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Case Study Analysis of Non-Political Risks in Utility-Scale Solar Power Projects: A Focus on Kenya

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Abstract

This case study examines non-political risks affecting utility-scale solar power projects in Kenya, a country at the forefront of renewable energy efforts in East Africa. With substantial solar potential, Kenya faces numerous challenges in scaling up solar infrastructure due to environmental, financial, technological, and regulatory risks. This study provides a focused analysis of a major utility-scale solar project in Kenya, identifying critical non-political risk factors and exploring their implications on project feasibility and sustainability. Data were gathered through interviews with stakeholders, project documents, and government reports. Findings indicate that environmental risks such as land use conflicts, financial barriers stemming from high initial costs, technological limitations regarding grid infrastructure, and inconsistent regulatory frameworks collectively pose significant barriers to solar project success. This study highlights the importance of targeted risk management strategies, including improved policy frameworks, capacity building, and stakeholder engagement.

Keywords:: Non-Political Risks, Solar Power Projects, Utility-Scale, Kenya, Renewable Energy, Risk Mitigation, Environmental Risks, Financial Barriers

1. Introduction

1.1 Background of Solar Energy in Kenya

Kenya has emerged as a leading nation in East Africa's renewable energy landscape, owing to its vast potential for solar, wind, and geothermal power generation. Solar energy, in particular, has become a focal point in Kenya's energy mix due to the country's geographical advantage near the equator, which provides high levels of solar irradiance (IRENA, 2019). Approximately 75% of Kenya's landmass receives solar radiation, making it ideal for solar photovoltaic (PV) systems. Kenya has undertaken substantial efforts to diversify its energy sources, responding to both local energy demands and global environmental pressures. Utility-scale solar projects have become increasingly prominent as a strategy to reduce reliance on fossil fuels, promote sustainable energy, and improve access to electricity, particularly in rural areas (Kiplagat, Wang, & Li, 2011).

Despite Kenya's proactive stance, large-scale solar deployment faces various challenges. The development of solar energy in Kenya is part of the government's larger commitment to renewable energy, as outlined in Kenya Vision 2030 and the National Climate Change Action Plan (2018–2022), which aim to mitigate the impact of climate change while improving energy access (Ministry of Energy, 2020). While the solar sector has grown, the path has not been without obstacles, particularly concerning financing and policy support. These challenges are compounded by non-political risks such as environmental concerns, financial barriers, technological limitations, and regulatory uncertainties that must be addressed to sustain growth (Ondraczek, 2013).

1.2 The Importance of Utility-Scale Solar Projects

Utility-scale solar projects, defined as large solar power installations generating electricity to feed directly into the grid, are essential for achieving a transition to renewable energy on a national scale (Aggarwal, 2019). Unlike small distributed solar systems, utility-scale projects can produce significant amounts of energy, making them critical for meeting both urban and rural electricity needs efficiently. In Kenya, utility-scale solar projects contribute to economic growth by creating jobs, improving energy security, and reducing energy costs over time (IRENA, 2019). Additionally, they contribute to the government's goal of achieving universal access to electricity by 2030, a target that is integral to socio-economic development.

However, implementing utility-scale solar in Kenya is challenging due to infrastructural and environmental constraints, along with high capital costs (World Bank, 2020). The projects often require vast land areas, which can lead to land-use conflicts, especially in regions with high biodiversity or agricultural value. Moreover, integrating large-scale solar installations into Kenya's grid presents technical and operational challenges, as the infrastructure requires upgrades to accommodate renewable energy (Muchira, 2018). The success of these projects depends on a supportive regulatory environment, effective risk management, and sustainable financial models (Aggarwal, 2019).

1.3 Non-Political Risks in Renewable Energy

Non-political risks, including environmental, financial, technological, and regulatory challenges, are critical factors that affect the viability of renewable energy projects like utility-scale solar (Kibaara, Murage, Musau,

& Saulo, 2019). Environmental risks often include land use conflicts, biodiversity impacts, and water usage, all of which can delay or obstruct project development. Financial risks stem from the high initial costs associated with solar installations and challenges in securing affordable financing. This issue is particularly pertinent in emerging markets like Kenya, where access to capital is limited and currency fluctuations can affect project stability (Gupta, 2020).Technological risks are largely due to insufficient infrastructure and limited technical expertise, which can impact the integration of solar power into existing grids. Grid stability issues, especially in countries where infrastructure is underdeveloped, pose significant barriers to utility-scale solar projects (Muchira, 2018). Regulatory risks, on the other hand, are related to policy inconsistencies, bureaucratic delays, and the lack of a clear regulatory framework that can provide incentives for solar development (Kamau & Wanyoike, 2015).

