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TAKING SOCIAL COSTS OF INFRASTRUCTURE DEVELOPMENT INTO ACCOUNT: LESSONS LEARNED FROM A "LICENCE TO OPERATE" FOR MEGA-WATER PROJECTS IN SOUTH AFRICA

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INTRODUCTION

South Africa is at a crossroads, grappling with the pressing issues of water scarcity and soaring unemployment rates. Investing in infrastructure development is not simply important to pave the way for a brighter future; it is essential to unlock economic growth and foster prosperity for all. Infrastructure projects are undertaken by state-owned liability management entities, such as the Trans-Caledon Tunnel Authority (TCTA), often in complex environments that pose various sociopolitical and environmental challenges. In such contexts, it is crucial for both TCTA and the communities involved to recognise and understand the nature and complexities of the impacts experienced at the individual and social levels. Although the Social Impact Assessment (SIA) was initially developed as a technocratic tool alongside the Environmental Impact Assessment (EIA), it has recently been integrated into the EIA, highlighting the importance of civil society and democracy (Gulakov and Vanclay 2019).

Khan (2020) argues that sustainability comprises three key social, economic, and environmental components. However, the author emphasised that economic and environmental factors are usually prioritised for project planning, whereas social elements are often overlooked. Khan defined social sustainability as the consideration of the social factors essential for achieving lasting social welfare. To ensure the sustainability of a new infrastructure project, it is crucial to maximise

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the positive impacts and minimise the negative impacts (Khan 2020). Hurst et al. (2020) describe a social licence as an intangible and dynamic concept that signifies the ongoing acceptance of an entity—whether an individual, project, organisation or industry—by its stakeholders. This acceptance is reflected in an entity's capacity to engage stakeholders and adapt to ever-changing demands and expectations (Hurst et al. 2020). The authors emphasise that the concepts of a licence to operate and public participation are not synonymous. A licence to operate refers to the broader acceptance or approval of a project or organisation by stakeholders and communities for its business (Hurst et al. 2020). Hurst et al. (2020) assert that this extends beyond mere legal or regulatory compliance and involves earning trust and legitimacy. Conversely, public participation denotes a specific process involving stakeholders and community members in decision-making, frequently through consultations, hearings, or other engagement mechanisms (Hurst et al. 2020). Current literature and practices highlight a gap in the depth and breadth of stakeholder engagement in social impact assessments. There is limited evidence on how various engagement strategies influence project outcomes and community satisfaction, especially regarding bulk water infrastructure.

During the Apartheid era, South Africa faced significant challenges, notably the voluntary implementation of Environmental Impact Assessments (EIAs), which were not mandated (Du Pisani and Sandham 2006). This voluntary approach enabled projects with considerable adverse environmental and social impacts to proceed without proper scrutiny, resulting in disproportionate consequences for marginalised communities. These vulnerable groups have endured the worst environmental degradation and pollution.

However, the enactment of the Environmental Conservation Act No. 73 of 1989 (ECA) marked a turning point, granting the Minister of Environmental Affairs the power to identify potentially harmful projects and mandate EIAs for such initiatives, thereby promoting sustainable development practices (Hildebrandt and Sandham 2014; Hurst et al. 2021).

After the first democratic elections in 1994, South Africa established a new constitutional framework that recognises all citizens' rights to a healthy environment, free from harm to their health and well-being. As outlined in the Bill of Rights (Chapter 2), this framework is committed to protecting the environment for the benefit of both present and future generations through appropriate legislation and other measures. These initiatives aim to prevent pollution and ecological degradation, promote conservation, ensure sustainable development, use natural resources, and facilitate equitable economic and social advancement (Hildebrandt and Sandham 2014; Republic of South Africa 1996; Smyth et al. 2015). However, the practical application of these legislative frameworks to ensure equitable and sustainable development outcomes through SIAs remains underexplored, especially in the context of South Africa's unique socio-political landscape and history of inequality. Given the unique sociopolitical landscape of South Africa and the critical role of water infrastructure projects, there is an urgent need to examine how TCTA's approach to SIAs can enhance community engagement, mitigate social costs, and contribute to project sustainability.

