

A Thematic Review on Social, Economic, and Environmental Impacts in Onshore Projects

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ABSTRACT

The growth of petroleum production from onshore fields has generated both positive and negative impacts on local communities. As these projects expand, they also exert environmental pressures due to hazardous operational activities, alongside economic interests that shape organisational decision-making. To ensure that decision-making addresses the most relevant issues, it is essential to understand the gaps between economic and environmental considerations that influence social values. This paper aims to identify potential risks that act as critical factors across three primary value domains: Economic, Environmental, and Social. A thematic review was conducted using literature sourced from Scopus, Web of Science, and Emerald databases, and analysed using ATLAS.ti 8 with established exclusion and filtering criteria. The findings first outline economic and environmental values in relation to the risks identified, followed by an examination of how these risks shape social values. The paper then proposes prevention and mitigation strategies centred on the needs of local communities. A clearer understanding of these three value domains and their interactions equips decision-makers with a more comprehensive basis for action, supporting smoother project implementation, achievement of objectives, and increased stakeholder satisfaction. Early risk recognition is further highlighted as essential to managing project triple constraints and ensuring overall project success.

Keywords: *Oil and Gas, onshore, project, project management.*

1.0 INTRODUCTION

Petroleum is a significant global energy source, and its scarcity has substantially affected various aspects of economic growth (Kraidt et al., 2020; Nabizadeh et al., 2021; Rawat et al., 2021a). In addition, demand within the petroleum sector has notable implications for local social interests, which may be both positive and negative (Acevedo & Lorca-Susino, 2021; Balaji & Rabiei, 2021). Given these potential influences, continuous planning and monitoring throughout a project are essential to prevent substantial damage (He et al., 2021; Nabizadeh et al., 2021). It is therefore important to recognise that proactive actions must be taken from the outset of every project to minimise potential losses, as this industry is both critical and demanding.

Among the key issues highlighted by previous scholars are the activities associated with pipeline projects, which often raise concerns among local communities, particularly when project sites are situated within their vicinity and affect related social agendas (Ogwang & Vanclay, 2019; Oliva et al., 2021). Environmental impacts also remain a significant concern. The rapid evolution of the industry affects the environment due to the hazardous nature of operational activities, which in turn influences evaluation and decision-making processes among project stakeholders (Luo et al., 2020; Marinos et al., 2019; Naime, 2017).

A clear understanding of the potential impacts of these risks enables project teams to develop an accurate and comprehensive picture of the issues they face, contributing to smoother project execution, achievement of objectives, social satisfaction, and overall project success (Aldhaheri et al., 2018; Kassem et al., 2020a; Sweis et al., 2019). Furthermore, early risk identification in pipeline projects is essential for managing the project's triple constraints, which are critical for maintaining progress and ensuring long-term project success (Alam et al., 2019; Kassem et al., 2019).

Therefore, to ensure that the appropriate issues are addressed during the decision-making process, and based on the challenges highlighted in these contexts, it is necessary to analyse onshore projects by identifying the potential risks. This paper examines the economic and environmental values discussed in previous studies on onshore petroleum projects and their interdependencies with social values within the industry. The review highlights critical factors that could enhance practice by prioritising the needs and requirements of local communities involved in onshore petroleum activities. The findings are derived from contemporary literature published between 2017 and 2021.

2.0 CLASSIFICATION METHODS

Reviewing past literature is a widely used method for identifying themes within a specific subject area or detecting emerging trends in the field (Koduru & Skow, 2018; Naevestad, Storesund Hesjevoll, Ranestad, & Antonsen, 2019). It enables systematic discussion and helps researchers focus their investigations. Accordingly, this paper presents a thematic study guided by a systematic approach to analyse the interdependencies among the three primary values outlined earlier.

The findings were generated from searches conducted in three databases: Scopus, Web of Science, and Emerald. A thematic review was performed and analysed using ATLAS.ti 8 to produce relevant results. This approach aligns with prior studies, such as Noah, Adhikari and Yazdifar (2020) who employed a thematic technique in their literature review to effectively explain and provide evidence from the data gathered.