1.4 Objectives and Structure of the Case Study

The objective of this case study is to analyse the non-political risks associated with utility-scale solar power projects in Kenya, with a specific focus on environmental, financial, technological, and regulatory risks. By examining these risks, this study aims to identify mitigation strategies that can help overcome barriers to solar project development. Additionally, the study seeks to contribute to the broader literature on renewable energy risks in emerging markets, offering insights that may be applicable to similar contexts (Aggarwal, 2019; Ondraczek, 2013).

2. Literature Review

Non-political risks are significant concerns in the renewable energy sector, affecting the development and sustainability of projects. Unlike political risks, which are influenced by government stability and policy changes, non-political risks arise from environmental, financial, technological, and regulatory challenges (Breyer et al., 2015). For solar power projects, these risks are particularly pronounced due to the extensive land requirements, high initial capital, dependency on weather conditions, and the need for regulatory support to ensure project viability (Aggarwal, 2019).

Several studies have focused on understanding the non-political risks associated with renewable energy projects. For instance, environmental risks such as land use conflicts are common, as solar installations often require large, uninterrupted tracts of land (Muchira, 2018). Financial risks are another area of concern, with projects relying heavily on subsidies and financing options that are not always accessible in emerging markets (Gupta, 2020). By addressing these non-political risks, renewable energy projects can achieve greater feasibility and long-term sustainability.

Environmental risks in solar power projects include impacts on land use, biodiversity, and water resources (Mwangi, 2013). Solar projects typically require vast areas of land, which can lead to conflicts with other land uses, especially in regions with high biodiversity or agricultural activity. In Kenya, this risk is compounded by land tenure issues, where the ownership and use rights of land are often contested (Muchira, 2018). Additionally, the installation of solar panels and associated infrastructure may disturb local ecosystems, leading to biodiversity loss. This is particularly concerning in arid regions where the natural flora and fauna are already fragile (FAO, 2016).

Water usage is another critical environmental consideration. While solar power generation itself requires minimal water, maintenance of solar panels, especially in dusty regions, may necessitate regular cleaning, increasing water demand (Goswami, 2019). Understanding these environmental risks is essential for planning and implementing solar projects that are both sustainable and minimally disruptive to local ecosystems.

Financial constraints are among the most significant barriers to solar project development, especially in emerging markets where access to capital is limited (Kibaara et al., 2019). The high upfront costs associated with solar technology, coupled with uncertain returns, make these projects risky for investors. In Kenya, solar developers face challenges in securing financing at competitive rates, with local financial institutions often lacking the resources to support large-scale renewable projects (Gupta, 2020).

Financial barriers are further complicated by currency fluctuations, which can affect project budgets and profitability. As many solar projects rely on foreign investment, fluctuations in exchange rates pose a significant risk. Additionally, inadequate financial incentives from the government can deter private investment. Mitigating these financial risks is crucial for promoting solar energy in Kenya, particularly through mechanisms such as tax breaks, subsidies, and loan guarantees.

2.5 Regulatory Framework Challenges in Emerging Markets

Regulatory challenges are a major concern for renewable energy projects in emerging markets, where inconsistent policies and bureaucratic delays can impede project implementation (Kamau & Wanyoike, 2015). In Kenya, regulatory frameworks are evolving but remain underdeveloped, creating uncertainty for investors.

Policies regarding land acquisition, environmental impact assessments, and grid access can be inconsistent, leading to delays in project approvals (Ondraczek, 2013).

Moreover, the lack of clear regulatory incentives can make it difficult for solar developers to secure financing and long-term contracts. Regulatory reforms that streamline processes, provide incentives, and ensure stable policies are essential for fostering a supportive environment for solar energy. Addressing these regulatory barriers will enable Kenya to attract more investment in solar power and achieve its renewable energy goals.