Aligned with previously expressed perspectives, Johnston and Lane (2018) posit that organisations typically depend on well-informed estimations to assess the concrete consequences of their decisions and the potential reactions that might be provoked. Consequently, social impact assessments have been regarded as the "orphan" or "lesser sibling" of environmental impact assessments (Francis and Jacobs 1999; Du Pisani and Sandham 2006; Hildebrandt and Sandham 2014). It is crucial to adopt a more practical strategy that incorporates a comprehensive SIA to evaluate the potential consequences of a project on the local population. This method should encourage authentic and dynamic involvement from stakeholders, enabling those affected by the project and other concerned parties to play a significant role in the decision-making process (Aledo-Tur and Gomez 2017).

Despite these advancements, there remains a significant gap in understanding how effectively SIAs, when integrated with EIAs, address the socio-economic impacts on affected communities in the post-apartheid era, specifically concerning water infrastructure. This study investigates how SIAs effectively incorporate social costs into the

planning and implementation of major water infrastructure projects in South Africa, focusing on the lessons learned from the Trans-Caledon Tunnel Authority (TCTA) approach.

In response to these pressures and expectations, TCTA adopted an innovative strategy and implemented a specialised process. The entity recognised that a singular focus on financial value would not yield the desired outcomes. Consequently, TCTA conducts comprehensive assessments of environmental, social, and economic factors to ensure that the biophysical impacts are not overestimated. According to the literature, social influences include health and well-being, liveability, economics, culture, family and community, politics/law, and gender, and they are experienced or perceived in intangible or perceptual terms (Hildebrandt and Sandham 2014; Vanclay et al. 2015). Although individual entities, such as TCTA, have begun to adopt innovative approaches to SIA, a noticeable lack of sector-wide methodological innovation to address the complex socioeconomic dynamics in South Africa presents a critical area for research.

Since 1997, South Africa has gradually adopted SIA requirements in its environmental impact assessment (EIA) (Du Pisani and Sandham 2006). However, the legal requirements in policy design and project planning contradict the minor role of the SIA in assessing biophysical impacts in the EIA (Francis and Jacobs 1999). Generally, the SIA is defined as the evaluation of intended or unintended positive or negative social consequences likely resulting from particular actions or projects (Vanclay 2003). Further, Vanclay (2015) defined impacts as changes in people's lives, experiences, sustainability, and societal functioning resulting from the decisions and subsequent actions of an organisation. Furthermore, a positive or negative intended or unintended social change or consequence resulting from policies, plans, developments, or projects is part of the research, planning, and management processes. Vanclay et al. (2015) identified SIA by incorporating the following dimensions: aesthetics (landscape analysis), archaeology and heritage, community, cultural, demographic, development, economy, gender, health, Indigenous rights, infrastructure, institutional, political, poverty-related, psychological, resource issues, impacts of tourism, and other societal effects (Vanclay et al. 2015).

This study advocates integrating the evaluation and management of SIA beyond the ex-ante prediction of negative effects and determining who wins and who loses. Several studies have found that SIA should evaluate all human effects and how people interact with their sociocultural, economic, and biophysical environments (Esteves et al. 2017). The SIA played a crucial role in Chapter 5 of the 1998 National Environmental Management Act by promoting the use of appropriate environmental management tools to integrate environmental management activities (NEMA 1998).

This evaluation study examined the implementation of a project and the SIA results. This differs from the Olifants River Water Resources Development Project-2 (ORWRDP-2C) at the beginning of the Mzimvubu Water Project (MWP). Although most stakeholders' understanding of social impacts is limited to recognising the importance of involvement, this study provides important insights into an emerging push towards co-creative processes, focusing on how community groups collectively understand complex decisions and their effects (Johnston and Lane 2018).

