdeveloped. Sudan has faced prolonged political turmoil, high corruption, and weak legal structures, making it a challenging environment for business and investment.

Eastern Africa is heavily weighted toward moderate standings, suggesting shared regional challenges, with a mixed PESTEL landscape, with promising growth in certain countries and significant challenges in others. This distribution reflects a region that is generally progressing but lacks uniformity in governance, infrastructure, and institutional strength. The overall moderate profile suggests that while opportunities exist, strategic reforms are needed to ensure long-term stability and attractiveness. Enhanced regional cooperation, particularly in governance and legal frameworks would facilitate a more balanced and investment-friendly environment across Eastern Africa.

Regional PESTEL Aggregates

When aggregating the standings of each country in the region in each PESTEL dimension, the regional averages for all factors—Political, Economic, Social, Technological, Environmental, and Legal—consistently falls within the moderate range. This outcome highlights both the relative stability of the region as a whole and the limitations each factor faces in achieving high levels of performance.

Politically, while there is a degree of political stability across Eastern Africa, governance challenges remain widespread. Factors such as corruption, limited political accountability, and inconsistent governance practices hold back overall performance in this dimension. This reflects a region striving toward stability but still struggling with foundational governance issues that affect long-term growth and investment.

Economically, the moderate score indicates a region with growing but uneven economic potential. The region shows contrast between diverse economies and limited economic resilience and growth. This suggests that while economic opportunity exists in Eastern Africa, significant structural reforms are needed to unlock sustained economic growth.

Socially, disparities across countries create uneven development outcomes, with some populations having access to essential services while others are left underserved. This results in the moderate average standing of the region, which indicates a need for targeted social policies to enhance equity and improve overall quality of life.

Technologically, development remains moderate across the region, suggesting while digital transformation is embraced, majority of Eastern Africa still faces barriers to technological growth. Overall, there is a need for region-wide investment to enhance digital connectivity, innovation capacity, and infrastructure.

Environmentally, the regional moderate standing reflects a mixed performance in sustainability practices with areas of low emissions and limited industrial impact due to low economic development, underdeveloped environmental policies and protections. Overall environmental management remains insufficient with challenges like reliance on traditional biomass in several areas.

Legally, the presence of legal systems and their variability in their effectiveness contributes to the moderate regional standing. Weak legal systems, corruption, and lack of enforcement currently undermines investor confidence and increases business risks. The regional average standing indicates that, while there are functioning legal systems, these are balanced by an uneven distribution of institutional strengths and weaknesses.

In summary, the Eastern Africa's moderate PESTEL standing across all factors indicates a region with potential for growth but with notable limitations. Each PESTEL factor, while functional, requires strategic enhancements to transition from a stable, moderate status to a region characterised by high standards of governance, economic development, social equity, technological innovation, environmental sustainability, and legal reliability. With targeted reforms, regional cooperation, and a commitment to raising standards across the board, Eastern Africa has the potential to overcome the limitations of its moderate standing and become stronger, more integrated, and prosperous economic region.

4. SWOT Analysis

A SWOT analysis is a critical tool for evaluating the internal strengths and weaknesses of the Eastern African oil and gas industry in relation to external opportunities and threats. By identifying the industry's competitive advantages and areas for improvement, we can develop strategies that capitalise on favourable conditions and mitigate potential risks. This analysis will help us understand the industry's strategic position.

The purpose of the SWOT analysis is to:

- Identify the opportunities and threats facing oil and gas development in Eastern Africa as a result of the situations, trends and events highlighted in the macro-environment; and

- Analyse strengths and weaknesses that have strategic implications in the context of current and future conditions in the macro-environment of the Eastern African oil and gas industry.

An overview of the SWOT analytical framework is shown in Figure 39.

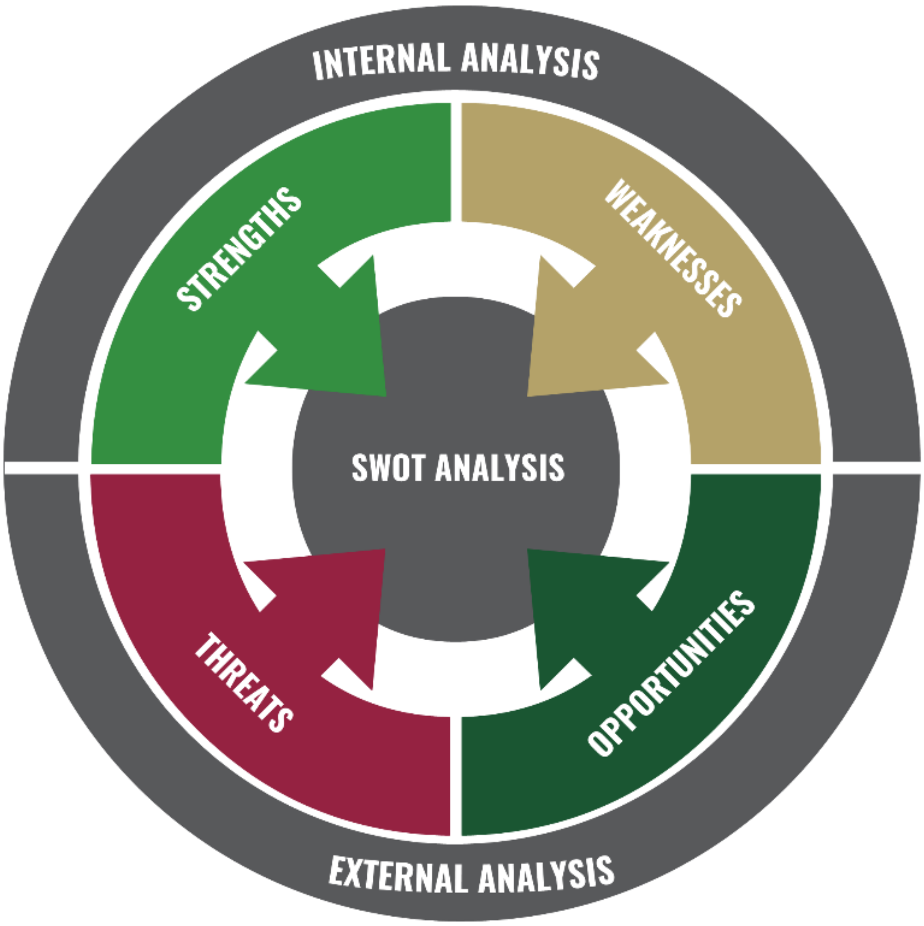

Figure 39: Overview of the SWOT Analytical Framework

4.1. Weighted SWOT Analysis Methodology

The methodology for this regional SWOT analysis was developed to identify and prioritise key Strengths, Weaknesses, Opportunities, and Threats across Eastern Africa. By synthesising data from individual country analyses and categorising recurring factors, this approach aims to present a cohesive view of the region’s strategic position within the oil and gas sector. The following approach was followed to conduct the weighted SWOT analysis:

1. Data Collection and Categorisation

   Individual SWOT analyses for each country were conducted, gathering unique and shared factors, amongst the Eastern African countries, relevant to the oil and gas sector. From these, common themes were identified and grouped. This allowed for the frequency of the shared factors obtained from the country-specific SWOT analyses to be grouped across the region.

