Journal of Energy Technology & Environment
www.nipes.org

Navigating Stakeholder Complexity in LNG Projects: A Framework for Non-Technical Relationship Management

Excel Theophilus Ukpohor[1*], Yetunde Adenike Adebayo[2], Ikiomoworio Nicholas Dienagha[3]

[1] Nigeria LNG Limited
[2] Independent Researcher, United Kingdom
[3] Shell Petroleum Development Company, Lagos, Nigeria
*Corresponding Author: Excelukpohor@gmail.com

Article information

Article History
Received 23 December 2024
Revised 23 January 2025
Accepted 2 February 2025
Available online 13 March 2025

Keywords:
LNG projects, Stakeholder engagement, Non-technical relationship management, Corporate social responsibility, Conflict resolution.

https://doi.org/10.5281/zenodo.15020990

https://nipesjournals.org.ng

Abstract

Navigating the complex landscape of stakeholder relationships is crucial for the success of LNG projects. This paper presents a comprehensive framework for non-technical relationship management, emphasizing the need to understand and engage with a diverse array of stakeholders, including government entities, local communities, investors, and environmental groups. Key principles of effective stakeholder management are discussed, focusing on building trust, fostering collaboration, and employing robust communication and conflict resolution techniques. The role of corporate social responsibility in enhancing stakeholder engagement is also examined. The paper outlines practical steps for integrating this framework into project management processes, highlights best practices, and provides examples of successful initiatives. Potential pitfalls are identified, along with strategies to avoid them. The findings underscore the importance of proactive and continuous stakeholder engagement in achieving project objectives and maintaining a positive social license to operate. The paper concludes with recommendations for future research and practice, emphasizing the need for customized engagement strategies and the integration of sustainability principles

1. Introduction

The global demand for energy has continually driven the exploration and development of new energy sources [1-2], among which Liquefied Natural Gas (LNG) has emerged as a significant player[3]. LNG projects involve the extraction, liquefaction, transportation, and regasification of natural gas, enabling it to be shipped across the globe to meet the energy needs of various countries[4] These projects are crucial for diversifying energy supply, reducing greenhouse gas emissions compared to other fossil fuels, and supporting the transition to a more sustainable energy future. The importance of LNG is underscored by its role in enhancing energy security, stabilizing markets, and providing cleaner alternatives to coal and oil[5].

However, the complexity of LNG projects extends beyond the technical and operational challenges. One of the most intricate aspects is managing the diverse range of stakeholders involved. Stakeholders in LNG projects include government bodies, local communities, investors, environmental groups, and suppliers, each with distinct interests, needs, and expectations [6]. This diversity creates a multifaceted landscape where aligning goals and addressing concerns becomes formidable. Stakeholder complexity can influence project timelines, costs, and overall success, making effective relationship management a critical component of project execution [7]

The purpose of this paper is to propose a comprehensive framework for non-technical relationship management in LNG projects. This framework aims to facilitate better understanding, communication, and collaboration among all parties involved by focusing on the human and organizational aspects of stakeholder interactions. The scope of the paper includes an analysis of stakeholder dynamics, relationship management principles, strategies for effective engagement, and practical steps for implementing the framework[8]. This approach underscores the importance of considering non-technical factors as integral to the successful completion of LNG projects.

2. Stakeholder Dynamics in LNG Projects

2.1.Identification of Key Stakeholders

Key stakeholders in LNG projects encompass a broad spectrum of groups, each playing a critical role in the project's lifecycle. These include government agencies, local communities, investors, environmental groups, and suppliers. Government agencies are often the primary regulators, responsible for granting necessary permits, enforcing environmental and safety standards, and ensuring that the project aligns with national energy policies. Their approval is crucial for the project to proceed, making them a pivotal stakeholder group [9].

Local communities are directly affected by the construction and operation of LNG facilities. They may experience economic benefits such as job creation and infrastructure development, but they can also face challenges such as environmental degradation and social disruption. Their support or opposition can significantly influence the project's progress and reputation [10-11]. Investors provide the financial backbone of LNG projects. They seek profitable returns on their investments and are concerned with the project's economic viability, risk management, and long-term profitability. Their commitment and confidence are essential for securing funding and sustaining the project through its various phases [12]

Environmental groups advocate for the protection of natural resources and the minimization of environmental impact. They scrutinize the project's adherence to environmental regulations and sustainability practices. Their engagement can lead to more robust environmental protection measures and enhance the project's social license to operate [13]. Suppliers, including contractors and service providers, are integral to the project's supply chain. They deliver essential goods, technologies, and services required for the project's development and operation. Effective coordination with suppliers ensures timely delivery and quality of inputs, which is critical for maintaining project schedules and budgets [14].