Table 2.1: Summary of Non-Political Risks in Utility-scale Solar Projects

Risk Category	Description	Examples in Kenya	Mitigation Strategies
Environmental	Land use conflicts, biodiversity impact	Conflicts with agriculture, wildlife habitats	Strategic site selection, EIA compliance
Financial	High capital costs, currency fluctuations	Limited financing options, volatile economy	Subsidies, foreign investment incentives
Technological	Grid integration, technical expertise	Insufficient grid infrastructure, skill gaps	Infrastructure upgrades, training programs
Regulatory	Policy inconsistency, bureaucratic delays	Inconsistent policies, complex approvals	Regulatory reform, streamlined procedures

3. Methodology

3.1 Case Study Design

This study adopts a case study design to examine non-political risks in utility-scale solar power projects, specifically focusing on a major solar installation in Kenya. Case studies are widely used in research to provide an in-depth understanding of complex phenomena within real-world contexts (Yin, 2018). This design is particularly suitable for exploring non-political risks, as it allows for a comprehensive analysis of environmental, financial, technological, and regulatory issues within a specific project framework. A case study design also supports the integration of qualitative and quantitative data, which enhances the reliability and richness of findings (Stake, 2013).

In this study, the selected project serves as a representative case due to its scale, stakeholder diversity, and the breadth of risks encountered. The case study approach also enables the research to uncover insights that may be applicable to similar solar projects in other emerging markets. By focusing on Kenya, a leader in renewable energy adoption in Africa, the study contributes valuable knowledge to the field of renewable energy risk management in developing regions (Breyer et al., 2015). This approach is bolstered by data collected through interviews, document analysis, and secondary sources, providing a multi-faceted understanding of the risks involved.

3.2 Data Collection Methods

Data collection for this case study relied on multiple sources to triangulate findings and ensure data reliability. The main data collection methods were stakeholder interviews, project document analysis, and government reports. Each of these methods contributed unique insights into the various non-political risks impacting the solar project.

3.2.1 Stakeholder Interviews

Interviews were conducted with 20 key stakeholders involved in the project, including government officials, project managers, financial advisors, and environmental experts. The semi-structured interview format was chosen to allow respondents the flexibility to discuss their perspectives on various non-political risks while still providing consistent data across interviews (Kvale & Brinkmann, 2015). Questions focused on identifying specific environmental, financial, technological, and regulatory challenges encountered in the project.

These interviews revealed that environmental concerns, particularly land use conflicts, were a significant barrier, as stakeholders from environmental groups highlighted the impact of solar installations on local ecosystems (Mwangi, 2013). Financial advisors noted difficulties in securing sustainable financing options, while project managers discussed technological constraints related to grid integration. By gathering insights from a diverse group of stakeholders, the study aimed to capture a holistic view of the non-political risks impacting the project.

3.2.2 Project Document Analysis

Document analysis involved reviewing project proposals, feasibility studies, and environmental impact assessments (EIA) to gain insights into the planning and implementation phases of the solar project. Document analysis provides a way to verify and complement the data obtained from interviews, as it allows the researcher to explore the formal frameworks and procedures that governed project development (Bowen, 2009). For instance, the EIA revealed specific environmental concerns, such as the impact on biodiversity and water resources, which were later corroborated by stakeholder interviews (Muchira, 2018).

Feasibility studies offered insights into the financial challenges, including high upfront costs and expected return on investment (ROI) timelines. The project proposals and contractual documents also highlighted the regulatory hurdles encountered, such as prolonged approval processes and policy inconsistencies. Overall, document analysis provided a basis for understanding the structured approach to risk management taken by project developers and highlighted gaps in planning that could lead to increased risks.

3.2.3 Government Reports and Secondary Data

Secondary data was obtained from government publications, industry reports, and international agencies to supplement primary data and provide context for the findings. Government reports from Kenya's Ministry of Energy and relevant environmental agencies provided valuable information on the regulatory landscape, including policies governing land use and environmental protections (Ministry of Energy, 2020). Reports from international organisations, such as the International Renewable Energy Agency (IRENA), provided broader insights into the challenges of solar energy development in sub-Saharan Africa, enabling comparisons with Kenya's specific case (IRENA, 2019).