2. Weighted SWOT Scoring

   To prioritise topics, a weighted scoring system was developed based on four (4) criteria, namely Impact, Relevance, Feasibility, and Frequency. Each criterion was weighted according to its importance within each SWOT category, as illustrated in Table 2. Each score assigned to the shared topics was multiplied with the weighting score, yielding a comparable total score across the SWOT categories.

Table 2: Weighted SWOT Scoring

Factor	Score	Explanation
Impact	3	High-impact factors are critical to achieving strategic goals. Emphasising impact across all categories ensures that priority is placed on factors with the most significant influence on the region's oil and gas sector.
Relevance	2	Relevant factors are closely aligned with current objectives. Assigning a moderate weight to relevance ensures accountability for factors that directly support regional goals without overshadowing impact.
Feasibility	1	Feasibility is important for understanding practical constraints but is weighted lower to keep focus on strategic importance rather than operational challenges.
Frequency	2	Frequency indicates how widely a factor affects the region. A moderate weight helps capture regionally significant topics without diminishing unique or high-impact issues.

3. Ranking and Qualitative Analysis

   The topics were ranked from highest to lowest based on their weighted scores, enabling the identification of high priority areas within the region. Each factor within the categories were analysed to provide strategic insights into the region's context.

Example

When looking at the strength of Strategic Location as an example the overall score, which determined its ranking amongst all the regional strengths was determined as outline below:

Location plays an important role in the expansion of the oil and gas market within the region. The Eastern African countries have good geographical positioning which directly enhances trade potential. For this reason, Strategic Location was assigned an impact score of 5 out of 5, reflecting the high potential to drive expansion, and a relevance score of 4 out of 5, indicating the significant extent of its influence on the industry.

The feasibility of the strength assesses the potential for improvement and utilisation for the expansion of the oi and gas market. While the location of the Eastern African countries is inherently beneficial and offer trade opportunities, it cannot be physically improved. Despite this, its utility for expansion remains significant, leading to a feasibility score of 4 out of 5.

Lastly, fourteen (14) of the countries had reference to their geographical location as a strength in their individual SWOT analyses which resulted in a frequency score of 4 out of 5 according to the ranking system provided in Table 3.

Table 3. Number of references and associated frequency score

No. of References	3 or less	4 to 6	7 to 9	10 to 14	15 or more
Frequency Score	1	2	3	4	5

These scores for impact, relevance, feasibility, and frequency, as outlined above, were combined with the weighting score provided in Table 2 to obtain a comparable weighted score for the strength. This yielded the results provided in Table 4.

Table 4. Total score for Strategic Location

Factor	Impact	Relevance	Feasibility	Frequency
Assigned score	5	4	4	4
Weighting score	3	2	1	2
Weighted Score	15	8	4	8
Total Score	35			

The overall score of 35 was used to determine the ranking of Strategic Location amongst the other strengths in the region. This placed Strategic Location as the second highest strength in the region, with respect to its influence on the expansion of the oil and gas market.

4.2. Regional Strengths

The Eastern Africa region has strong potential for growth in the oil and gas sector. The landscape offers opportunities for exploration, making it attractive to both local and international investors. Various characteristics of the region, along with its evolving market dynamics, create a conducive environment for investment and collaboration. Recognising these strengths is crucial for building a sustainable and successful oil and gas market in Eastern Africa. The strengths for Eastern Africa region are presented in Figure 40, ranked according to their weight as described in Section 4.1 above.

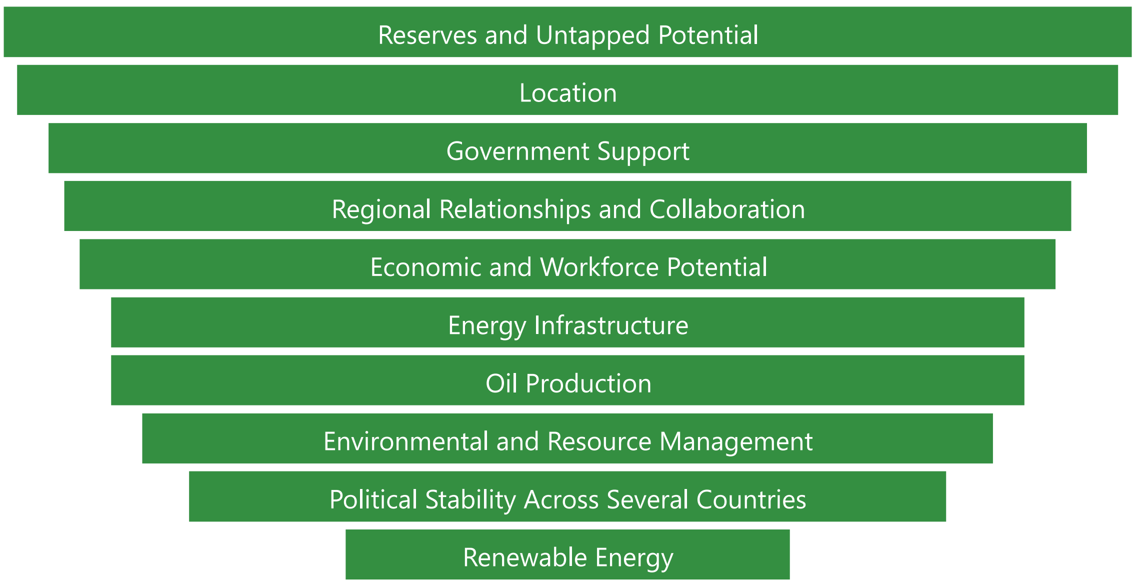

Figure 40: Regional Strengths

Reserves and Untapped Reserves emerged as the greatest strength of the region, followed by Location, Government Support, and Regional Relationships and Collaboration. On the other hand, Environmental and Resource Management, Political Stability Across Several Countries, and Renewable Energy are considered strengths, however, these are considered lower priority strengths in the context of the Eastern African oil and gas market.

The specific shared factors contributing to the strengths of the Eastern Africa region are discussed in Table 5. The strengths are discussed in order of the weighted rankings, obtained using the methodology outlined in Section 4.1.