Scopus, Web of Science (WoS) and Emerald were selected as the primary databases for retrieving articles published between 2017 and 2021. As this paper undertakes a thematic review, these databases were chosen due to their proven ability to capture a significant proportion of multidisciplinary English and non-English literature, including articles, editorials, and letters (De Groot & Raszewski, 2012). Their extensive coverage supports the retrieval of the relevant material required for this study. The selected publication range ensured the inclusion of contemporary and recent scholarly discussions. Table 1 summarises the search strings used for each database. All retrieved articles were recorded, downloaded, compiled using Mendeley, and subsequently uploaded to ATLAS.ti 8 as primary documents for thematic analysis.

Table 1. Search Strings from Scopus and Web of Science (WoS)

Databases	Search Strings
SCOPUS	TITLE-ABS-KEY (oil AND gas AND petroleum AND project AND (risk* OR uncertain*)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017))

Web of Science (WoS) TS=(oil AND gas AND petroleum AND project AND risk* AND uncertain*)
 Refined by: PUBLICATION YEARS: (2021 OR 2020 OR 2019 OR 2018 OR 2017)

Emerald Oil AND gas AND petroleum AND project AND (risk* OR uncertain*)
 Publication Years: 2017-2021

The search terms were intentionally broad to capture a wide range of terminology commonly used within this field. This was necessary due to the diverse ways in which risks are defined and discussed, and the variation in keyword usage across published articles. Examples include: “Risk”, “Uncertainty”, “Issues”, “Factors”, and “Impact”.

Additionally, the term “oil AND gas AND petroleum” was used consistently across all three databases to ensure coverage of all sectors of the petroleum industry, upstream, midstream, and downstream, as well as the full range of associated activities. This approach ensured that the search aligned with the aims of the study and captured the values relevant to the paper’s focus. The formation of search keywords was guided by the stated aim of this paper.

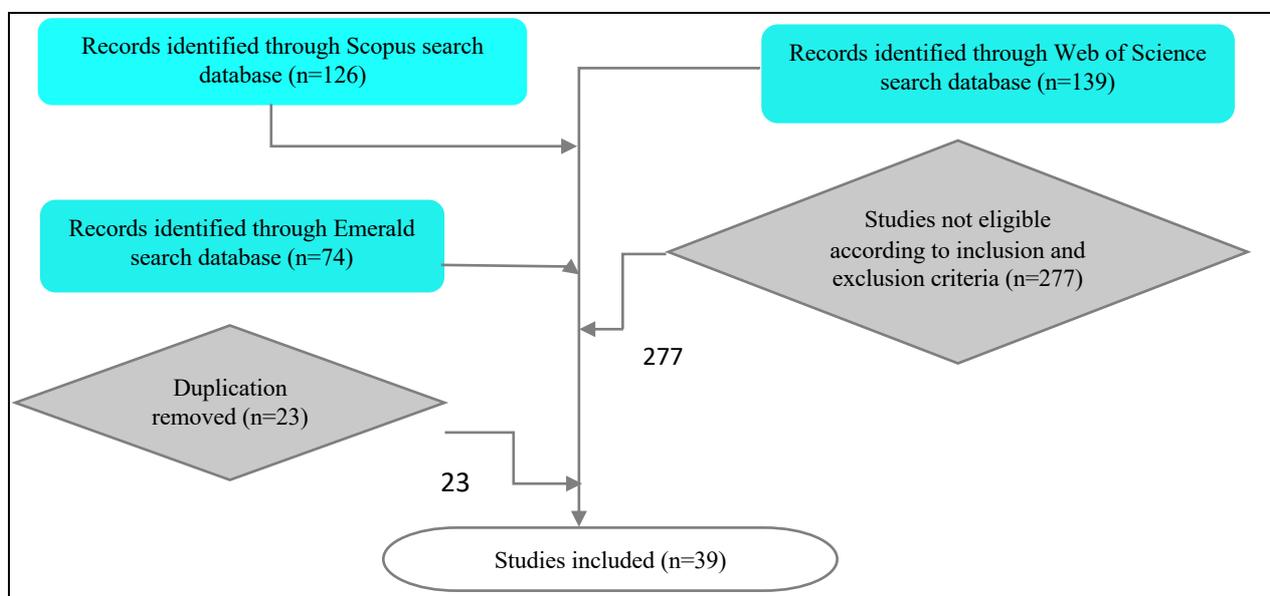


Figure 1. Inclusion and Exclusion Criteria in the Thematic Review

Figure 1 illustrates the inclusion and exclusion criteria applied in this review. Initially, searches across the three databases produced a total of 339 articles: 126 from Scopus, 139 from Web of Science, and 74 from Emerald. Following the application of the inclusion and exclusion criteria, 277 articles were removed because they discussed petroleum-related topics without focusing specifically on onshore projects. Other excluded papers addressed unrelated fields such as coal, mining, medicine, fertilisers, and agriculture. A further 23 duplicate articles were eliminated. In the final stage, 39 articles were selected for analysis, forming the basis for the quantitative and qualitative findings.

