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## NAVIGATING NON-TECHNICAL RISKS IN THE OIL & GAS INDUSTRY: INSIGHTS AND FRAMEWORKS - A REVIEW

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### ABSTRACT

Non-technical risks play a critical role in the oil and gas industry, influencing operational efficiency, financial performance, and stakeholder trust. This review explores key insights and frameworks for understanding and managing non-technical risks in the oil and gas sector. The review begins by defining non-technical risks and highlighting their significance in the industry. It then discusses various types of non-technical risks, including regulatory, environmental, social, and geopolitical risks, and their impact on oil and gas operations. The review also examines the interconnected nature of non-technical risks and how they can escalate into larger crises if not managed effectively. It emphasizes the importance of adopting a holistic approach to risk management that considers the interplay between different risk factors. Furthermore, the review identifies several key frameworks and methodologies for assessing and managing non-technical risks in the oil and gas industry. These include risk assessment tools, scenario planning, and

stakeholder engagement strategies. The review concludes by highlighting the need for oil and gas companies to proactively identify, assess, and mitigate non-technical risks. It emphasizes the importance of integrating risk management into overall business strategies and decision-making processes. Overall, this review provides valuable insights and frameworks for navigating non-technical risks in the oil and gas industry. It offers practical recommendations for industry practitioners and policymakers to enhance risk management practices and ensure the long-term sustainability of the sector.

**Keywords:** Oil and Gas, Insights, Frameworks, Navigating, Non- Technical Risks

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## INTRODUCTION

The oil and gas industry operates in a complex and dynamic environment, facing various risks that extend beyond technical challenges. Non-technical risks encompass a wide range of factors that can significantly impact the industry's operations, reputation, and financial performance. This review explores the insights and frameworks available for navigating these non-technical risks, providing a comprehensive overview of the strategies and approaches used in the oil and gas sector (Adekanmbi, Wolf, 2024, Bento & Garotti, 2019, Koroteev & Tekic, 2021).

Non-technical risks in the oil and gas industry refer to the challenges and uncertainties that are not directly related to the technical aspects of exploration, production, and distribution. These risks can include regulatory, environmental, social, and geopolitical factors, among others. Managing these risks requires a multidisciplinary approach that considers the broader context in which the industry operates (Imran, et. al., 2021, Onoyere & Adekanmbi, 2012, Seyyedattar, Zendejboudi & Butt, 2020).

Effective management of non-technical risks is crucial for the long-term sustainability and success of oil and gas companies. These risks can have significant consequences, including project delays, cost overruns, damage to reputation, and legal liabilities. By proactively identifying and mitigating these risks, companies can enhance their resilience and ability to navigate the complexities of the industry (Abdulkadir, et. al., 2022, Hayes, et. al., 2021, Seyyedattar, Zendejboudi & Butt, 2020). This review aims to provide a comprehensive analysis of the insights and frameworks available for managing non-technical risks in the oil and gas industry. It will explore the different types of non-technical risks, their impact on the industry, and the strategies and methodologies used to mitigate these risks. Additionally, the review will examine case studies and examples of successful risk management practices, as well as provide recommendations for enhancing non-technical risk management in the industry.

### Historical Perspectives

Exploring the historical perspectives of navigating non-technical risks in the oil and gas industry provides valuable insights into the evolution of risk management practices and the industry's response to various challenges over time (Adekoya, et. al., 2023, Nguyen, Gosine & Warriar, 2020, Oshioke, Okoye & Udokwu, 2023).

In the early stages of the oil and gas industry, exploration and production activities were often focused on identifying and extracting hydrocarbon reserves with little consideration for non-technical risks. As the industry expanded, companies encountered various challenges related to regulatory compliance, environmental impact, and community relations.