2.2 Analysis of Stakeholder Interests, Needs, and Expectations

Each stakeholder group brings unique interests, needs, and expectations to an LNG project. Understanding these elements is vital for developing strategies that align stakeholder objectives with project goals. Government agencies are primarily interested in regulatory compliance, public safety, and the economic benefits that the project can bring to the region. They expect project proponents

to adhere to legal and regulatory frameworks, maintain high safety standards, and contribute to the national economy through taxes and job creation [15]

Local communities often have mixed interests. They seek economic opportunities, improved infrastructure, and community development initiatives. However, they are also concerned about potential negative impacts such as pollution, displacement, and social changes. Their expectations include transparent communication, fair compensation, and meaningful participation in decision-making processes [16].

Investors focus on the project's financial performance and risk mitigation. They need assurance that the project will be managed efficiently, meet its milestones, and generate expected returns. Their expectations revolve around strong governance, clear reporting, and effective risk management strategies [17].

Environmental groups are concerned with the ecological footprint of LNG projects. They advocate for preserving biodiversity, reducing greenhouse gas emissions, and sustainable resource use. Their expectations include rigorous environmental assessments, implementation of best practices in environmental management, and proactive measures to mitigate adverse impacts (Beckers et al., 2013). Suppliers are interested in stable, long-term contracts, timely payments, and clear specifications. They need reliable information about project timelines, scope, and requirements to plan their operations effectively. Their expectations focus on fair treatment, transparency in procurement processes, and collaborative relationships [18].

2.3 Challenges in Managing Diverse Stakeholder Relationships

Managing the diverse relationships among these stakeholders presents several challenges. One of the primary challenges is balancing conflicting interests. For instance, the economic goals of investors may sometimes conflict with the environmental concerns of advocacy groups or the social needs of local communities. Navigating these conflicts requires skillful negotiation and compromise to achieve mutually acceptable solutions.

Communication barriers also pose significant challenges. Different stakeholders may have varying levels of technical understanding, cultural backgrounds, and communication preferences. Ensuring clear, consistent, and accessible communication can be difficult but is essential for building trust and fostering collaboration[19]. Another challenge is the dynamic nature of stakeholder interests. Stakeholder priorities can change over time due to external factors such as political shifts, economic conditions, or environmental incidents. This fluidity requires ongoing stakeholder engagement and adaptability in management strategies to address emerging concerns and opportunities [20].
Stakeholder engagement can also be resource-intensive. Developing and maintaining relationships, conducting consultations, and addressing stakeholder concerns demand significant time, effort, and financial resources. Project managers must balance these demands with other priorities to ensure effective engagement without compromising project efficiency [21]. Moreover, managing stakeholder expectations is an ongoing challenge. Stakeholders often have high and sometimes unrealistic expectations regarding project benefits and outcomes. Aligning these expectations with what the project can realistically deliver requires careful communication and setting clear, achievable goals.

3. Framework for Non-Technical Relationship Management

3.1 Principles of Effective Non-Technical Relationship Management

Several core principles underpin effective non-technical relationship management. The first is transparency. Transparent processes and decision-making build trust and reduce misunderstandings among stakeholders. Sharing relevant information openly and honestly helps stakeholders feel informed and valued.

Another principle is inclusivity. Ensuring that all stakeholders, especially those who are typically marginalized or less vocal, have a voice in the process is crucial. Inclusivity fosters a sense of ownership and commitment, as stakeholders feel that their perspectives and concerns are being considered [22].

Respect and empathy are also fundamental. Recognizing and valuing stakeholders' diverse perspectives and experiences helps build strong, respectful relationships. Empathy allows project managers to understand stakeholders' positions better and respond to their needs more effectively. Finally, accountability is essential. Project managers must be accountable for their actions and decisions, demonstrating responsibility and integrity. This principle reassures stakeholders that their interests are taken seriously and that there are mechanisms in place to address any issues that arise [23-24]

3.2 Strategies for Building Trust and Collaboration

Building trust and fostering collaboration among stakeholders require deliberate and strategic efforts. One effective strategy is early and continuous engagement. Engaging stakeholders early in the project lifecycle and maintaining this engagement throughout helps build long-term relationships and address concerns before they escalate.