While previous studies have underscored the significance of integrating social considerations into infrastructure development, few have critically analysed the effectiveness of Social Impact Assessments (SIAs), specifically within the context of South Africa's water infrastructure projects. This study addresses this gap by examining the innovative approaches that entities such as TCTA employ.

RESEARCH APPROACH

A qualitative research methodology was used for both data collection and interpretation to ensure a comprehensive understanding of the experiences, perceptions, and challenges encountered by the participants engaged in the social impact assessment process. The participants comprised project managers, social facilitators, contractor representatives, community leaders, and other stakeholders who benefited from the project. The participants were invited to share their insights and propose recommendations to enhance the application of social impact assessments.

Information was collected by reviewing the existing memos, meeting records, and project reports. In-depth interviews were conducted with key stakeholders from the TCTA project as well as with community representatives involved in the Olifants River Water Resources Development Project Phase 2 (ORWRDP-2). Owing to uncertainties regarding the scope and implementation of the Mzimvubu Water Project (MWP), conducting interviews or focus group discussions with interested parties, affected individuals, or general community representatives was not feasible. Instead, data were extracted from progress project reports, emphasising public facilitation and engagement. The project was undergoing a thorough process of reconceptualisation and reconfiguration. This study employed a qualitative approach to analyse two major water infrastructure projects—ORWRDP-2 and MWP—to identify effective strategies for integrating social considerations into project planning and implementation. The objectives of this study were as follows:

Evaluate the effectiveness of Social Impact Assessments (SIAs) in mitigating the social costs associated with major water projects,

Identify strategies to enhance stakeholder engagement and assess the impact of TCTA's approach on project sustainability and community acceptance.

By focusing on ORWRDP-2 and MWP projects, this study provides a significant opportunity to examine and differentiate their approaches to mitigating the social impacts of large-scale water infrastructure projects. Through an analysis of progress reports and public engagement efforts, this study elucidates the best practices for incorporating social considerations into a project's lifecycle. The knowledge acquired from this qualitative analysis can inform future water infrastructure initiatives, thereby enhancing stakeholder relationships and minimising adverse social effects in impacted communities.

LITERATURE REVIEW

The SIA promotes the systematic integration of social issues in the planning and implementation of projects, improves their quality and sustainability, supports and strengthens compliance with national requirements, and enhances project acceptance and local ownership

(Vanclay et al. 2015). Similarly, it helps to identify and manage potential adverse social impacts that a project may cause or contribute to and maximise benefits to local communities and other groups (Aledo-Tur and Domínguez-Gómez 2017; Dendena and Corsi 2015). In this regard, the SIA should be embedded in all stages of a project's life cycle, from concept and identification through preparation, approval, implementation, and completion. Throughout the life cycle of a project, this process focuses on identifying, assessing, and managing social risks and opportunities (Vanclay et al. 2015; Johnston and Lane 2018).

Social risk is a widely recognised concept in the context of SIA. In discussions related to SIA projects, "social risk" is frequently synonymous with "non-technical risk" (Vanclay et al. 2015; Asah and Baral 2021; Khan 2020). For the World Bank, social risk refers to the possibility that an intervention may create, reinforce, or worsen inequality or social conflicts. Additionally, it includes the risk that the attitudes and actions of key stakeholders could impede the attainment of development objectives, or that these objectives, along with the means to achieve them, may lack the necessary support and ownership from important stakeholders (Dendana and Corsi 2015). The inherent nature of social risk poses a significant threat to organisational success (Kvam 2018). Inadequate identification and management of such risks may lead to unforeseen financial burdens stemming from project-related social impacts or issues. These additional costs can manifest in various forms, including unanticipated risk-mitigation expenses, legal proceedings, compensatory payments, labour disputes, acts of retaliation, and damage to corporate reputation (Vanclay et al. 2015; Smyth et al. 2015).