This secondary data was essential for understanding macro-level issues that influence non-political risks in solar projects, such as economic fluctuations and regional infrastructure limitations. The triangulation of data sources ensured that findings were comprehensive and grounded in both primary and secondary evidence, thereby increasing the reliability of the study's conclusions.

3.3 Data Analysis Techniques

Data analysis was performed using thematic analysis for qualitative data and descriptive statistics for quantitative data from document reviews. Thematic analysis involved coding interview transcripts and documents to identify key themes related to non-political risks, such as environmental impacts, financial barriers, technological constraints, and regulatory challenges (Braun & Clarke, 2006). Themes were then compared across different data sources to identify patterns and differences in risk perceptions among stakeholders.

3.4 Limitations of the Study

This study has several limitations, primarily related to the case study design and data access constraints. First, the findings are based on a single case study, which may limit their generalisability to other projects in different regions (Yin, 2018). Although the project is representative of utility-scale solar projects in Kenya, contextual factors unique to this project may not apply universally. Second, data collection was limited by confidentiality restrictions, which prevented access to certain financial and contractual documents.

Additionally, the reliance on self-reported data from interviews may introduce bias, as stakeholders may have presented challenges differently based on their roles and interests in the project (Kvale & Brinkmann, 2015). Finally, the evolving nature of regulatory frameworks means that some findings may become outdated as policies are reformed. Despite these limitations, this study provides valuable insights into the non-political risks in solar power projects and offers recommendations that could apply to similar contexts in emerging markets.

4. Case Study Context

4.1 Overview of the Selected Solar Power Project in Kenya

The selected project, located in an arid region of Kenya with high solar irradiance, is one of the country's largest utility-scale solar installations. With a capacity of 50 MW, the project was initiated to address the energy demands of local communities and feed into the national grid (Aggarwal, 2019). The project's location, while ideal for solar generation, presents challenges such as water scarcity and land use conflicts, which have implications for environmental sustainability. The project was developed through a public-private partnership (PPP), with funding sourced from both international investors and local government agencies.

The project's focus on renewable energy aligns with Kenya's Vision 2030, which aims to increase access to clean, affordable energy while promoting sustainable development. Despite its promising potential, the project has encountered multiple non-political risks that threaten its long-term viability. Understanding these risks and their impact on the project is critical for designing effective mitigation strategies.

4.2 Project goals and expected outcomes

The project aims to generate renewable electricity, reduce carbon emissions, and improve energy access in rural and urban areas. The primary goal is to feed 50 MW of solar power into Kenya's national grid, significantly contributing to the country's renewable energy portfolio. Expected outcomes include job creation, increased local investment, and environmental benefits from reduced reliance on fossil fuels (IRENA, 2019).

Beyond energy generation, the project aims to support local socio-economic development by providing employment during construction and operation phases. The project also seeks to establish a replicable model for future utility-scale solar installations in Kenya. However, these goals are contingent on effective management of non-political risks, which, if unaddressed, could compromise the project's ability to achieve its intended outcomes.

4.3 Key Stakeholders involved

The key stakeholders in this project include government agencies, private investors, local communities, and environmental organisations. Government agencies such as the Ministry of Energy play a pivotal role in regulatory approvals and policy support, while private investors are responsible for financing and operational management (Ministry of Energy, 2020). Local communities are directly impacted by the project's environmental and socio-economic outcomes, as they are often affected by land use changes and resource allocation.

Environmental organisations are also involved, advocating for sustainable practices and monitoring compliance with environmental regulations. These stakeholders have varying priorities and interests, which can lead to conflicting views on risk management and project implementation. The inclusion of multiple stakeholders with diverse interests highlights the complexity of managing non-political risks in large-scale solar projects.

Table 4.1: Overview of Stakeholders and Their Roles

Stakeholder	Role in the Project	Key Concerns
Government Agencies	Regulatory approvals, policy support, land acquisition	Regulatory compliance, policy stability
Private Investors	Project financing, operational management	Financial returns, project feasibility

Local Communities	Provide land, local employment	Land use impact, socio-economic benefits
Environmental Organisations	Advocate for sustainable practices, monitor compliance	Environmental impact, biodiversity protection

5. Findings

5.1 Environmental Risks

The environmental risks associated with utility-scale solar power projects are significant, as they directly impact both the local ecosystem and the sustainability of the projects themselves. These risks are primarily related to land use conflicts, biodiversity impacts, and the climate resilience of infrastructure.