Another strategy is to create joint task forces or working groups that include representatives from different stakeholder groups. These groups can work collaboratively on specific issues, promoting a sense of teamwork and shared purpose. Joint problem-solving activities also help stakeholders understand each other's perspectives and build mutual respect [25].

Regular and structured interactions, such as stakeholder meetings, workshops, and forums, provide platforms for ongoing dialogue and collaboration. These interactions should be well-facilitated to ensure that all voices are heard and that the discussions remain focused and productive. Providing stakeholders with opportunities for capacity building is another effective strategy. Training programs, informational sessions, and resource sharing can enhance stakeholders' understanding of the project and its technical aspects, enabling them to engage more meaningfully and confidently [26]

3.3 Communication Techniques and Tools

Effective communication is the cornerstone of successful stakeholder management. Various techniques and tools can be employed to ensure clear, consistent, and meaningful communication. One key technique is the use of plain language. Avoiding technical jargon and using clear, straightforward language helps in making complex information accessible to all stakeholders, regardless of their technical background. Visual aids, such as infographics, diagrams, and videos, can also enhance understanding [27]

Digital communication tools, such as project websites, email newsletters, and social media platforms, are invaluable for reaching a broad audience and providing timely updates. These tools can facilitate two-way communication, allowing stakeholders to provide feedback and ask questions [28]

Face-to-face communication remains important, especially for building personal connections and trust. Regular meetings, site visits, and open houses provide direct interaction and relationship building opportunities. These face-to-face interactions can complement digital communications and provide a more personal touch [29-30]Listening actively to stakeholders is another crucial communication technique. Active listening involves paying full attention to the speaker, acknowledging their points, and responding thoughtfully. This technique shows stakeholders that their input is valued and considered [31]

3.4 Conflict Resolution Approaches

Conflicts are inevitable in any large-scale project, and having effective conflict resolution approaches is essential for maintaining positive stakeholder relationships. One approach is interest-based negotiation, which focuses on understanding all parties' underlying interests and needs rather than their stated positions. This method aims to find win-win solutions that satisfy the core concerns of all stakeholders.

Mediation is another valuable approach. A neutral third party can facilitate discussions between conflicting stakeholders, helping them to reach a mutually acceptable agreement. Mediation can be particularly useful in highly contentious situations where direct negotiations have stalled. Developing clear grievance mechanisms is also critical. Stakeholders should have access to transparent and fair processes for raising and resolving their concerns. These mechanisms should be well-publicized, easy to use, and capable of addressing issues promptly and effectively [32]
Promoting a culture of open communication and problem-solving within the project team can prevent conflicts from escalating. Encouraging team members to address issues proactively and collaboratively can help resolve minor disputes before they become major problems.

3.5 Role of Corporate Social Responsibility (CSR) in Stakeholder Engagement

Corporate social responsibility plays a significant role in stakeholder engagement, particularly in projects with substantial social and environmental impacts[33]. CSR initiatives demonstrate a company's commitment to ethical practices and its willingness to contribute positively to the communities in which it operates.

Implementing community development programs is one way to enhance stakeholder relationships. These programs can include educational initiatives, healthcare services, infrastructure improvements, and economic development projects. By addressing the needs and concerns of local communities, CSR initiatives can build goodwill and support for the project [34]

Environmental stewardship is another important aspect of CSR. Implementing sustainable practices, reducing environmental footprints, and actively contributing to conservation efforts can address the concerns of environmental groups and demonstrate a commitment to protecting natural resources. Transparency in reporting CSR activities is also crucial. Regularly publishing reports on CSR initiatives, including successes and challenges, helps in building trust and credibility. These reports should be accessible to all stakeholders and provide clear evidence of the company's efforts and impact [35].

4. Implementing the Framework in LNG Projects

4.1 Steps for Integrating the Framework into Project Management Processes

The first step in integrating the framework is to conduct a comprehensive stakeholder analysis. This involves identifying all relevant stakeholders, understanding their interests, needs, and potential impacts on the project. Tools such as stakeholder mapping and power-interest grids can be helpful in this process. This analysis provides the foundation for tailored engagement strategies that address different stakeholder groups' specific concerns and expectations.