Origins of Social Impact Assessment

Environmental Impact Assessments (EIAs) focus on the biophysical environment, whereas social impact assessments (SIAs) evaluate how projects affect communities. In TCTA, the integration of SIA into the EIA process aims to ensure a holistic understanding of both the environmental and social impacts, which is a critical consideration in the planning and execution of water infrastructure projects.

The origins of SIA in South Africa are well documented (Vanclay 2003; Vanclay et al. 2015; Du Pisani and Sandham 2006; Chanchitpricha and

Bond 2013; Hildebrandt and Sandham 2014; Department of Environmental Affairs 2014). They began by promulgating Environmental Impact Assessment (EIA) regulations under the Environmental Conservation Act 1989. The subsequent phase involved the introduction of a new set of comprehensive EIA regulations in accordance with the National Environmental Management Act of 1998. This new legislation expanded the definition of the environment to encompass physical and chemical aspects and aesthetic and cultural properties and conditions that influence health and well-being. The final phase focused on enhancing the efficiency and effectiveness of EIA.

After the enactment of the National Environmental Management Act (NEMA) No. 107 of 1998 in South Africa, a consensus emerged that development and investment projects should be grounded in the principles of sustainable development. These principles are predicated on participatory governance and effective management of long-term consequences in project planning, encompassing both intended and unintended outcomes as well as positive and negative outcomes. Consequently, Chapter 1, section 2 of the NEMA stipulates that environmental authorisation and Social Impact Assessment processes have been recognised as the most efficacious means of development and investment project implementation, owing to the fundamental principles of sustainable, transparent, participatory and equitable justice (Değirmenci and Evcimen 2013; Department of Environmental Affairs 2014).

Following multiple reviews and amendments to NEMA, the Department of Environmental Affairs formulated an "Environmental Impact Assessment and Management Strategy for South Africa" to rectify the deficiencies in the initial Integrated Environmental Management (IEM) framework and methodologies via the “Review of Effectiveness and Efficiency of EIA in South Africa” (Department of Environmental Affairs 2014). Notably, the principal stakeholders opined that the EIA procedure failed to sufficiently address crucial sustainable development concerns. They posited that “sustainable development might manifest haphazardly in a considerable proportion of cases undergoing EIA and that the insufficient emphasis on sustainable development within the EIA

process warrants alteration" (Department of Environmental Affairs 2014).

The Review of Effectiveness and Efficiency of EIA in South Africa advocates the implementation of a sustainability-oriented approach. This strategy aims to optimise the beneficial impacts of human activities by addressing the interconnected sustainability prerequisites for maintaining biophysical system integrity and ensuring fundamental human health, welfare, and economic sustenance. (Department of Environmental Affairs 2014, p. 89).

A sustainability-driven approach requires addressing a spectrum of considerations for all project stakeholders and TCTA, including the following:

Adapting project infrastructure to accommodate local community requirements;

Allocating social investment funds to bolster local, sustainable development initiatives and facilitate community visioning processes for strategic development planning;

Demonstrating an authentic commitment to optimising local content opportunities by dismantling entry barriers, thereby enabling local enterprises to provide goods and services and create employment for area residents;

Offering training and assistance to local inhabitants. (In instances of project-related resettlement, it is crucial to ensure the restoration and enhancement of post-relocation livelihoods).

These considerations foster sustainable development and community engagement throughout the project life cycle (Zhang et al. 2018; Hanna et al. 2016). The evolution of SIA, paralleling that of EIA, has transcended its initial conceptualisation as a mere study or report, emerging as a more intricate and comprehensive process (Parsons and Everingham 2019). This multifaceted process comprises various stages and outputs that require careful coordination and integration during the project's lifecycle. Its primary objectives include augmenting project

benefits and opportunities while simultaneously identifying and mitigating potential adverse impact risks (Vanclay et al. 2015; Yuan et al. 2007).