Table 5: Regional Strengths Discussions

Factor	Description
Reserves and Untapped Potential across Several Countries	Eastern Africa has vast oil and gas reserves and untapped potential, presenting significant economic opportunities, with some areas exhibiting recoverable oil, and others with promising hydrocarbon potential. Some offshore reserves attract major international interest, and various unexplored basins offer further growth prospects. The region showcases reserves in both oil and natural gas spread over some areas. These untapped resources, if developed, could drive regional economic diversification, reduce energy import dependency, and strengthen Eastern Africa's standing as an emerging energy producer in global oil and gas markets.
Strategic Location	Eastern African countries hold valuable positions along major maritime routes, like the Bab-el-Mandeb Strait, Red Sea, Gulf of Aden, and Indian Ocean, enabling access to various trade markets. Coastal countries may serve as key logistics hubs, while landlocked countries benefit from proximity to regional trade corridors. This advantageous geography supports energy exports, attracts investment, and enhances regional cooperation, positioning Eastern Africa as a potential critical player in global oil and gas logistics.
Government Support and Commitment	Some Eastern African governments are actively promoting energy sector growth through strategic visions, where several initiatives prioritise energy infrastructure and attract foreign investment. Various countries have streamlined regulations and established national petroleum bodies, demonstrating strong commitment to sector development. This governmental backing encourages a stable environment for investments, enhances regional energy security, and strengthens Eastern Africa's position as a promising destination for international energy projects.
Regional Relationships and Collaboration	Eastern African countries are currently leveraging regional partnerships to strengthen their energy sectors and integrate infrastructure. Regional agreements with neighbouring countries and access to shared facilities and markets enhances East African energy trade. Some countries benefit from the African Union which supports collaboration, while others benefit from joint oil infrastructure. Overall, there is various existing regional integration, interconnected pipelines, and shared facilities.
Economic and Workforce Potential	Eastern Africa's economic growth and overall youthful population create promising conditions for the oil and gas sector. The region's young, rapidly growing populations present a substantial labour force for future industry expansion. In addition to this, thriving sectors like tourism in the island countries, and rapid urbanisation in the region, fuel consistent energy demand, supporting stable investments in infrastructure.
Energy Infrastructure	Eastern Africa is advancing its energy infrastructure with substantial investments in ports, railways, and pipelines. Key projects in port expansions and pipeline development, position several countries as logistics hubs. Even post-conflict areas in the region maintain vital oil infrastructure, supporting production and export. Cross-border initiatives, can further integrate regional networks, enhancing export capacity and strengthening Eastern Africa's role in global energy markets.

Factor	Description
Oil Production	Eastern Africa boasts significant oil reserves, with some countries holding billions of barrels in recoverable oil, supporting economic growth and foreign exchange. Established production capabilities, benefitting from skilled workforces and partnerships with global oil firms, can furthermore be seen in Eastern Africa. Collectively, Eastern Africa is positioned as an emerging energy hub, driving regional growth, and attracting substantial foreign investment.
Environmental and Resource Management	The diverse energy mix supports low-carbon energy security, while focus on hydropower enhances environmental awareness. Several countries showcase a commitment to environmental protection and have set ambitious goals for sustainable energy and conservation.
Political Stability Across Several Countries	Political stability across several Eastern African countries, nurtures an attractive environment for investment in the energy sector. Eastern Africa improved their stability, with recent peaceful power transitions and peace treaties, in some areas of the region, which normalises regional relations. This stability reassures investors and supports long-term projects in infrastructure and energy, making these countries more appealing for foreign partnerships and sustainable development in the region.
Renewable Energy	Eastern Africa is investing in renewable energy, aiming to diversify and secure its energy supply. The majority of the region relies heavily on traditional biomass. Various areas already focus on hydropower, solar, and wind, and others are moving towards the use of renewable energy. These initiatives enhance regional energy security and align Eastern Africa with global sustainability goals.

4.3. Regional Weaknesses

The Eastern Africa region faces various challenges that may impede the growth of its oil and gas sector. These challenges can affect investment attractiveness and operational efficiency, creating barriers to development. Factors such as regulatory complexities, infrastructure limitations, and political dynamics contribute to an environment that requires careful navigation. Recognising these weaknesses is essential for identifying potential obstacles and developing effective strategies to support a more resilient oil and gas sector in the region. The weaknesses for Eastern Africa region are presented in Figure 41, ranked according to their weight as described in Section 4.1 above.

Figure 41: Regional Weaknesses

Infrastructure Limitations, and Regulatory and Governance Challenges emerge as the greatest weaknesses in the Eastern Africa region, followed by High Costs and Financial Constraints, and Dependency on Imports and External Support. Limited Skilled Workforce, Limited Domestic Market, and Limited Industrial and Technological Capability were lower priority weaknesses for the oil and gas market in the Eastern Africa region.

The specific shared factors contributing to the weaknesses of the Eastern Africa region are discussed in Table 6. The weaknesses are discussed in order of the weighted rankings, obtained using the methodology outlined in Section 4.1.

Table 6: Regional Weaknesses Discussions

Factor	Description
Infrastructure Limitations	Many of the countries in the Eastern Africa region struggle with inadequate infrastructure, hindering energy development and access. These countries exhibit limited or underdeveloped infrastructure related to the oil and gas sector, as well as transportation infrastructure and electricity grids, limiting sector growth. Certain countries face logistical challenges due to limited storage capacity. Ageing oil infrastructure is prevalent in countries experiencing ongoing conflict, which hinders production and maintenance, and hampers efficiency. Some key players in the industry have gaps in refining and distribution, limiting their energy independence and export potential.
Regulatory and Governance Challenges	Eastern Africa faces significant regulatory and governance obstacles, impacting the oil and gas sector's development. Prominent levels of corruption and weak governance across the region erode investor confidence and hinder efficient resource management. Bureaucratic delays slow project timelines, while underdeveloped legal frameworks add to investment risks, limiting sector growth across the region.
High Costs and Financial Restraints	Financial limitations, high energy costs, and operational expenses impact many Eastern African countries. Countries with a heavy reliance on foreign aid and debt face significant constraints, limiting large-scale energy investments. Many of the smaller countries in the region experience high energy costs, deterring industrial growth, and high production costs in others inhibit industrial expansion. Economic instability in conflict prone regions adds further challenges, impacting investment attractiveness in this region.
Dependency on Imports and External Support	Many Eastern African countries depend heavily on imports or external support for energy and economic stability, leaving them vulnerable to oil price fluctuations and supply chain disruptions. This reliance on foreign aid, imported energy, or revenue from a single resource exposes economies to external market shifts, impacting government revenue and economic resilience. Such dependence limits opportunities for local capacity-building and sustainable growth, creating challenges for achieving economic stability and reducing reliance on external factors.
Political Instability	Political instability in a number of Eastern African countries poses significant risks for the oil and gas sector. Ongoing conflicts, government transitions, and security challenges deter foreign investment, disrupt production, and increase logistical risks. Even relatively stable countries face underlying issues that may impact long-term projects. This instability complicates the regulatory environment, reducing investor confidence and hindering regional energy sector growth and development.
Environmental and Social Challenges	Oil exploration in Eastern Africa often triggers environmental risks, including deforestation, pollution, and potential harm to ecosystems. In countries with more prominent agricultural sectors, oil projects could impact agriculture, and environmental concerns also provoke community opposition and delays in many cases. Some countries impose strict environmental regulations which further slow sector growth. In countries facing severe conflict, severe impacts due to limited regulation are seen, leading to unchecked pollution and social tensions. These challenges add operational costs and affect investor confidence in the region.