Next, project managers should establish clear communication channels and protocols. This includes setting up regular meetings, creating digital platforms for information sharing, and designating points of contact for different stakeholder groups. Clear communication helps maintain transparency and keep all stakeholders informed about project developments [36]

Incorporating stakeholder feedback into project planning and decision-making is another critical step. This can be achieved through consultations, surveys, and participatory workshops. By actively seeking and integrating stakeholder input, project managers can build trust and foster a sense of ownership among stakeholders.

Developing a robust conflict resolution mechanism is essential. This involves establishing procedures for addressing grievances and resolving disputes promptly and fairly. Having a well-defined process for conflict resolution can prevent minor issues from escalating into major conflicts, thereby maintaining positive stakeholder relationships [37]. Finally, project managers should continuously monitor and evaluate the effectiveness of their stakeholder engagement strategies. This involves setting up key performance indicators (KPIs) to measure the impact of engagement activities and making necessary adjustments based on feedback and changing circumstances[38].

4.2 Best Practices for Stakeholder Engagement

Effective stakeholder engagement requires adherence to several best practices. One of the most important is early engagement. Engaging stakeholders from the earliest stages of the project helps build long-term relationships and address concerns before they become significant issues. Early engagement also provides an opportunity to align stakeholder expectations with project goals.
Transparency is another crucial practice. Being open and honest about project plans, potential impacts, and challenges helps build trust. Regular updates and clear, accessible information ensure stakeholders feel informed and involved. Active listening is a key component of effective engagement. It involves not just hearing but truly understanding stakeholders' concerns and perspectives. By demonstrating that their input is valued and considered, project managers can build stronger, more cooperative relationships.

Creating opportunities for collaboration can also enhance stakeholder engagement. Joint task forces, working groups, and participatory decision-making processes enable stakeholders to contribute actively to the project. This collaborative approach fosters a sense of partnership and shared responsibility. Respecting cultural and social norms is particularly important in diverse stakeholder environments. Being sensitive to local customs, traditions, and values helps build respect and avoid misunderstandings. Tailoring engagement strategies to fit the cultural context can enhance their effectiveness.

Despite best efforts, stakeholder management in LNG projects can face several potential pitfalls. One common pitfall is underestimating the complexity of stakeholder interests. Failing to recognize and address stakeholders' diverse and sometimes conflicting interests can lead to misunderstandings and conflicts. To avoid this, project managers should conduct thorough stakeholder analysis and continuously update their engagement strategies. Another pitfall is insufficient communication. Infrequent or unclear communication can result in stakeholders feeling excluded or misinformed,

leading to mistrust and opposition. Establishing regular, transparent communication channels and ensuring that information is accessible and understandable is essential to avoid this issue.

Another risk is overpromising and underdelivering. Making commitments that cannot be fulfilled can damage credibility and trust. Project managers must set realistic expectations and follow through on their promises. When challenges arise, they should communicate openly about the issues and the steps being taken to address them. Lastly, failing to address grievances promptly can escalate conflicts. A well-defined grievance mechanism that allows stakeholders to voice their concerns and address them fairly and swiftly is vital. This demonstrates a commitment to resolving issues and maintaining positive relationships.

4.3 Case Studies

Managing complex stakeholder interfaces in LNG projects requires an in-depth understanding of these projects' technical and non-technical dimensions. Non-technical stakeholder management, which includes engaging with local communities, governments, environmental groups, and NGOs, is critical to the success of LNG projects. Case studies of LNG projects, both successful and those facing challenges, offer valuable lessons in navigating these complex relationships and provide insights into how non-technical issues can be managed effectively.

A notable example of successful non-technical stakeholder management in an LNG project is the Australia Pacific LNG (APLNG) project in Queensland, Australia. This project involved the development of a large-scale natural gas field, a pipeline system, and an LNG export terminal [39]. A key challenge was managing local landholders' and Indigenous communities' expectations and concerns [40]. To address these concerns, APLNG implemented a comprehensive stakeholder engagement program that included direct consultations, workshops, and a transparent process for addressing grievances. The company ensured all stakeholders were informed about the project's potential impacts and benefits, fostering transparency and trust. The project also emphasized the importance of building long-term relationships with local communities, ensuring that the broader population felt the benefits of the project, such as job creation and infrastructure development.