According to (Vanclay et al. 2015; Kvam 2018), the key principles for Social Impact Assessment include the following:

Legal and Normative Foundation: SIA must adhere to a country's legal standards and relevant norms.

Social Context: The SIA should enhance the understanding of local social groups and address issues such as poverty, social exclusion, and vulnerability.

Stakeholder Engagement: Effective stakeholder analysis and stakeholder engagement are essential for informed decision-making and ensuring transparency and accountability.

Benefits and Opportunities: SIA identifies project benefits for local communities that foster ownership and support.

Risk Identification: SIA is crucial for identifying potential adverse impacts, focusing on issues such as involuntary resettlement and social risks.

Indicators, Baseline, and Methodology: Accurate data are essential for establishing baselines and monitoring the risks and impacts.

Design and Implementation: Identified risks and benefits must be managed throughout the project lifecycle using a structured risk mitigation approach.

Reports and Plans: Specific reports and plans are required during the SIA process, with key documents publicly disclosed for stakeholder input.

Project Management System: The SIA should provide information to manage social issues and ensure appropriate resource allocation effectively.

Monitoring, Adaptive Management, and Evaluation: The project should adapt to unforeseen circumstances, with ongoing monitoring and oversight throughout implementation.

While potentially viewed as a superfluous expense that augments project costs, the assessment and management of social impacts offer considerable advantages for enterprises. These benefits encompass an improved capacity for early issue identification, thereby reducing delay-related expenses, enhancing the likelihood of project success, and fostering opportunities to create enduring positive legacies that transcend a project's lifespan. The Social Impact Assessment (SIA) process comprises several crucial phases, including a thorough delineation of the social milieu, impact identification, stakeholder engagement, and the appraisal and selection of alternative approaches (Gulakov and Corsi 2015; Gulakov and Vanclay 2019; Smyth et al. 2015).

VALUE OF SOCIAL IMPACT ASSESSMENT

Although progress has been made, a considerable knowledge gap remains regarding the effectiveness of SIAs, when combined with EIAs, in mitigating the socioeconomic impacts on communities affected by bulk water projects in the post-apartheid context. The efficacy of SIAs in mitigating socio-economic impacts on communities affected by bulk water projects in post-apartheid South Africa requires further investigation. This research gap presents an opportunity to evaluate the long-term outcomes of SIAs and their integration with EIAs in the context of water infrastructure development. Understanding this specific context's unique challenges and opportunities could provide valuable insights into improving the SIA process and its global implementation in similar contexts.

The research, situated within the context of South Africa's ongoing reconstruction, makes a substantial contribution to the Social Impact Assessment (SIA) field. It scrutinises the incorporation of social considerations into project planning and execution to enhance project quality, impact, and longevity. Additionally, it aims to bolster and reinforce adherence to national mandates while fostering increased project acceptance and local ownership, often referred to as a licence to operate (Hurst and Johnston 2020; Gulakov and Vanclay 2019). This study also facilitates recognising and mitigating potential adverse social consequences that projects may engender while simultaneously

supporting and benefiting local communities and other stakeholders (Aledo-Tur and Gomez 2017; Dendana and Corsi 2015). Governmental bodies and commercial enterprises must ensure the integration of SIAs throughout the entire project lifecycle, encompassing conceptualisation, identification, preparation, approval, implementation, and culmination. This comprehensive approach focuses on identifying, evaluating, and managing social risks and opportunities across all stages of the lifespan of a project (Vanclay et al. 2015; Zhang et al. 2018).

Vanclay and Hanna (2016) assert that the absence of a social licence to operate can result in disruptive protests against corporate entities and local communities. Their research paper, "Conceptualising Company Response to Community Protest," delineates 175 potential corporate actions that surpass minimal compliance requirements. These actions aim to mitigate conflicts and foster positive outcomes for both businesses and their host communities (Hanna et al. 2016).