The use of ATLAS.ti 8 enabled efficient and systematic organisation of the selected articles. The codes generated during analysis were categorised into several themes aligned with the three primary values to examine their interdependencies. The final objective of this paper was to promote improvements in practice by prioritising the needs and requirements of local communities involved in onshore petroleum projects.

3.0 RESULT AND DISCUSSION

This paper gathered literature discussing economic, environmental, and social values from selected databases to explore the themes highlighted in published studies through a thematic review method. The strength of this review lies in its transparency and objectivity. As shown previously in Figure 1, the thematic review guidelines and stages were adapted to ensure that the criteria for article selection and assessment were applied clearly and systematically, in line with this paper’s aim. The findings are presented in two main sections: quantitative findings and qualitative findings.

3.1 Quantitative Findings

Since this paper focuses on identifying literature that deliberates on economic and environmental values and their interdependencies with social values, abstracts and full texts of the selected studies were screened based on the initial codes. Coding was first conducted in ATLAS.ti using Code In Vivo and Open Coding, resulting in the classifications shown in Table 2.

The initial codes were subsequently categorised into three thematic groups: Economic, Environmental, and Social. Table 2 lists the articles included in the thematic review according to the themes addressed by their authors.

Table 2. List of Articles for Thematic Review

No.	Author(s) & Year	Economic	Environmental	Social
1.	Aldhaheri et al. (2018)			√
2.	Kraidı et al. (2021)			√
3.	A Kassem, Khoiry and Hamzah (2020a)			√
4.	Sweis et al. (2019)	√		
5.	Rawat et al. (2021)			√
6.	Nabizadeh et al. (2021)		√	√
7.	Garrett (2018)	√	√	√
8.	Rawat et al. (2021)	√	√	
9.	Siedlok et al. (2020)	√		√
10.	Evans (2021)	√	√	√
11.	Fu and Su (2020)		√	
12.	A Kassem, Khoiry and Hamzah (2020b)	√	√	√
13.	Naime (2017)	√	√	√
14.	Lachapelle et al. (2021)	√	√	√
15.	Brown et al. (2017)			√
16.	Scott and Scott (2019)			√
17.	Lu et al. (2021)			√
18.	Fry and Hilburn (2020)	√	√	√
19.	Dusyk et al. (2018)	√	√	√
20.	Alam et al. (2019)	√		√
21.	Oliva et al. (2021)		√	
22.	Balaji and Rabiei (2021)	√	√	
23.	Marinos et al. (2019)		√	
24.	Monahan and Bambury (2017)			√
25.	Novoselov et al. (2019)	√	√	√
26.	Vaezi and Verma (2018)	√		
27.	Bai et al. (2017)		√	
28.	He et al. (2021)		√	
29.	Ogwang and Vanclay (2019)			√
30.	Chalgham et al. (2020)			√
31.	Adamtey and Onsarigo (2018)			√
32.	Shishodia, Dixit and Verma (2018)	√	√	√
33.	Omoya, Papadopoulou and Lou (2019)	√	√	
34.	Acevedo and Lorca-Susino (2021)	√	√	
35.	A. Kassem, Khoiry and Hamzah (2020)	√		
36.	Onyebuchi et al. (2018)		√	
37.	Schumann (2017)		√	√
38.	Jabbari et al. (2021)			√
39.	Kraidı et al. (2020b)	√		√

To illustrate the distribution more clearly, Figure 2 presents the themes according to publication year (2017–2021). The analysis shows a significant increase in publications over time, reflecting growing scholarly interest in this area. This rise is linked to the evolving and diverse nature of the petroleum industry, along with

increasing global environmental awareness, institutional consciousness, and international policies encouraging rigorous environmental protection, economic development, and geopolitical considerations (Doric & Dimovski, 2018; Macini et al., 2018; Moores et al., 2018).