One of the critical components of APLNG's success was its focus on cultural sensitivity, particularly with the indigenous communities. The project team recognized the need for culturally appropriate engagement strategies and worked closely with local indigenous leaders to ensure the project aligned with the community's values and expectations [41]. This collaborative approach helped mitigate potential conflicts and built a sense of ownership and partnership with the indigenous groups. Additionally, the company was proactive in its approach to environmental management, working with environmental NGOs to address concerns about the project's potential impact on local ecosystems. By prioritizing community consultation, transparency, and cultural sensitivity, APLNG was able to successfully navigate complex stakeholder dynamics and deliver a project that benefited both the company and local communities.

However, not all LNG projects have experienced such smooth stakeholder relations. The Yamal LNG project in Russia, for example, faced significant stakeholder-related challenges, particularly concerning the project’s environmental impact and the interests of local indigenous populations. The project, which involved the development of a major LNG plant in the Arctic, raised concerns about the potential impact on local ecosystems and the livelihoods of indigenous communities that rely on traditional hunting and fishing practices [42-43]. The lack of early and continuous engagement with these communities led to mistrust and opposition from local groups. Environmental NGOs also raised concerns about the project's carbon footprint and the potential for oil spills and other environmental hazards. The project team was criticized for not adequately

addressing these concerns during the early planning stages, which led to tensions with local communities and environmental groups.

In response to these challenges, the project management team undertook efforts to improve stakeholder engagement and address the concerns of the affected communities. The company began holding regular consultations with local indigenous groups to discuss the project's impacts and explore ways to mitigate negative effects. Additionally, the company invested in community development initiatives to improve local infrastructure and provide job opportunities for indigenous people. Despite these efforts, the project continued to face significant resistance from some stakeholders, particularly environmental groups, who argued that the project would contribute to climate change and have irreversible ecological consequences. This case illustrates the importance of early, proactive engagement with all stakeholders and highlights the risks of neglecting the non-technical aspects of stakeholder management in large-scale LNG projects.

Another case study that sheds light on the complexities of managing non-technical stakeholders in LNG projects is the Corpus Christi LNG project in the United States. This project, developed by Cheniere Energy, involved the construction of a liquefaction facility on the Texas Gulf Coast. One of the key challenges the project faced was managing local opposition, particularly from residents concerned about the potential health and safety risks associated with the LNG terminal [44-45] There were concerns about the environmental impact of the facility, as well as potential risks related to shipping traffic and the storage of LNG. The project team recognized the need to address these concerns directly and engaged in a series of community outreach initiatives to inform residents about the safety measures in place and the benefits the project would bring to the local economy, including job creation and increased tax revenue.

Cheniere Energy’s approach to stakeholder engagement focused on building trust through transparency and consistent communication. The company held regular town hall meetings and provided updates on the project's progress, addressing community concerns and ensuring that stakeholders had access to accurate information. Cheniere also worked closely with local emergency response teams to develop and implement safety protocols and procedures to minimize potential risks [46-47]. While the project faced some opposition, the company’s proactive approach to stakeholder engagement helped to mitigate local concerns and ensured that the project moved forward with a relatively smooth approval process.

These case studies demonstrate the critical role that non-technical stakeholder management plays in the success of LNG projects. In both the APLNG and Corpus Christi projects, effective communication, transparency, and cultural sensitivity were key to building strong relationships with local communities and other stakeholders. These projects highlight the importance of early engagement and ongoing dialogue with stakeholders to identify concerns, address grievances, and build trust. Additionally, these cases show the significance of aligning project goals with community needs and expectations, as well as the importance of ensuring that local populations feel the benefits of the project.

In contrast, the Yamal LNG project serves as a cautionary tale about the risks of neglecting stakeholder engagement and the potential consequences of failing to address non-technical concerns early in the project lifecycle. The project's challenges with indigenous communities and environmental groups illustrate the need for LNG developers to prioritize non-technical stakeholder management from the outset. Failure to do so can result in opposition, delays, and reputational damage, which can ultimately affect the project's success.

The lessons learned from these case studies offer valuable insights for future LNG projects. First, early and proactive engagement with all relevant stakeholders is essential to identify and address concerns before they escalate into major issues. Second, transparency, inclusivity, and cultural sensitivity are critical to building trust and fostering positive relationships with local communities. Third, aligning project goals with stakeholder expectations and ensuring that the benefits of the project are shared with the local population can help to minimize opposition and enhance the social license to operate. Finally, LNG developers must recognize the importance of addressing environmental and social concerns in a meaningful way, through both mitigation efforts and ongoing community development initiatives.