Factor	Description
Lack of Domestic Hydrocarbon Resources across Several Countries	Some Eastern African countries lack proven oil or gas reserves, restricting their roles in energy extraction and production. Without significant domestic resources, they face challenges in developing robust oil and gas sectors, thereby reducing their influence within the regional energy market.
Limited Skilled Workforce	Most Eastern African countries face a shortage of skilled labour in the oil and gas sector, heavily relying on foreign expertise. This reliance raises operational costs and slows sector development, limiting opportunities for local employment and skill transfer. Addressing these skills gap is essential to aid sustainable growth and reduce dependency on external expertise in the region.
Limited domestic market	Several Eastern African countries face challenges with small domestic markets for oil and gas. These limited local demands reduce the economic viability of large-scale investments in downstream operations, like refining and petrochemicals. Countries with small populations also face challenges which limited energy project returns. Consequently, countries with low consumption often rely on exports to drive energy sector growth, but this reliance can introduce additional logistical and economic complexities.
Limited industrial and technological capacity	Several areas in the region depend on foreign industrial expertise and have restricted access to modern equipment, while others have limited domestic technological capacity, hindering sector efficiency and growth. These limitations affect revenue generation and energy sector development.

4.4. Regional Opportunities

The Eastern Africa region presents a range of opportunities for the development of its oil and gas sector, driven by evolving market dynamics and increasing energy demands. The potential for collaboration among countries can enhance regional integration and investment attractiveness. Advancements in technology and sustainable practices offer avenues for innovation and improved operational efficiency. By capitalising on these opportunities, the region can strengthen its position in the energy landscape and promote economic growth.

Figure 42: Regional Opportunities

Recognising and leveraging these possibilities will be crucial for advancing the oil and gas industry in Eastern Africa. The opportunities for Eastern Africa region are presented in Figure 42, ranked according to their weight as described in Section 4.1 above.

Regional Energy Integration emerged as the greatest opportunity in Eastern Africa, followed by Exploration and Development, Regional Influence and Market Expansion, and Infrastructure and Technology Expansion. On the other hand, Local and Skill Development, Renewable Energy and Clean Technology, and Sustainable Energy Development were lower priority opportunities for the oil and gas market in the Eastern Africa region.

The specific shared factors contributing to the opportunities of the Eastern Africa region are discussed in Table 7. The opportunities are discussed in order of the weighted rankings, obtained using the methodology outlined in Section 4.1.

Table 7: Regional Opportunities Discussion

Factor	Description
Opportunities in Regional Energy Integration	Eastern African countries can benefit from regional energy cooperation, infrastructure sharing, and integration projects, as certain countries in the region have large reserves while this is lacking in other countries in the region. Therefore, through regional cooperation, countries with significant reserves can supply to those that have little to no reserves. EAC memberships, throughout the region, facilitate access to regional projects, and could broaden regional trade. Regional oil connections encourage cooperation, while centrally located areas are positioned as potential distribution hubs, enhancing market access for regional energy resources.
Opportunities in Exploration and Development	Eastern Africa has promising opportunities in hydrocarbon exploration. With countries in proximity to resource-rich areas hinting at untapped oil potential. Offshore basins are ripe for new discoveries, which could boost energy independence, and attract investment by expanding exploration. Some areas have a degree of wealth and refineries which enhances some areas potential to become net oil exporters.
Opportunities for Regional Influence and Market Expansion	Strategic locations in Eastern Africa can be leveraged to develop oil and gas logistics hubs to aid in distribution and development of the regional market. Export capabilities and pipelines strengthen regional energy integration, with several areas enhancing sector growth through licensing, while others have high storage and refining potential.
Opportunities for Infrastructure and Technological Expansion	The region is seizing opportunities to enhance infrastructure and energy technology, attracting investments in storage and refining facilities. Oil exports in several areas may fund development of infrastructure and aid in technological expansion, while others eye a petrochemical industry for added value.
Foreign Direct Investment Opportunities	Eastern African countries offer growing potential for foreign direct investment ("FDI") in the oil and gas sector, with several areas in the region actively seeking FDIs. The improvement of infrastructure, political reforms, and focus on creating stable climates attract energy-related FDIs and other major investors.
Opportunities for Public-Private Partnerships and Diversification	Eastern African countries are increasingly encouraging Public-Private Partnerships ("PPP" s) and economic diversification. PPP initiatives, and openness to PPPs, aim to attract private investments in energy infrastructure. Regionally there is a focus on economic diversification to build resilience and obtain foreign investments. The blend of oil, natural gas, and renewables enhances energy security throughout the region.

Factor	Description
Local and Skills Development Opportunities	Eastern African countries have immense potential for job creation and skills development through the oil and gas sector. All countries in the region could benefit from job creation in extraction and related industries, where a focus on local content initiatives could stimulate employment. Regional partnerships in the region coupled with capacity-building programs could further enhance technical skills, promoting economic diversification across the region.
Renewable Energy and Clean Technology	Eastern Africa's vast renewable energy potential complements traditional energy sources, facilitating sustainable growth. Some areas aim to expand renewable energy, integrating solar, wind, and geothermal to reduce fossil fuel dependency. Pursuits of hybrid projects aimed at merging natural gas with solar and exploration of renewables strengthens the region's green energy. This presents the opportunity for leveraging renewable energy in regional trade to initiate integration of the oil and gas market.
Opportunities in Sustainable Energy Development	The region has several environmental initiatives in place, enhancing its appeal to environmentally conscious investors, aiming to align with global standards in sustainable development and environmental stewardship.

4.5. Regional Threats

The Eastern Africa region faces various threats that could impact the development of its oil and gas sector. Various internal and external challenges create uncertainties that may affect investment and operational stability. These threats can undermine confidence in the market and complicate strategic planning. Understanding the potential risks is essential for developing effective strategies to mitigate them and ensure the sustainable growth of the oil and gas industry in the region. The threats for Eastern Africa region are presented in Figure 43, ranked according to their weight as described in Section 4.1 above.

Regulatory and Governance Threats, and Political and Security Risks emerged as the greatest threats in the region, followed by Environmental and Climate Risks, and Global Oil and Gas Price Volatility. On the other hand, Regional Competition, Community and Social Opposition, and Impact of Global Energy Transition were lower priority threats to the oil and gas sector in Eastern Africa.