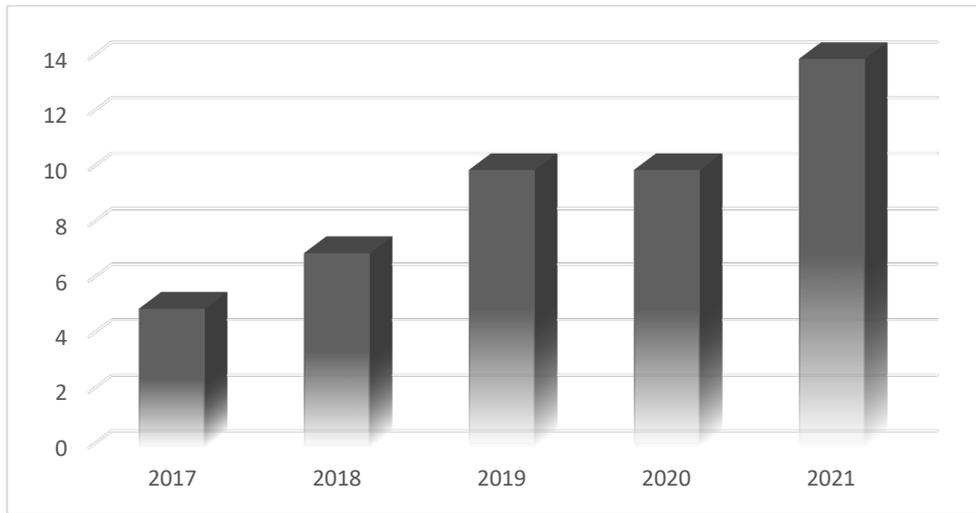


Figure 2. Number of Papers Published From 2017 to 2021

Figure 3 visualises the publication trends for the three main values. Studies focusing on economic and social values increased consistently until 2020, followed by a slight decline in 2021. Conversely, while environmental-value-related publications remained stagnant between 2017 and 2018, they show a steady upward trend from 2018 to 2021. This pattern suggests that contemporary researchers have progressively shifted their attention towards environmental considerations. As Wilson (2016) stated that petroleum companies are becoming increasingly aware of the need to earn the trust of local communities and secure a social “licence to operate”, beyond merely obtaining formal legal permits.

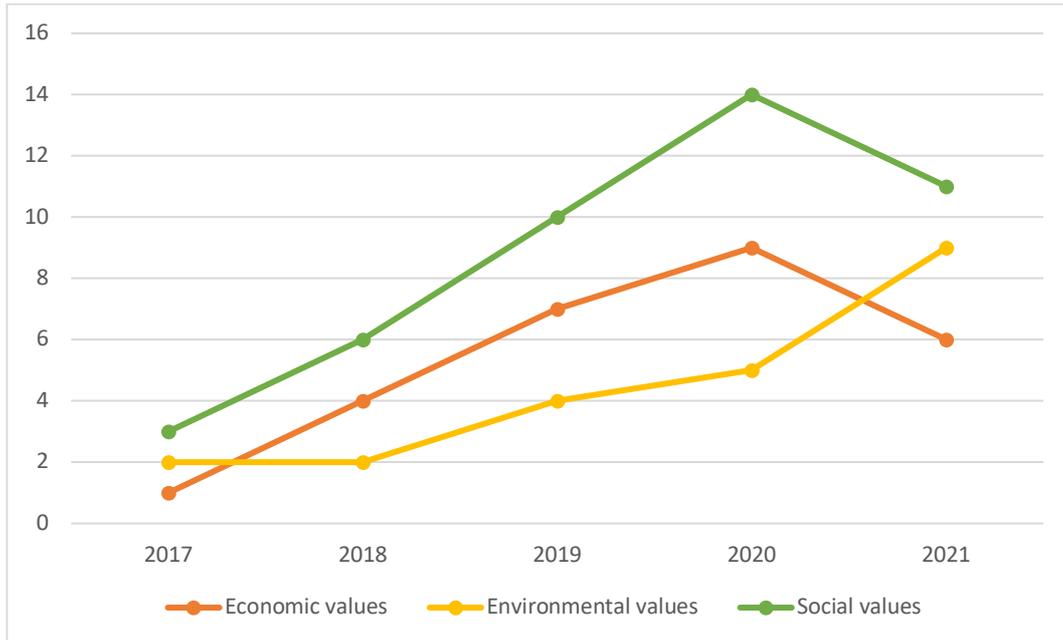


Figure 3. Trends of the Values Discussed by the Publication Year

3.2 Qualitative Findings

3.2.1 Economic Values and Environmental Values and Their Risk Impacts

Figure 4 presents the qualitative results derived from analysing the first two themes: Economic and Environmental values and their associated risk impacts. The grey boxes show the initial codes generated from ATLAS.ti, representing risk impacts connected to each value.