5. Conclusion and Recommendations

5.1 Conclusion

Navigating stakeholder complexity in LNG projects is a multifaceted challenge that requires a strategic and nuanced approach. This paper has highlighted the importance of understanding stakeholder dynamics, emphasizing the diversity and varied interests of key stakeholders such as government entities, local communities, investors, and environmental groups. Effective non-technical relationship management principles have been outlined, focusing on building trust, fostering collaboration, employing robust communication techniques, and implementing conflict resolution strategies. Additionally, the role of corporate social responsibility in enhancing stakeholder engagement has been underscored. Implementing these principles involves a structured integration into project management processes, adherence to best practices, and learning from successful stakeholder management initiatives. The discussion also identified potential pitfalls and provided strategies to avoid them, ensuring that stakeholder relationships and project objectives are achieved.

The findings of this paper have significant implications for LNG project managers and stakeholders. For project managers, the emphasis on early and continuous stakeholder engagement is critical. Engaging stakeholders from the outset helps align expectations, mitigate risks, and build long-term relationships. This proactive approach can lead to smoother project execution and reduced conflicts. Project managers must also prioritize transparency and active listening, ensuring that all stakeholder concerns are addressed promptly and effectively. This fosters trust and enhances the project’s social license to operate.

For stakeholders, particularly those from local communities and environmental groups, the outlined framework provides a clear pathway for meaningful engagement. By understanding their role in the project and the mechanisms for addressing their concerns, stakeholders can participate more effectively in the project lifecycle. This participation can lead to more equitable outcomes and ensure that the benefits of the project are shared more broadly.

Furthermore, the role of corporate social responsibility in stakeholder engagement cannot be overstated. LNG projects that integrate CSR initiatives into their core operations are likely to build stronger relationships with stakeholders and gain broader support. These initiatives should focus on sustainable development, environmental stewardship, and community well-being, aligning project goals with society's broader interests.

5.2 Recommendations

While this paper provides a comprehensive framework for managing non-technical stakeholder relationships in LNG projects, several areas warrant further research and exploration. One key area

is the development of quantitative metrics for measuring the effectiveness of stakeholder engagement strategies. While qualitative assessments provide valuable insights, quantitative metrics can offer more objective and actionable data, helping project managers continuously refine their approaches.

Another area for future research is the impact of digital technologies on stakeholder engagement. With the rise of digital communication tools and platforms, there is potential for more efficient and inclusive stakeholder engagement. Research should explore how these technologies can be leveraged to enhance communication, facilitate real-time feedback, and improve transparency. Additionally, the role of social media in shaping public perceptions and its influence on stakeholder dynamics should be examined.

Future practice should also focus on customising stakeholder engagement strategies to fit different cultural and regional contexts. LNG projects often operate in diverse environments, and a one-size-fits-all approach may not be effective. Tailoring engagement strategies to respect local customs, traditions, and values can lead to more meaningful and productive relationships. Furthermore, the integration of sustainability principles into stakeholder engagement practices is essential. As global attention increasingly turns to sustainability and environmental responsibility, LNG projects must align their operations with these values. This involves mitigating environmental impacts and contributing positively to the communities in which they operate.

References

[1] O.O. Ighodaro and M. Osikhuemhe (2019) – Thermo-Economic Analysis of a Heat Recovery Steam Generator Combined Cycle. *Nigerian Journal of Technology (NIJOTECH)*, Vol 38(2) 2019, pp 345-350. http://dx.doi.org/10.4314/njt.v38i2.10

[2] Efe f. Orumwense, Osarobo Ighodaro, Khaled M Abo-Al-Ez (2021) – Energy growth and sustainability through smart grid approach: a case study of the Nigeria Electric grid. *International Review of Electrical Engineering (IREE) 2021*. Vol 16, N6 pp 542-551doi; https://doi.org/10.15866/iree.v16i6.20063

[3] Sakmar, S. L. (2013). Energy for the 21st century: Opportunities and challenges for liquefied natural gas (LNG).

[4] Litvinenko, V. (2020). The role of hydrocarbons in the global energy agenda: The focus on liquefied natural gas. *Resources, 9*(5), 59.