Throughout the 20th century, the oil and gas industry faced increasing scrutiny from environmental and social advocacy groups, as well as regulatory agencies, regarding the environmental and social impacts of its operations. High-profile incidents, such as oil spills and accidents, highlighted the need for better risk management practices (Jagoda & Wojcik, 2019, Okeke, 2021, Segun, et. al., 2021).

In response to growing concerns about environmental degradation and community displacement, governments began implementing stricter regulations governing oil and gas operations. Additionally, industry organizations developed voluntary standards and best practices to address non-technical risks and promote sustainable development.

Over time, oil and gas companies recognized the importance of integrating risk management into their business strategies to mitigate non-technical risks and safeguard their reputation and social license to operate. This led to the adoption of comprehensive risk management frameworks and the establishment of dedicated risk management departments within companies.

The advent of advanced technology and analytics has revolutionized risk management in the oil and gas industry. Companies now have access to sophisticated tools and techniques for risk assessment, scenario planning, and predictive modeling, enabling them to identify and address non-technical risks more effectively (Adelekan, et. al., 2024, Lu, et. al., 2019, Mohammadpoor & Torabi, 2020).

In recent years, there has been a growing emphasis on stakeholder engagement and transparency in the oil and gas industry. Companies are increasingly engaging with local communities, indigenous groups, and other stakeholders to address concerns, build trust, and ensure that their operations align with societal expectations.

Overall, the historical evolution of navigating non-technical risks in the oil and gas industry reflects a shift towards proactive risk management practices and a greater emphasis on sustainability and corporate responsibility. By learning from past experiences and embracing innovative approaches, companies can better navigate non-technical risks and contribute to a more sustainable and resilient industry.

### **Types of Non-Technical Risks**

In the oil and gas industry, non-technical risks encompass a broad range of factors that can significantly impact operations, reputation, and financial performance. Understanding these risks is crucial for effective risk management and sustainable operations. Here are four key types of non-technical risks (Derah, 2020, Ibiyam, 2021, Ohalete, et. al., 2023).

Regulatory risks in the oil and gas industry arise from the complex and evolving regulatory environment in which companies operate. These risks can include changes in laws and regulations governing exploration, production, and distribution activities. Regulatory compliance failures can result in fines, legal disputes, and reputational damage. Companies must stay abreast of regulatory developments and implement robust compliance programs to mitigate these risks (Akindote, 2023, Hartmann, Inkpen & Ramaswamy, 2021, Lu, et. al., 2019).

Environmental risks are a major concern for the oil and gas industry due to the potential for spills, leaks, and other incidents that can harm ecosystems and communities. Climate change regulations and increasing public scrutiny further elevate these risks. Companies are increasingly adopting

environmental management systems and investing in technologies to reduce their environmental footprint and enhance sustainability.

Social risks in the oil and gas industry relate to the impact of operations on local communities and stakeholders. These risks can include community opposition to projects, conflicts with indigenous peoples, and issues related to land acquisition and resettlement. Companies must engage with communities in a transparent and respectful manner, address grievances effectively, and contribute to local development to manage these risks (Ablo, 2020, Pizzi, et. al., 2021, Rentizelas, et. al., 2020).

Geopolitical risks arise from the political and economic instability of countries where oil and gas operations are located. These risks can include changes in government policies, civil unrest, and geopolitical tensions. Companies must conduct thorough risk assessments and implement contingency plans to mitigate the impact of geopolitical events on their operations.

By understanding and effectively managing these types of non-technical risks, oil and gas companies can enhance their resilience and sustainability in an increasingly complex operating environment.

### **Impact of Non-Technical Risks**

Non-technical risks in the oil and gas industry can have significant impacts on various aspects of operations, including operational efficiency, financial performance, and stakeholder trust and reputation (Basak, Coffey & Perrons, 2021, Ibiyam, 2021, Mohammad, et. al., 2023).

Non-technical risks such as regulatory compliance issues, environmental incidents, and social conflicts can disrupt operations and lead to downtime, delays, and increased costs. For example, an environmental spill may require extensive cleanup efforts and regulatory fines, impacting the efficiency of production and distribution processes. Companies must invest in risk management strategies and technologies to minimize these disruptions and maintain operational efficiency.