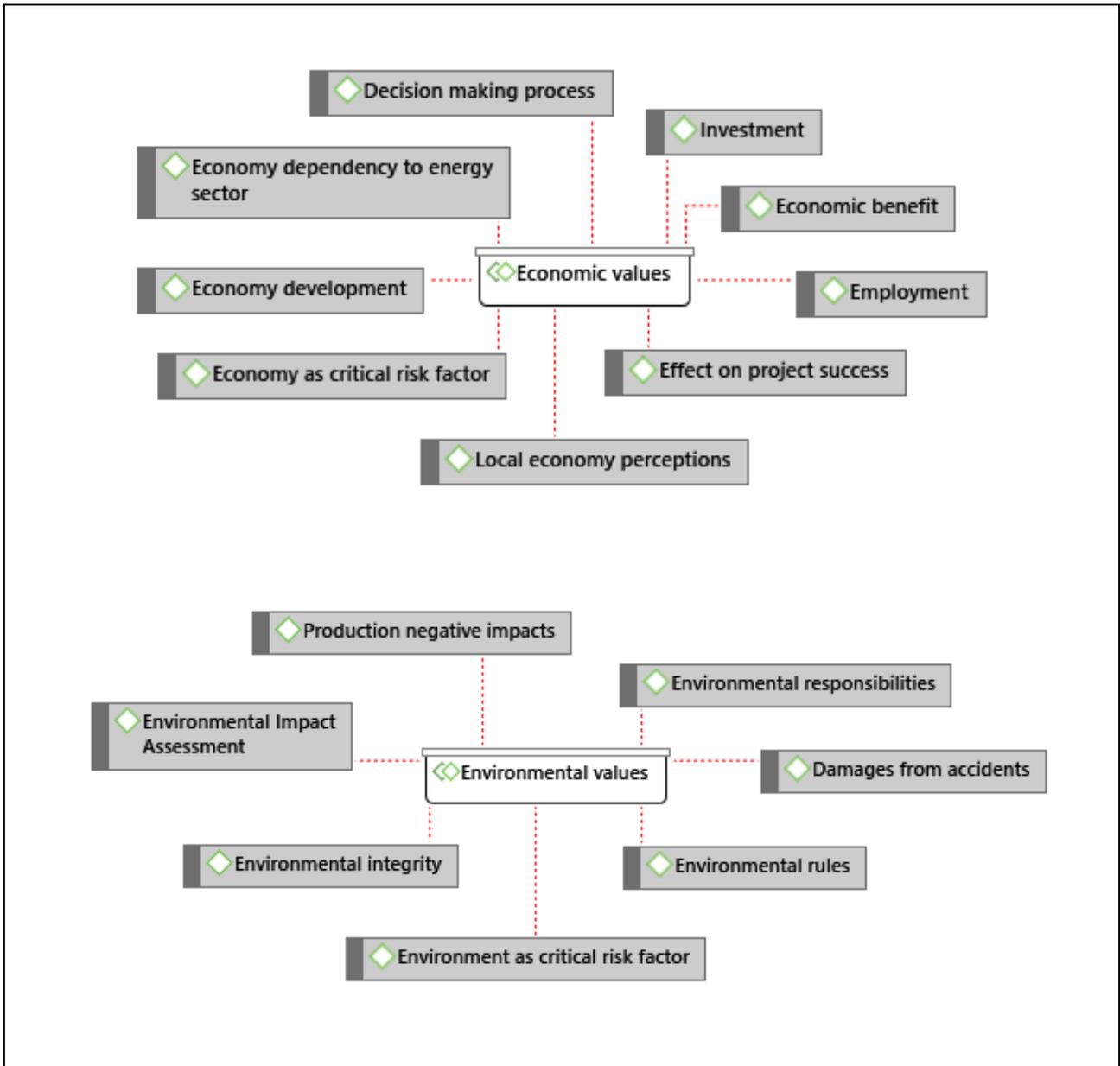


Figure 4. Generated results from the analysis of the first two categories; The Economic and the Environmental values

3.2.2 Social Impacts from The Economic and Environmental Values in Onshore Projects

The same analytical process was used to generate the third category: Social values. As outlined earlier, the aim of this thematic analysis was to determine how economic and environmental values influence social values in onshore projects. The risk impacts affecting social values shown in the orange boxes in Figure 5, include:

- Social sustainability
- End-user engagement
- Community concerns
- Safety and health
- Social as a critical risk factor.