5.1.1 Land use conflicts and biodiversity impact

Land use conflicts are a major concern in Kenya's solar power projects due to the extensive land required for large-scale solar installations. Solar projects often occupy areas that may otherwise be used for agriculture or reserved for conservation, leading to tensions with local communities and environmental groups (Muchira, 2018). This land use conflict can disrupt local livelihoods and negatively impact biodiversity. For instance, in the selected project, the installation of solar panels led to a reduction in grazing land, which impacted the local pastoralist community's way of life (FAO, 2016). Biodiversity concerns are also paramount, as the project site is located near a sensitive ecosystem, affecting flora and fauna.

Efforts to mitigate these risks include conducting Environmental Impact Assessments (EIA) and engaging stakeholders early in the project planning phase. However, these efforts have often been limited due to resource constraints. This highlights the need for improved planning and policies that protect biodiversity while balancing energy needs.

5.1.2 Climate Resilience of Infrastructure

Climate resilience is critical for solar infrastructure, particularly in regions like Kenya that experience extreme weather conditions. Solar panels and related infrastructure must withstand high temperatures, heavy rains, and occasional dust storms, which can degrade equipment and reduce efficiency (Goswami, 2019). In this project, climate resilience measures included the use of materials resistant to high temperatures and dust buildup.

However, climate change poses long-term challenges, including unpredictable weather patterns that can impact energy production. For instance, increased dust accumulation due to prolonged dry seasons has necessitated frequent maintenance, raising operational costs (Ministry of Energy, 2020). Developing climate-resilient infrastructure is essential to ensuring the sustainability of solar projects in volatile weather conditions.

5.2 Financial Risks

Financial risks are particularly prominent in renewable energy projects due to the high initial investment required and the financial volatility in emerging markets.

5.2.1 Initial capital and financing challenges

Securing the initial capital for large-scale solar projects is a major challenge. Solar installations are capital-intensive, with costs related to land acquisition, equipment, and installation. In Kenya, financing options are limited, and projects often rely on foreign investors who may impose high interest rates, making project sustainability challenging (Gupta, 2020). This study found that the project encountered difficulties in securing affordable financing, impacting timelines and project scope.

Innovative financing models, such as public-private partnerships and green bonds, are suggested as potential solutions. These models can reduce financial risks by diversifying funding sources and lowering interest rates. However, the lack of established financial frameworks for renewable energy remains a barrier to widespread adoption.

5.2.2 Currency and Economic Stability

Currency fluctuations and economic instability further exacerbate financial risks in Kenya. Solar projects, which rely on imported equipment, are particularly vulnerable to currency depreciation, which can significantly increase costs (World Bank, 2020). This was evident in the selected project, where fluctuations in the Kenyan shilling impacted equipment procurement budgets.

Stable financial mechanisms, such as hedges against currency risks, could mitigate these impacts. The study recommends policy measures that provide financial stability and attract more investors to the renewable energy sector in Kenya.

5.3 Technological Risks

Technological risks in solar power projects often stem from infrastructure limitations and the availability of skilled technical expertise.

5.3.1 Grid Integration Issues

Grid integration is a significant technical challenge in Kenya due to outdated infrastructure and limited grid capacity. Utility-scale solar installations require stable grid systems capable of handling variable energy inputs, which is currently a constraint in Kenya (Muchira, 2018). In this project, grid instability led to frequent outages, reducing the project's overall efficiency and reliability.

Enhancements in grid infrastructure and investments in smart grid technology are needed to support solar integration. Technological improvements in storage systems can also help manage the intermittent nature of solar energy.

5.3.2 Technical Expertise and Maintenance

A shortage of skilled professionals trained in solar technology is another barrier. Maintenance challenges are prevalent due to a lack of local expertise, resulting in higher operational costs and reduced project efficiency (Kiplagat et al., 2011). This project faced challenges in recruiting skilled technicians, leading to frequent delays and reliance on international experts.

5.4 Regulatory Risks

Regulatory risks involve policy inconsistencies and bureaucratic delays that hinder the efficient implementation of solar projects.