[5] Kumar, S., Kwon, H.-T., Choi, K.-H., Cho, J. H., Lim, W., & Moon, I. (2011). Current status and future projections of LNG demand and supplies: A global prospective. *Energy policy, 39*(7), 4097-4104.

[6] Ekemezie, I. O., & Digitemie, W. N. (2024). Assessing the role of LNG in global carbon neutrality efforts: A project management review. *GSC Advanced Research and Reviews, 18*(3), 091-100.

[7] Weems, P. R., & Hwang, M. (2013). Overview of issues common to structuring, negotiating and documenting LNG projects. *Journal of World Energy Law and Business, 6*(4), 267-299.

[8] O.O Ighodaro, K. Scott and L.Xing (2017), An Isothermal Study of the Electrochemical Performance of Intermediate Temperature Solid Oxide Fuel Cells, *Journal of Power and Engineering*, Vol 5, No 2, pp 97-122. https://doi.org/10.4236/jpee.2017.52006

[9] Koromila, I., Aneziris, O., Nivolianitou, Z., Deligianni, A., & Bellos, E. (2022). Stakeholder analysis for safe LNG handling at ports. *Safety science, 146*, 105565.

[10] Bellos, E., Chatzistelios, G., Deligianni, A., & Leopoulos, V. (2021). Stakeholders and risks in liquified natural gas bunkering projects: The hidden link. *Sustainability, 13*(15), 8140.

[11] O. O Ighodaro (2010) - Reliability and Availability Analysis of Gas Turbine Plants. *International Journal of Engineering and Technology* 2(1), pp. 38-50, (ISSN 2141- 8756).

[12] Ighodaro O.O and Saale G.B (2017), Performance and Exergy Analysis of Boiler (101-B-01) System at the Warri Refining and Petrochemical Company, *Journal of the Nigerian Association of Mathematical Physics*, Vol 39 (January, 2017), pp 369-378

[13] Steelman, T. A. (2010). *Implementing innovation: fostering enduring change in environmental and natural resource governance*: Georgetown University Press.

[14] Tullos, D. (2009). Assessing the influence of environmental impact assessments on science and policy: An analysis of the Three Gorges Project. *Journal of environmental management, 90*, S208-S223.