Figure 43: Regional Threats

The specific shared factors contributing to the threats of the Eastern Africa region are disused in Table 8. The threats are discussed in order of their weighted rankings, obtained using the methodology outlined in Section 4.1.

Table 8: Regional Threats Discussion

Factor	Description
Regulatory and Governance Threats	The oil and gas sector in Eastern Africa encounters substantial risks due to regulatory and governance challenges. Inconsistent legal frameworks, ambiguous revenue-sharing policies, and frequent regulatory changes create an unstable environment for investors. Corruption remains a widespread issue, discouraging foreign investment. Insufficient regulatory enforcement also increases environmental and operational risks, further complicating sustainable development in the industry.
Political and Security Risks	The oil and gas sector in Eastern Africa faces considerable challenges from political instability, regional conflicts, and security issues. Geopolitical tensions among neighbouring countries heighten risks to energy infrastructure and logistics. Security threats, including terrorism, increase costs and disrupt operations. Economic dependence on fluctuating oil prices, coupled with competition from established players in the region, adds financial uncertainty. Widespread corruption and governance issues also hinder foreign investment, creating an environment of instability that affects growth across the oil and gas sector.
Environmental and Climate Risks	Environmental and climate-related risks pose serious challenges for Eastern Africa's oil and gas sector. Oil exploration impacts such as deforestation, water contamination, and habitat destruction can incite local opposition and threaten social stability. Climate change adds to these vulnerabilities, with rising sea levels endangering infrastructure in coastal and island areas. The region also faces heightened risks from extreme weather and environmental degradation, while efforts to meet climate goals may conflict with the carbon emissions associated with oil and gas development.
Global Oil and Gas Price Volatility	Eastern African countries are vulnerable to global oil price volatility due to their reliance on oil imports or exports. Fluctuating prices impact economic stability, putting regional oil and gas projects at risk. For resource-dependent economies, sharp declines can reduce government revenues, while high prices place added strain on importing countries. This dependence on unstable markets highlights the need for energy diversification across the region to reduce exposure to external economic shocks.
Dependence on Foreign Resources	Eastern African countries face challenges from their heavy reliance on foreign investment, expertise, and infrastructure for oil and gas development. Dependence on external capital and technical expertise limits local capacity-building and heightens vulnerability to external disruptions. Reliance on cross-border energy sources and infrastructure exposes the region to geopolitical risks, while limited economic diversification in some areas amplifies these dependencies. This reliance on outside resources magnifies the need for greater self-sufficiency to strengthen economic resilience across the region.
Skills and Infrastructure Challenges	Eastern Africa's oil and gas sector faces significant challenges from skill shortages and infrastructure limitations. Heavy reliance on costly foreign labour restricts local employment opportunities and slows sectoral growth. Infrastructure delays limit resource distribution and reduce potential economic gains, while underdeveloped energy infrastructure increases costs and heightens vulnerability to supply disruptions. Additionally, aging facilities across the region require urgent upgrades to prevent operational and environmental risks, underscoring the need for investment in both workforce development and infrastructure modernisation.

Factor	Description
Regional Competition	Eastern African countries face competitive pressures from established regional energy leaders with mature oil and gas sectors, robust infrastructure, and favourable legal frameworks that attract more substantial foreign investment. For emerging players, this entrenched competition presents challenges in securing market presence and investment. Smaller markets also struggle to attract investors, given competition from larger, resource-rich countries with well-developed energy sectors. This dynamic limits opportunities for new entrants and smaller economies to pursue large-scale energy projects and establish industry footholds.
Community and Social Opposition	Community opposition presents a considerable risk to oil and gas projects throughout Eastern Africa. Where resource development benefits are perceived as unequally distributed, local resistance can lead to protests and social unrest. Core issues often include disputes over land rights, revenue-sharing, and environmental impacts. In areas with heightened sensitivities, tensions may escalate if communities feel excluded, resulting in project delays and elevated costs as companies work to address and mitigate local grievances.
Impact of Global Energy Transition	The global transition to renewable energy presents challenges for Eastern African countries focused on fossil fuel development. As global demand for oil declines, the region may experience reduced investment in exploration, risking untapped hydrocarbon reserves. Additionally, rapid shifts in international energy policies could curtail funding access for fossil-based projects, constraining growth opportunities and pressing the need for diversification in energy strategies to align with sustainable energy trends.

4.6. Regional SWOT Analysis

To illustrate the interdependencies between the multiple factors across the board, the nodal diagram in Figure 44 was developed, which aids in visualising the complex relationships among the Strengths, Weaknesses, Opportunities, and Threats identified, highlighting how factors across the SWOT categories influence each other. This approach allows for deeper analysis of how strengths can offset weaknesses, how opportunities can mitigate threats, and where interdependencies may create challenges and offer solutions. This perspective enables a nuanced understanding of the regional dynamics, supporting the formulation of strategies that capitalise on strengths, address weaknesses, and leverage opportunities to minimise potential threats.

To effectively capitalise on opportunities and mitigate threats in the Eastern African oil and gas sector, it is essential to leverage the region's strengths while addressing its weaknesses. By strategically utilising inherent advantages, competitive positioning and sustainable growth can be enhanced. Recognising and addressing existing challenges will be critical for creating an environment that drives investment and operational efficiency.

This discussion will explore how a balanced approach, combining the maximisation of strengths with proactive measures to overcome weaknesses, can facilitate a more resilient and prosperous oil and gas industry in Eastern Africa.

Opportunity-Driven Analysis

Regional Energy Integration facilitates economic interdependence, which can stabilise relations and reduce conflicts, as countries prioritise shared resources. This mutual reliance can provide a buffer against *Political and Security Risks*, encouraging conflict resolution to protect energy infrastructure. The synergy between *Regional Energy Integration* and *Regional Relationships and Collaboration* creates a reinforcing loop. Increased energy ties fortify diplomatic relations, setting the groundwork for cooperation in other critical areas and promoting a more cohesive regional framework. By focusing on *Regional Energy Integration*, Eastern Africa can both counter political risks and leverage stronger regional alliances, positioning itself as a stable and cooperative energy hub attractive to investors.

The strong connection between *Exploration and Development* and *Oil Production* highlights how active production can drive further exploration efforts, enhancing economic returns and improving regional energy security. Developing existing production capabilities strengthens exploration viability by generating revenue to fund further resource assessment.

Exploration and Development is reinforced by the region's *Reserves and Untapped Potential*. This connection suggests that by advancing exploration the region can capitalise on its untapped resources, transforming potential reserves into actionable assets that enhance its position in the global energy market. *High Costs and Financial Constraints* and *Lack of Domestic Hydrocarbon Resources* indicates that while financial and resource limitations pose challenges, targeted exploration could attract foreign investment, reducing the financial burden on local economies. Proving domestic resources through exploration could reduce reliance on imports, building energy independence.