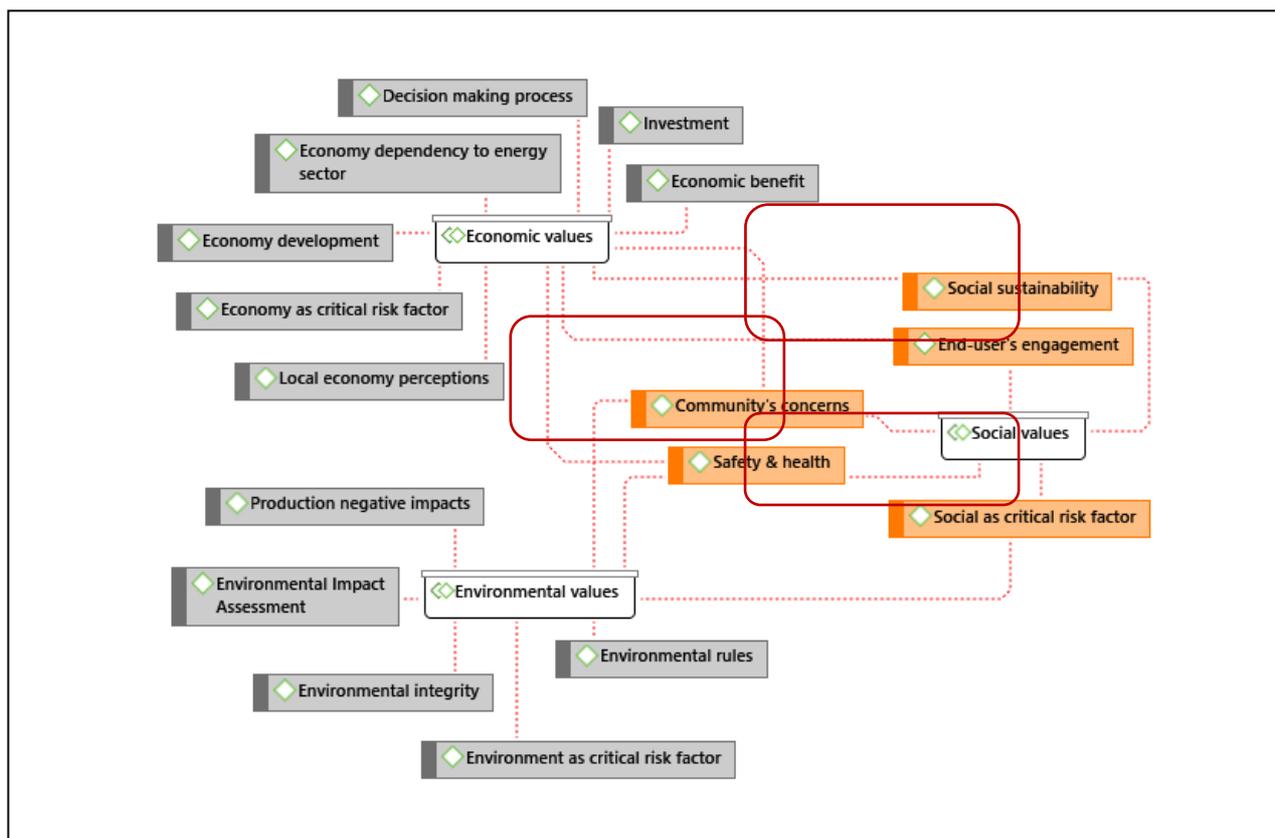


Figure 5. Social Impacts from The Economic and Environmental Values

Figure 5 also summarises the clusters of discussions found in the 39 selected articles, corresponding to the three primary value domains. These discussions inform the final analytical points presented below.