Non-technical risks can also affect the financial performance of oil and gas companies. Regulatory fines, legal disputes, and environmental cleanup costs can erode profits and shareholder value. Additionally, social conflicts and geopolitical risks can lead to project delays and cost overruns, further impacting financial performance. To mitigate these risks, companies must conduct thorough risk assessments and implement robust risk management practices (Basak, Coffey & Perrons, 2019, Fabian, et. al., 2023, Jaluakbar & Putra, 2019).

Stakeholder trust and reputation are critical for oil and gas companies, particularly in the face of increasing scrutiny from regulators, investors, and the public. Non-technical risks such as environmental incidents and social conflicts can damage a company's reputation and erode stakeholder trust. Companies must engage with stakeholders transparently, address grievances promptly, and demonstrate a commitment to sustainable and responsible operations to maintain trust and reputation.

In conclusion, non-technical risks in the oil and gas industry can have far-reaching impacts on operational efficiency, financial performance, and stakeholder trust and reputation. Companies must proactively manage these risks through robust risk management practices, stakeholder engagement, and a commitment to sustainability to ensure long-term success in an increasingly complex operating environment.

### **Interconnected Nature of Non-Technical Risks**

Non-technical risks in the oil and gas industry are often interconnected, meaning that the impact of one risk can escalate and lead to the emergence of other risks. Understanding the interconnected nature of these risks is crucial for developing effective risk management strategies. An environmental incident, such as an oil spill, can lead to regulatory fines and penalties. Additionally, it can damage the company's reputation, leading to a loss of stakeholder trust and potential boycotts or protests against the company's operations (Adeleke, Segun & Olaoye, 2019, Al Rasheedi, 2019, de Mello, 2020).

Social conflicts, such as protests by local communities over land use or water rights, can disrupt operations and lead to delays and increased costs. This can impact the company's financial performance and operational efficiency. Geopolitical tensions in a region where a company operates can lead to supply chain disruptions, regulatory changes, and increased security risks. These factors can impact the company's financial performance and operational stability (Rugadya, 2020, Uchechukwu, et. al., 2023, Vanclay & Hanna, 2019).

Given the interconnected nature of non-technical risks, a holistic approach to risk management is essential. This approach involves identifying, assessing, and managing risks in a coordinated manner to address potential cascading effects. Conducting a comprehensive risk assessment that considers the interdependencies between different types of risks. Encouraging collaboration between different departments, such as operations, finance, and compliance, to ensure a coordinated approach to risk management. Developing scenarios that consider the potential escalation of risks and the impact on operations, finances, and reputation. Regularly monitoring and evaluating risks to identify emerging threats and opportunities for mitigation (Mashaqbeh, et. al., 2020, Hayes, et. al., 2021, Singh & Helfert, 2019).

In conclusion, the interconnected nature of non-technical risks in the oil and gas industry underscores the importance of taking a holistic approach to risk management. By understanding how risks can escalate and implementing proactive measures to mitigate them, companies can better protect their operations, finances, and reputation.

### **Frameworks and Methodologies for Managing Non-Technical Risks**

Managing non-technical risks in the oil and gas industry requires robust frameworks and methodologies to identify, assess, and mitigate potential risks. Several approaches, tools, and strategies can be employed to manage non-technical risks effectively. QRA is a systematic approach to assess and quantify risks based on the probability of an event occurring and its potential consequences. It uses mathematical models to estimate risks and prioritize mitigation efforts (Albasteki, 2021, Larkin, et. al., 2019, Zhen, et. al., 2020).