[15] Boudet, H.S., 2016. An "insiteful" comparison: contentious politics in liquefied natural gas facility siting in the US. *Projections*, *11*, p.47.
[16] Cavaye, J. (2001). Rural community development-New challenges and enduring dilemmas. *Journal of Regional analysis and Policy, 31*(2).
[17] Beckers, F., Chiara, N., Flesch, A., Maly, J., Silva, E., & Stegemann, U. (2013). A risk-management approach to a successful infrastructure project. *Mckinsey Work. Pap. Risk, 52*(2013), 18
[18] Kerzner, H. (2022). *Project management metrics, KPIs, and dashboards: a guide to measuring and monitoring project performance*: John wiley & sons.
[19] Damian, D., & Zowghi, D. (2003). Requirements Engineering challenges in multi-site software development organizations. *Requirements Engineering Journal, 8*(3), 149-160.
[20] Haigh, N., & Griffiths, A. (2009). The natural environment as a primary stakeholder: the case of climate change. *Business Strategy and the Environment, 18*(6), 347-359.
[21] Heckert, A., Forsythe, L. P., Carman, K. L., Frank, L., Hemphill, R., Elstad, E. A., . . . Lesch, J. K. (2020). Researchers, patients, and other stakeholders' perspectives on challenges to and strategies for engagement. *Research Involvement and Engagement, 6*, 1-18.
[22] Masondo, C. N. (2017). *Enhancing the effectiveness of principals in implementing inclusive education using Ubuntu approach.* University of the Free State,
[23] Padgett, D. R. G., Cheng, S. S., & Parekh, V. (2013). The quest for transparency and accountability: Communicating responsibly to stakeholders in crises. *Asian Social Science, 9*(9), 31.
[24] Ighodaro Osarobo, Okogie Sunday and Ozakpolor Jude (2010) – Design and Modelling of a Wind Power Generating Plant. *Journal of Engineering and Applied Sciences.* Vol 2, (pp 82 -92)
[25] Sherman, M. H., & Ford, J. (2014). Stakeholder engagement in adaptation interventions: an evaluation of projects in developing nations. *Climate Policy, 14*(3), 417-441.
[26] Sanginga, P. C., Chitsike, C. A., Njuki, J., Kaaria, S., & Kanzikwera, R. (2007). *Enhanced learning from multi-stakeholder partnerships: Lessons from the Enabling Rural Innovation in Africa programme.* Paper presented at the Natural resources forum.
[27] Adebayo, Y. A., Ikevuje, A. H., Kwakye, J. M., & Esiri, A. (2024). Driving circular economy in project management: Effective stakeholder management for sustainable outcomes. *GSC Advanced Research and Reviews, 20*(3), 235-245.
[28] Weber, L. (2009). *Marketing to the social web: How digital customer communities build your business*: John Wiley & Sons.
[29] O.O. Ighodaro and M. Osikhuemhe (2019) – Numerical Investigation of the Effect of Tyre Inflation Pressure on Fuel Consumption in Automobiles. *Nigerian Journal of Technological Research (NJTR)*, Vol 14(2) 2019, pp 38 -47. http://dx.doi.org/10.4314/njtr.v14i2.5
[30] Freeman, R. E., Harrison, J. S., & Wicks, A. C. (2007). *Managing for stakeholders: Survival, reputation, and success*: Yale University Press.
[31] Zulch, B. (2014). Communication: The foundation of project management. *Procedia Technology, 16*, 1000-1009.
[32] Kaptein, M., & Van Tulder, R. (2017). Toward effective stakeholder dialogue.
[33] Osarobo O. Ighodaro and Ndem F. Essien (2020) – Experimental Analysis on the Characteristics of Pulverized Coal- Palm Kernel Shell Fuel Blend. *Caliphate Journal of Science and Technology (CAJOST)*, Vol 2, pp 89 -93
[34] Lopatta, K., Jaeschke, R., & Chen, C. (2017). Stakeholder engagement and corporate social responsibility (CSR) performance: International evidence. *Corporate Social Responsibility and Environmental Management, 24*(3), 199-209.
[35] Prado-Lorenzo, J. M., Gallego-Alvarez, I., & Garcia-Sanchez, I. M. (2009). Stakeholder engagement and corporate social responsibility reporting: the ownership structure effect. *Corporate Social Responsibility and Environmental Management, 16*(2), 94-107.
[36] Pritchard, C. (2013). *The project management communications toolkit*: Artech House.
[37] Bercovitch, J., & Jackson, R. D. W. (2009). *Conflict resolution in the twenty-first century: principles, methods, and approaches*: University of Michigan Press.
[38] Amsler, L. B., Martinez, J., & Smith, S. E. (2020). *Dispute system design: Preventing, managing, and resolving conflict*: Stanford University Press.
[39] Collins, T., Skelly, A. and Merton, L. (2018). Australia Pacific LNG Project. https://aplng.com.au/wp-content/uploads/2021/06/Spring-Gully-NE-and-NW-Constraints-Planning-and-Field-Development-Protocol-Rev-2.pdf

[40] Babayeju, O. A., Jambol, D. D., & Esiri, A. E. (2024). Reducing drilling risks through enhanced reservoir characterization for safer oil and gas operations. *GSC Advanced Research and Reviews*, 19(03), 086–101. https://doi.org/10.30574/gscarr.2024.19.3.0205
[41] Bayzakova, A., 2014. *The uncertain future of Australian LNG projects: the use of scenario building in strategic management* (Master's thesis).
[42] Gavrilova, K., 2023. Arctic LNG production and the state (the case of Yamal Peninsula). In *The Siberian World* (pp. 273-284). Routledge.
[43] Wildman, S., 2019, November. Overcoming the Challenges of Designing, Developing, and Operating LNG Plants in an Arctic Environment. In *Abu Dhabi International Petroleum Exhibition and Conference* (p. D021S050R003). SPE.
[44] Bridger, J. C., & Alter, T. R. (2006). Place, community development, and social capital. *Community Development, 37*(1), 5-18.
[45] Sakmar, S. L. (2013). Energy for the 21st century: Opportunities and challenges for liquefied natural gas (LNG).
[46] Jenewein, O., Hummel, M.A., Bezbourah, K., Liu, Y. and Masten, K., 2023. Smart Cities Designed by Smart Communities: An Engaged Approach to Develop a Sociotechnical Network. In *World Environmental and Water Resources Congress 2023* (pp. 797-806).
[47] Cheniere Energy, 2020. Corporate Responsibility Report. https://www.cheniere.com/pdf/Community-engagement.pdf