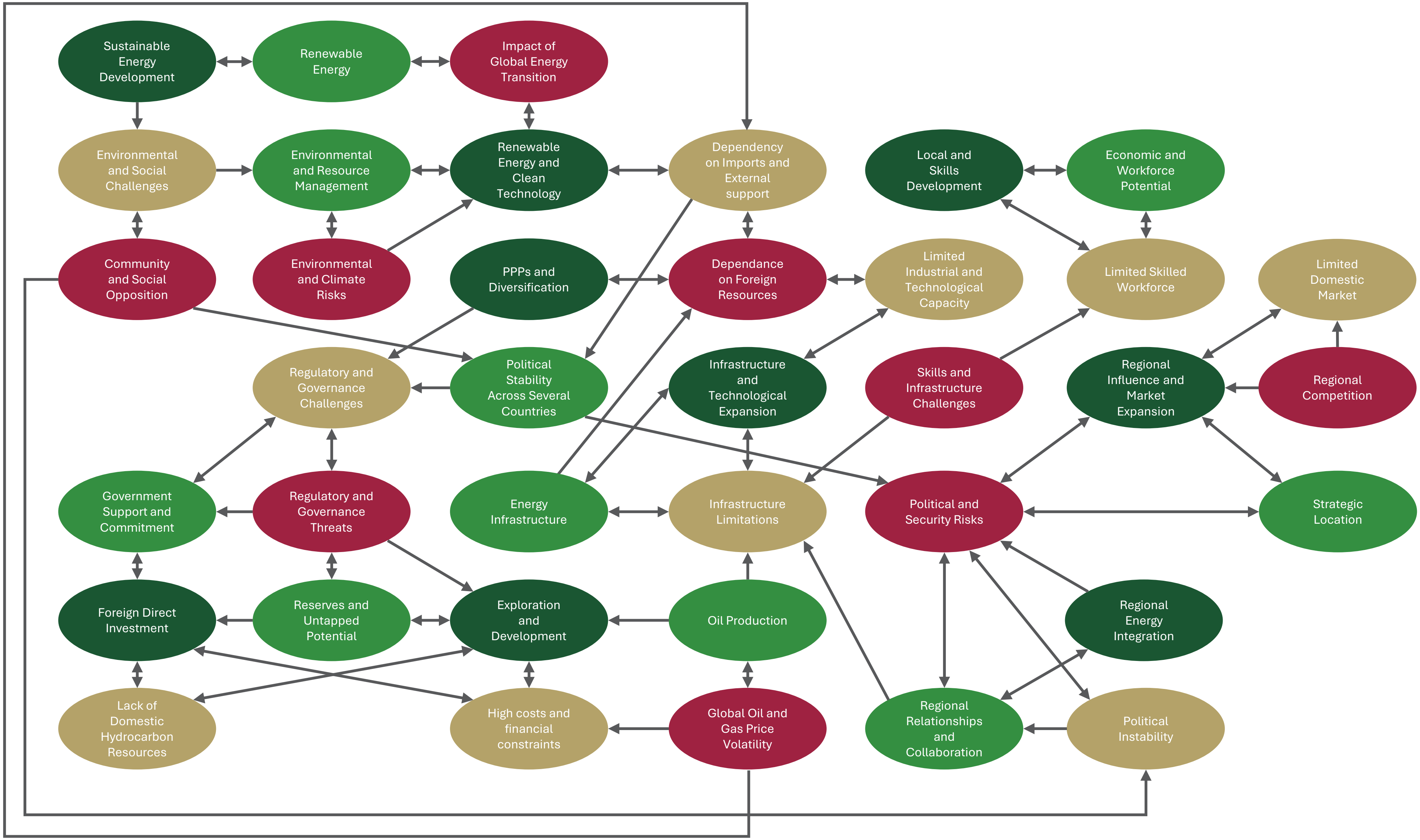

Figure 44: Nodal Diagram of SWOT Interdependencies

Strategic Location provides Eastern Africa with a geographical advantage for becoming a logistics and distribution hub, aligning well with the goal of *Regional Influence and Market Expansion.* This natural strength supports regional trade routes and cross-border energy supply chains, giving the region leverage to attract investments and enhance its global energy presence. While *Regional Competition* poses a risk by diverting investment to neighbouring energy players, focusing on unique advantages like strategic access points and trade linkages can differentiate Eastern Africa from other regions. By emphasising collaborative trade relationships and capitalising on infrastructure, Eastern Africa can build resilience against this competitive threat. The connection with the *Limited Domestic Market* increases the necessity of regional expansion to tap into broader markets within the region and enhance resource distribution. Expanding market influence mitigates the limitations of smaller domestic demands making large-scale investment viable through regional trade. The connection with *Political and Security Risks* highlights that geopolitical stability is critical to fully realising *Regional Influence and Market Expansion*. Building diplomatic and security-focused collaborations can reduce these risks, reinforcing a stable foundation for energy projects and encouraging foreign direct investment.

Eastern Africa's *Energy Infrastructure* serves as a foundational asset to drive *Infrastructure and Technological Expansion*. This existing strength provides a baseline for upgrading facilities, expanding capacity, and introducing more advanced technologies, positioning the region to support increased production and improve logistical networks. *Infrastructure Limitations* currently hinder growth by creating bottlenecks in distribution, refining, and energy access. This connection highlights the pressing need to expand infrastructure networks, such as pipelines, refineries, and transport links, to unlock the full potential of the region's resources. Prioritising technological and infrastructural development can directly alleviate this limitation, encouraging efficient resource management and wider regional integration. *Limited Industrial and Technological Capacity* highlights the importance of the *Infrastructure and Technological Expansion* opportunity. Investment in modern equipment, technological upgrades, and skilled labour development will be essential to enhance the operational efficiency of the energy sector. By focusing on technological advancement and capacity building, the region can decrease dependency on foreign expertise, lower operational cost, and strengthen local industry resilience.

The region's *Reserves and Untapped Potential* make Eastern Africa an attractive destination for *Foreign Direct Investment.* The presence of substantial hydrocarbon resources creates compelling prospects for investors, providing a strong foundation for resource-driven economic growth. *Government Support and Commitment* plays a pivotal role in attracting *Foreign Direct Investment* by establishing favourable policies, streamlining regulatory frameworks, and creating a stable business environment. These actions reinforce the appeal of Eastern Africa's oil and gas sector, making it easier for foreign entities to navigate the investment landscape. This connection shows that ongoing and robust government backing can maximise the flow of *Foreign Direct Investment. Lack of Domestic Hydrocarbon Resources* emphasises the importance of *Foreign Direct Investment* for countries that rely on imported energy. By attracting *Foreign Direct Investment*, these countries can boost exploration activities, potentially discovering new reserves and reducing dependency on external resources. Thus, *Foreign Direct Investment* can serve as a strategic tool to mitigate this limitation by providing the capital and expertise needed to expand resource access. *High Costs and Financial Constraints* presents significant hurdles to self-funded sector growth, making *Foreign Direct Investment* essential for overcoming financial barriers. *Foreign Direct Investment* can alleviate these constraints by supplying the necessary capital to cover operational expenses, technological upgrades, and infrastructural improvement, accelerating sectoral expansion in a financially sustainable manner.