3.3 Key Qualitative Insights

3.3.1 Social Sustainability and End-User Engagement

These aspects are closely connected to Economic Values, as community acceptance often depends on whether projects generate visible socio-economic benefits. Scholars widely acknowledge the importance of enhancing public awareness regarding both the sensitivities of local communities and the economic contributions of petroleum operations (Fry & Hilburn, 2020; Siedlok et al., 2020). Petroleum-related activities often bring tangible social development gains, including job creation, improved skills, and increased local business participation, all of which help strengthen community support (Rawat et al., 2021a).

Additional studies reinforce this connection. For example, Shehu et al. (2023) highlighted that sustainable practices, including stakeholder engagement and communication, significantly contributed to timely and effective project delivery. Their findings underscore that socially responsible practices are essential not only for compliance but also for fostering trust and cooperation with local end-users. Likewise, Soyingbe & Simeon (2025) emphasised the importance of strategic risk management in small and medium-sized construction enterprises, noting that economic and social considerations must be integrated to ensure project stability and long-term sustainability. These insights collectively demonstrate that enhancing social sustainability and engaging end-users are integral to maximising the economic and social value produced by onshore petroleum projects.

3.3.2 Community's concerns on the Safety and Health Engagement

These aspects are influenced by both Economic and Environmental Values, as communities often evaluate petroleum projects based on perceived risks and anticipated benefits. Previous studies show that public opinion is particularly sensitive to issues involving worker safety, environmental protection, and the economic viability of petroleum operations. As Monahan and Bambury (2017) asserted, while the petroleum industry contributes significantly to national development, safeguarding community welfare and ensuring operational safety must remain central priorities.

Emerging studies further strengthen this argument. Mustafa et al. (2025) demonstrated how technological solutions, such as machine learning for green building practices, can enhance safety, efficiency, and sustainability in project delivery. Their findings imply that adopting innovative approaches helps mitigate public concern by promoting transparency and improving environmental performance. Meanwhile, Simeon and Soyngbe (2023) identified critical factors affecting the implementation of safety protocols on construction sites, emphasising that organisational culture, regulatory compliance, and management commitment play essential roles in maintaining safe operations. These studies collectively show that addressing community concerns about safety and health requires proactive engagement, early risk identification, and the consistent integration of environmental–economic considerations in project planning.

3.3.3 Social Value as a Critical Risk Factor

This dimension is inherently linked to Environmental Values, as social outcomes increasingly form part of environmental and sustainability assessments. Scholars argue that early identification of risk factors—especially those that may contribute to community dissatisfaction, environmental incidents, or project delays is essential for developing effective mitigation strategies (Kassem et al., 2020a, 2020c). Proactive risk identification strengthens long-term project success by ensuring preparedness and reducing the possibility of unanticipated disruptions.

Additional research contributes further clarity to this theme. Abdullah and Foo (2019) highlighted the integration of HSSE (Health, Safety, Security, Environment) elements into social risk assessment frameworks, reinforcing that social risks must be managed through systematic and holistic approaches. Their work demonstrates that social value considerations are not peripheral but central to project feasibility and stakeholder acceptance. Similarly, Azari and Karimi (2018) showed how spatial and structural risk patterns, particularly in urban gas pipeline systems, can be assessed using social and environmental parameters. Their findings illustrate that overlooking social factors (e.g., population density, community vulnerability) can increase environmental and operational risks.

Collectively, the evidence underscores that social value is a critical risk factor, one that intersects strongly with environmental considerations and must be embedded into comprehensive risk management practices for onshore petroleum projects.

4.0 CONCLUSION

In summary, the analysis identified three primary value domains, Economic, Environmental, and Social, and highlighted their interdependencies. Through this analysis, several critical factors were recognised that can improve professional practice, particularly when prioritising the needs of local communities in onshore petroleum projects. This paper contributes to supporting decision-makers by providing clearer insights into the issues they face. Early risk recognition is essential for managing the project's triple constraints, ensuring smoother project progress, successful achievement of objectives, and enhanced social satisfaction, ultimately contributing to long-term project success. For improved assessment and understanding of how these findings influence project execution, further research is recommended. This includes evaluating the effectiveness of the strategies highlighted in decision-making processes and conducting deeper investigations into the social-related risk impacts identified in this study to propose more targeted resolutions.

5.0 ACKNOWLEDGEMENT

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