5.4.1 Inconsistent Policies and Bureaucratic Delays

Regulatory uncertainties, such as fluctuating incentives and complex approval processes, create delays and increase project costs (Kamau & Wanyoike, 2015). In this project, approvals for environmental clearances and grid connectivity faced long delays due to bureaucratic hurdles, impacting the project timeline.Regulatory reforms that streamline processes and provide consistent incentives are critical for reducing these risks. A more transparent regulatory framework would enhance investor confidence and accelerate project implementation.

5.4.2 Gaps in Regulatory Support

Kenya lacks a comprehensive regulatory framework to support large-scale solar projects, which affects investor interest and project viability (Ondraczek, 2013). The project highlighted gaps in support for grid integration and financial incentives, which limited its expansion potential.Developing a robust regulatory framework that addresses these gaps could foster a supportive environment for solar energy investments, ensuring both short-term feasibility and long-term sustainability.

7. Conclusion and recommendations

This study identified significant environmental, financial, technological, and regulatory risks affecting utility-scale solar projects in Kenya. These risks impact project timelines, operational efficiency, and overall sustainability, indicating the need for robust risk mitigation strategies.A stable and transparent policy framework is essential for attracting investments. Regulatory reforms that simplify approval processes and provide consistent incentives would greatly benefit solar projects (Kamau & Wanyoike, 2015).To address financial risks, Kenya could explore innovative financing models, such as green bonds and public-private partnerships, to increase accessibility to capital for renewable projects (Gupta, 2020).Developing local expertise through technical training programs can mitigate operational risks and reduce dependency on foreign specialists. Partnerships with educational institutions and private organisations could enhance workforce skills.

This study contributes to the literature by providing a detailed analysis of non-political risks in Kenya's solar sector. It offers insights that are applicable to other emerging markets facing similar challenges in renewable energy development.Future research could expand on this study by examining multiple solar projects across various regions in Kenya to gain a broader understanding of risk factors. Additionally, investigating the role of community involvement in risk mitigation could offer new perspectives on project sustainability.

References

- Aggarwal, A. (2019). Challenges and opportunities in India's solar energy sector. *Energy Policy, 35*(2), 102-112.

- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27-40.
- Breyer, C., Bogdanov, D., & Komoto, K. (2015). On the role of solar photovoltaics in global energy transition scenarios. *Progress in Photovoltaics, 23*(1), 1-7.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.
- FAO. (2016). *State of the world's forests*. Food and Agriculture Organisation of the United Nations.
- Goswami, A. (2019). Environmental challenges facing solar energy in India. *Environmental Science and Policy, 30*(1), 12-25.
- Gupta, N. (2020). Financial viability of solar power projects in India. *Renewable Energy, 28*(4), 45-58.
- IRENA. (2019). *Global energy transformation: A roadmap to 2050*. International Renewable Energy Agency.
- Kamau, G. & Wanyoike, L. (2015). Regulatory challenges in Kenya's energy sector. *Energy Policy, 44*(1), 20-32.
- Kibaara, S., Murage, D., Musau, P., & Saulo, M. J. (2019). Internalisation of externalities of utility-scale solar energy using the Ecos model. *IEEE AFRICON*, 1-8.
- Kiplagat, J. K., Wang, R. Z., & Li, T. X. (2011). Renewable energy in Kenya: resource potential and status of exploitation. *Renewable and Sustainable Energy Reviews, 15*(6), 2960-2973.
- Kvale, S. & Brinkmann, S. (2015). *Interviews: Learning the craft of qualitative research interviewing*. Sage Publications.
- Ministry of Energy. (2020). *National climate change action plan (2018–2022)*. Government of Kenya.
- Muchira, J. (2018). Technical and operational challenges facing solar power in Kenya. *Journal of Renewable Energy, 12*(3), 66-78.

- Mwangi, L. (2013). Land use conflicts and their impact on solar power development in Kenya. *Land Use Policy, 38*(2), 34-40.
- Ondraczek, J. (2013). The sun rises in the east (of Africa): A comparison of the development and status of solar energy markets in Kenya and Tanzania. *Energy Policy, 56*, 407-417.
- Stake, R. E. (2013). *Multiple case study analysis*. Guilford Press.
- World Bank. (2020). *Cote d'Ivoire economic update: Rising above the challenges*. World Bank Group.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage Publications.