PPPs can help mitigate *Regulatory and Governance Challenges* by introducing structured, private-sector standards that promote transparency and efficiency. PPPs facilitate shared risk management and potentially streamline complex regulatory environments, making it easier to navigate governance issues across multiple countries within Eastern Africa's energy sector. The connection between *Dependence on Foreign Resources* and *PPPs and Diversification* illustrates how this opportunity can reduce external reliance by creating a diversified energy base. Through PPPs, Eastern Africa can attract local and international investment to develop domestic resources, which in turn can decrease the need for foreign expertise and infrastructure. This interdependency highlights the potential of PPPs to enhance self-reliance in both resources and skills. Diversification within the sector, supported by PPPs, can create a more balanced energy landscape by expanding into renewables alongside traditional oil and gas resources. This diversification can make the region less vulnerable to oil price fluctuations, political stability, and supply chain disruptions associated with over-reliance on any single energy source. The interconnection of *PPPs and Diversification* is therefore a critical strategy to ensure energy security.

The connection between *Local and Skills Development* and *Economic and Workforce Potential* emphasises how investing in skills directly strengthens the region's labour force, increasing its capacity for growth. By cultivating a skilled workforce, Eastern Africa can unlock latent economic potential, creating a competitive and sustainable energy sector equipped with local expertise. This interdependency emphasises the opportunity for localised development to fuel economic resilience and drive job creation. *Local and Skills Development* serves as a direct solution to the *Limited Skilled Workforce* challenge. Training can reduce reliance on costly foreign labour by equipping local populations with essential skills in oil and gas operations, renewable energy, and supporting industries. This not only fills the current skill gap but also establishes a long-term foundation for local employment, lowering operational costs over time. By developing local expertise, Eastern Africa can move toward greater self-sufficiency within its energy sector. Reducing dependence on imported skills helps retain revenue within the region and allows for consistent sectoral growth as the workforce becomes more skilled and autonomous. A local talent base can support innovation and sectoral advancements, positioning Eastern Africa to be competitive in both traditional and renewable energy markets.

Renewable Energy and Clean Technology present a proactive solution to *Environmental and Climate Risks* by reducing reliance on fossil fuels and promoting sustainable practices. By prioritising cleaner energy sources, Eastern Africa can address environmental vulnerabilities, like emissions reduction, habitat protection, and improved air quality, which supports long-term resilience and minimises the sector's ecological footprint. The *Impact of Global Energy Transition* magnifies the urgency for Eastern Africa to adopt renewable energy to remain competitive in a shifting global landscape. Embracing renewables not only aligns with international sustainability trends but also positions the region to attract environmentally conscious investments. The region's commitment to *Environmental and Resource Management* boosts the case for clean energy adoption. By building on existing environmental strategies, the transition to renewables gains a strong foundation, enhancing Eastern Africa's reputation as a sustainable energy player. Developing clean technology can reduce Eastern Africa's *Dependency on Imports and External Support* for fossil fuels. Expanding domestic energy sources like solar, wind, and hydropower build energy self-sufficiency, shields the region from oil price volatility and strengthens its economic stability.

Sustainable Energy Development directly influences *Environmental and Social Challenges* by prioritising cleaner, more responsible energy practices. This opportunity emphasises implementing eco-friendly projects that minimise ecological disruption, address pollution, and encourage community trust. Integrating sustainable approaches into energy strategies can mitigate local opposition and social tensions associated with oil and gas developments, improving relationships between energy projects and communities. The connection to *Renewable Energy* as a strength positions *Sustainable Energy Development* as a natural progression for Eastern Africa. Existing commitments to renewable energy, lay the groundwork for broader sustainability initiatives. This linkage reinforces the region's focus on diversifying energy sources while aligning with global sustainability standards, making Eastern Africa more attractive to investors interested in environmentally responsible projects.

Threat-Driven Analysis

Regulatory and Governance Threats drives the need for stronger *Government Support and Commitment*. This dynamic, highlights that inconsistent regulatory frameworks and governance issues put pressure on governments to demonstrate stability and commitment ensuring a conducive investment climate. Strengthening government backing can counteract these threats by providing clearer policies and robust support for energy projects, thereby building investor confidence and facilitating sector growth. The connection to *Reserves and Untapped Potential* suggests that while the region hold significant untapped energy resources, *Regulatory and Governance Threats* can impede *Exploration and Development* efforts. Without addressing these threats, the potential economic benefits of reserves may remain unrealised, limiting the region's ability to capitalise on its resources and attract substantial investment. *Regulatory and Governance Threats* deepens the cyclical nature of governance issues. Weak regulatory frameworks exacerbate governance threats leading to a loop where inefficiencies perpetuate challenges in legal, environmental, and operational areas.

Political and Security Risks are notably influenced by the opportunity of *Regional Energy Integration* and the strength of *Political Stability Across Several Countries*. Successful energy integration can enhance political cooperation, stabilise relationships, and reduce security risks. Similarly, *Political Stability Across Several Countries* strengthens regional resilience to these threats, creating an environment where collaborative energy projects and investments can thrive. The *Strategic Location* of Eastern Africa and *Regional Relationships and Collaboration* are both strengths than can either buffer or exacerbate *Political and Security Risks.* The region's location along global maritime routes can attract strategic investments but may also become a focal point for geopolitical tensions. The opportunity of *Regional Influence and Market Expansion* is intricately linked to *Political and Security Risks*. While expanding market influence can alleviate the region's economic profile, underlying *Political and Security Risks* can disrupt the growth and limit market opportunities. Stable governance and effective security strategies are necessary to sustain the region's aspirations for broader regional market influence. *Political and Security Risks* are interconnected with *Political Instability* highlighting the reinforcing nature of these challenges. Unresolved security issues can deepen political instability, affecting the investment climate and hindering infrastructure development. This cycle emphasises the critical need for strong governance frameworks and cohesive security policies to ensure a stable operating environment.