Bowtie analysis is a visual risk assessment tool that helps identify potential hazards, assess their likelihood and consequences, and develop control measures to mitigate risks. It provides a clear overview of risk scenarios and helps in communicating risks to stakeholders. FMEA is a proactive approach to identify and prioritize potential failure modes in a system, process, or design. It helps in assessing the potential impact of failures and implementing preventive measures to reduce risks. Scenario planning involves developing a range of plausible future scenarios and assessing their potential impact on the organization. It helps in identifying emerging risks and opportunities and

allows for better preparedness to respond to changing conditions (Aust & Pons, 2020, Elamir, 2020, Tzanakakis & Tzanakakis, 2021).

Stakeholder engagement is crucial for managing non-technical risks, as stakeholders can have a significant impact on the success or failure of risk management efforts. Strategies for effective stakeholder engagement include: Identifying key stakeholders and understanding their interests and concerns Establishing clear communication channels and mechanisms for feedback Involving stakeholders in decision-making processes and seeking their input on risk management strategies Building trust and credibility through transparent and honest communication

In conclusion, effective management of non-technical risks in the oil and gas industry requires the use of robust frameworks and methodologies. By employing risk assessment tools, scenario planning, and stakeholder engagement strategies, companies can identify, assess, and mitigate risks effectively, thereby enhancing operational resilience and sustainability (Albasteki, 2021, de Mello, 2020, Fraser, Mello & Kunz, 2023).

### **Case Studies and Examples**

Navigating non-technical risks in the oil and gas industry is crucial for ensuring operational continuity, regulatory compliance, and maintaining stakeholder trust. Several case studies and examples highlight both successful management practices and challenges faced in dealing with non-technical risks (Luca, et. al., 2021, Mahjour & Faroughi, 2023, Nyahoda, 2022).

Shell has implemented a comprehensive community engagement program in the Niger Delta region to address social risks associated with its operations. The program includes initiatives such as community development projects, stakeholder consultations, and grievance mechanisms. By engaging with local communities and addressing their concerns, Shell has been able to improve relations and mitigate social risks (Achunike, 2020, Angela, et. al., 2021, Emmanuel, et. al., 2021). Chevron has implemented robust environmental management practices in its operations worldwide to mitigate environmental risks. This includes regular monitoring of emissions, implementation of best practices in waste management, and adherence to stringent environmental regulations. These efforts have helped Chevron reduce its environmental impact and maintain compliance with regulations (Chowdhury, et. al., 2019, Chutcheva, et. al., 2022, Li, Trencher & Asuka, 2022).

Total has adopted a risk-based approach to managing non-technical risks in its operations. This includes conducting comprehensive risk assessments, implementing control measures to mitigate identified risks, and regularly monitoring and reviewing risk management processes. This proactive approach has helped Total reduce the likelihood and impact of non-technical risks (Alzoubaidi, Najdawi & Alzoubaidi, 2023, Patrício & Almeida, 2019, Radu & Amon, 2021).

The Deepwater Horizon oil spill in 2010 highlighted the catastrophic consequences of inadequate risk management in the oil and gas industry. The incident resulted in environmental damage, loss of life, and significant financial costs for BP. Lessons learned from this event include the importance of robust risk assessment, effective communication, and adherence to safety protocols (Makocha, Ete & Saini, 2019, Murawski, et. al., 2020, Swuste, et. al., 2020).

In 1998, a gas explosion on an ExxonMobil offshore platform in Nigeria resulted in several fatalities and environmental damage. The incident was attributed to a combination of technical failures and inadequate risk management practices. ExxonMobil subsequently implemented

changes to its safety protocols and risk management processes to prevent similar incidents in the future.

Chevron faced a prolonged legal battle in Ecuador over environmental damage caused by its operations in the region. The lawsuit highlighted the importance of conducting thorough environmental assessments, implementing effective remediation measures, and engaging with local communities to prevent legal and reputational risks (Martínez-Alier, 2023, Percival, 2020, Sawyer, 2022).