Environmental and Climate Risks act as a catalyst for the opportunity of *Renewable and Clean Technology*. The risks push for a shift toward cleaner and more sustainable, energy solutions to mitigate the impact of climate change and reduce reliance on environmentally detrimental practices. This interdependency reinforces the necessity for Eastern Africa to accelerate renewable energy adoption as a strategic response to environmental challenges. The strength of *Environmental and Resource Management* plays a crucial role in addressing *Environmental and Climate Risks.* Effective management practices can help reduce the impact of these risks by ensuring sustainable resource use and implementing policies to protect ecosystems. Conversely, increased environmental challenges can strain current management systems, highlighting the need for continuous improvement and innovation in resource management strategies. The presence of *Environmental and Climate Risks* threatens the stability and sustainability of the oil and gas sector. Leveraging the strength of *Environmental and Resource Management*, the region can build resilience and foster sustainable practices. This link emphasises the importance of robust environmental policies and proactive climate strategies to secure long-term growth and maintain investor confidence.

Global Oil and Gas Price Volatility exerts pressure on regional economies by increasing operational costs and financial risks. This leads to the weakness of *High Costs and Financial Constraints*, impacting the ability of Eastern African countries to fund infrastructure projects and maintain competitive energy production levels. The fluctuation in prices creates budgetary instability, complicating long-term financial planning for the oil and gas sector. *Oil Production* as a strength can be both affected by and be a response to *Global Oil and Gas Price Volatility*. When prices are high, *Oil Production* may boost revenues and strengthen economic resilience. However, when prices fall, production becomes less profitable, highlighting a vulnerability in relying heavily on this sector. This relationship suggests that diversifying revenue streams is essential for mitigating the risks posed by volatile oil prices. *Dependency on Imports and External Support* is a weakness linked to *Global Oil and Gas Price Volatility*. When oil prices rise, the cost of imported energy increases, straining national budgets and heightening economic dependence. Periods of lower oil prices may reduce costs but can impact revenues for resource-dependent countries, further underscoring the need for energy diversification to balance imports and domestic production.

The strength of *Energy Infrastructure* drives the threat of *Dependence on Foreign Resources.* While *PPPs and Diversification* can attract investment and expertise to support infrastructure and sector development, they can also perpetuate reliance on foreign partners. *Dependency on Imports and External Support* is inherently connected to the threat of *Dependence of Foreign Resources*. This interdependency highlights the region's challenge in balancing external inputs with internal capabilities. Excessive reliance on imports and foreign aid limits the region's self-sufficiency and increases exposure to geopolitical and economic disruptions. *Limited Industrial and Technological Capacity*, ties directly to *Dependence on Foreign Resources*. The lack of domestic technological development and expertise reinforces reliance on foreign technology and services. This creates a feedback loop where limited local capacity necessitates further dependence, which in turn stunts local growth and innovation. Addressing this through targeted investments in education, training, and local industry could break the cycle.

Skills and Infrastructure Challenges significantly contribute to the weakness of a *Limited Skilled Workforce*. The persistent lack of training programmes, educational opportunities, and industry-relevant skill development exacerbates this issue. This, in turn, restricts the oil and gas sector's ability to utilise local talent, increasing reliance on foreign expertise and raising operational costs. Addressing this threat through targeted educational initiatives and training programmes could enhance local workforce capabilities and reduce dependence on costly external resources. *Infrastructure Limitations* are directly influenced by *Skills and Infrastructure Challenges.* Insufficient expertise in planning, constructing, and maintaining energy infrastructure limits the development and efficiency of critical facilities such as pipelines, refineries, and transportation networks. This challenge results in inefficiencies, production delays, and higher operational costs. Strategic partnerships, investments in technical training, and the development of public-private projects could help mitigate these limitations by enhancing local capabilities and infrastructure resilience.

The threat of *Regional Competition* places pressure on countries with smaller or *Limited Domestic Markets.* Established regional energy leaders with stronger infrastructure and more mature oil and gas sectors can out compete emerging or smaller markets, limiting their ability to attract investment and scale operations. This dynamic can result in constrained economic growth, as countries may struggle to generate significant domestic demand or attract sufficient investment to expand their oil and gas sector. Despite posing a challenge, *Regional Competition* also fuels the opportunity for *Regional Influence and Market Expansion*. The need to remain competitive can push Eastern African countries to develop strategies that leverage their unique strengths and carve out niches in the market. By encouraging collaboration, improving infrastructure, and adopting policies that attract investment, these countries can enhance their market position. This could transform competition into a driver for innovation and growth allowing for strategic partnerships and regional integration that strengthens collective economic standing.

Community and Social Opposition has a direct impact on *Political Stability Across Several Countries* in the region. When local communities feel marginalised or perceive unequal distribution of benefits from oil and gas projects, it can lead to protests, unrest, and social conflicts. These disruptions can escalate, creating broader *Political Instability* that deters foreign investment and hampers sector growth. Addressing community concerns is therefore essential to maintaining *Political Stability Across Several Countries* and cultivating a conducive investment climate. *Community and Social Opposition* is closely linked with *Environmental and Social Challenges*. Environmental degradation can provoke strong resistance for communities. *Community and Social Opposition* can highlight the urgency of addressing environmental concerns more effectively, pushing for stricter regulations and sustainable practices. This interaction creates a feedback loop where unresolved environmental issues intensify community opposition, while heightened social opposition further underscore environmental priorities.

The *Impact of Global Energy Transition* is intricately linked with the region's strength in *Renewable Energy and Clean Technology*. While the transition poses a threat to traditional oil and gas sector by reducing demand for fossil fuels, it also emphasises the importance of developing *Renewable Energy*. Eastern Africa's existing efforts in expanding *Renewable Energy* can help counteract this threat by positioning the region as a leader in sustainable energy, mitigating risks associated with declining oil demand. The *Impact of Global Energy Transition* also connects with the opportunity for *Renewable Energy and Clean Technology.* This transition drives the need for diversification, pushing Eastern African countries to capitalise on their *Renewable Energy* potential. By integrating clean technologies and promoting green energy projects, the region can leverage this shift as an opportunity to attract environmentally conscious investors, align with sustainability goals, and enhance energy resilience.

Regional SWOT Insights

The interplay between strengths, weaknesses, opportunities, and threats in Eastern Africa's oil and gas sector creates a dynamic and balanced landscape where challenges are met with existing and emerging capabilities. This balance signifies that while challenges persist, they can be countered by existing assets and emerging strategies that enhance the region's resilience. Aligning opportunities with strengths could enable the region to harness untapped potential and advance its energy ambitions. Robust regional cooperation provides a platform for managing risks related to external dependencies and market volatility. The capacity to transform these opportunities into actionable strategies relies on cohesive policies, investment in local capabilities and innovation. The region's vulnerabilities necessitate careful management, as while risks are present, they do not overshadow the potential for development.

Eastern Africa's ability to navigate this landscape depends on leveraging its strengths, mitigating its weaknesses, capitalising on opportunities, and actively addressing threats. This interconnected approach paves a path towards stability and progress, positioning the region as a formidable contender in the energy landscape while promoting long-term economic growth and resilience.