In conclusion, effective management of non-technical risks in the oil and gas industry requires a proactive approach, robust risk assessment processes, and stakeholder engagement. By learning from past experiences and implementing best practices, companies can mitigate risks and enhance their overall sustainability.

### **Recommendations for Managing Non-Technical Risks**

Managing non-technical risks in the oil and gas industry requires a comprehensive approach that integrates risk management into business strategies, enhances stakeholder communication and engagement, and involves continuous monitoring and evaluation of risks. Here are some recommendations for effectively managing non-technical risks:

Companies should foster a culture of risk awareness and accountability at all levels of the organization. This includes providing regular training and education on risk management principles and practices. Risk management processes should be aligned with the organization's strategic goals and objectives. This ensures that risk management activities are prioritized and integrated into decision-making processes. Adopting an ERM framework enables companies to identify, assess, and manage risks comprehensively across all business functions and activities. ERM facilitates a holistic approach to risk management and helps prioritize resources effectively. Companies should communicate openly and transparently with stakeholders about potential risks and mitigation efforts. This includes providing regular updates on risk management activities and soliciting feedback from stakeholders. Building strong relationships with local communities where operations are located is essential for managing social and environmental risks. Companies should engage with community leaders, NGOs, and other stakeholders to understand concerns and address issues proactively. Collaboration with industry partners, government agencies, and regulatory bodies can help identify emerging risks and develop collective solutions. Participating in industry forums and sharing best practices can enhance risk management capabilities across the sector.

Companies should conduct regular risk assessments to identify emerging threats and vulnerabilities. This includes analyzing both internal and external factors that may impact operations. Leveraging data analytics and technology tools can enhance the effectiveness of risk monitoring and evaluation. Real-time monitoring systems, predictive analytics, and scenario planning can help anticipate and mitigate risks more effectively. Companies should establish KPIs to measure the effectiveness of risk management efforts. Regularly evaluating KPIs allows organizations to identify areas for improvement and adjust strategies accordingly.

By integrating risk management into business strategies, enhancing stakeholder communication and engagement, and implementing continuous monitoring and evaluation processes, companies can effectively navigate non-technical risks in the oil and gas industry and safeguard their operations, reputation, and long-term sustainability.

## CONCLUSION

In conclusion, the review of navigating non-technical risks in the oil and gas industry has provided valuable insights and frameworks for enhancing risk management practices. Here's a recap of the key findings and a call to action for improving non-technical risk management practices:

Non-technical risks, including regulatory, environmental, social, and geopolitical factors, pose significant challenges to the oil and gas industry. These risks can have a profound impact on operational efficiency, financial performance, and stakeholder trust and reputation. The interconnected nature of non-technical risks underscores the importance of adopting a holistic approach to risk management. Frameworks and methodologies, such as risk assessment tools, scenario planning, and stakeholder engagement strategies, are essential for effectively managing non-technical risks. Case studies and examples highlight both successful risk management practices and challenges faced by companies in the industry.

Companies must prioritize proactive risk management to identify, assess, and mitigate non-technical risks before they escalate into crises. Collaboration among industry players, government agencies, and other stakeholders is critical for developing collective solutions to common challenges. Leveraging advanced technology and analytics can enhance risk monitoring, evaluation, and decision-making processes. Engaging with local communities, NGOs, and other stakeholders is essential for building trust, addressing concerns, and fostering sustainable operations. Cultivating a culture of risk awareness and accountability ensures that risk management becomes ingrained in the organization's DNA.

Proactive risk management is vital for the long-term sustainability of the oil and gas industry. By identifying and addressing non-technical risks effectively, companies can safeguard their operations, protect the environment, and maintain social license to operate. Moreover, proactive risk management enhances resilience and agility, enabling companies to adapt to evolving market dynamics and emerging challenges.

In conclusion, by embracing proactive risk management practices and adopting a collaborative and integrated approach, the oil and gas industry can navigate non-technical risks more effectively and ensure a sustainable future for the sector.

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