To ensure a meaningful SIA, organisations and entities must undertake a range of initiatives, including substantial social investment activities, development of alternative livelihoods, provision of apprenticeships, formation of community consultative or liaison committees, recruitment of the local workforce, and implementation of grievance redress mechanisms (Hanna et al. 2016). The SIA process must commence significantly before project approval, initiating discussions about potential projects. This approach allows for the discussion of social issues immediately after project conception (Vanclay et al. 2015).

The implementation of the National Environmental Management Act (NEMA) No. 107 in 1998 led to a broad consensus on the necessity for development and investment projects to be grounded in sustainable development principles. These principles are underpinned by notions of participatory governance and effective management of both intended and unintended, as well as positive and negative, long-term ramifications of project planning. As stipulated in Chapters 1 and 2, environmental authorisation and social impact assessment processes are deemed the most effective mechanisms for executing development and investment projects, owing to their alignment with the fundamental tenets of

sustainability, transparency, participation, and equitable justice (Department of Environmental Affairs 2014).

The extant literature (Vanclay et al. 2015; Department of Environmental Affairs 2014; Hanna et al. 2016) suggests that organisations must address the following issues while cultivating a sustainability-centric approach among all project stakeholders:

Modify the project infrastructure to meet the requirements of the local community;

Allocate social investment funds to facilitate local, sustainable social development and community visioning processes to formulate strategic community development plans;

Demonstrate genuine commitment to enhancing opportunities for local content (i.e. employment for residents and local procurement) by reducing entry barriers that enable local enterprises to provide goods and services;

Implement training and assistance programmes in local communities. In instances where population resettlement is necessary for project progression, it is imperative to restore and improve post-resettlement livelihoods.

Similar to EIA, SIA has evolved from a mere study or report into a comprehensive process. This transformation necessitates the synchronisation and integration of various phases and outcomes throughout the project lifecycle. Organisations are increasingly adopting methodologies to evaluate and manage their environmental and social impact (Chanchitpricha & Bond, 2013). This process should not only identify and address potential adverse effects but also recognise and maximise project benefits and opportunities (Chanchitpricha and Bond 2013; Hanna et al. 2016; Esteves et al. 2017).

The incorporation of SIA throughout the project's duration enables the ongoing assessment and refinement of resettlement approaches, ensuring that the needs of affected communities are addressed promptly. This comprehensive impact evaluation method facilitates the

identification of both short- and long-term consequences, thereby promoting more robust and sustainable resolution. Additionally, by acknowledging and optimising project advantages, entities can foster favourable community relationships and contribute to the broader socio-economic advancement of relocated populations.

Drawing on South Africa's historical engagement with SIAs, as mandated by evolving legislation, the following sections examine how these principles have been applied and challenged in recent projects, such as ORWRDP-2C and MWP, highlighting the ongoing need for innovation in stakeholder engagement strategies.

REFLEXIVE AND DELIBERATIVE ASSESSMENT OF SOCIAL IMPACT

The evolution of the social risk concept and the incorporation of social licence practices necessitated a more structured stakeholder engagement approach. This approach entailed the formalisation, institutionalisation, and integration of stakeholder concerns with well-established biophysical, environmental, and economic considerations.

In the period preceding 2013, environmental managers at TCTA were tasked with supervising environmental, social, and land acquisition matters related to the designated projects. Subsequently, organisations recognised the importance of addressing the consequences of developmental interventions through a more specialised approach. This shift in methodology was prompted by the increasing complexity of projects, their growing numbers, diverse locations, and the intricacies of community dynamics.

The Olifants River Water Resources Development Project-2 (ORWRDP-2C) signified a pioneering endeavour for the organisation, as it marked the first instance of construction on communally owned land, necessitating the navigation of a unique ownership framework with intricate underlying dynamics. Traditionally, the organisation executed projects on “marketable” land, engaging in discussions with commercial agriculturists to secure areas for dam and pipeline facilities.

Due to the prevailing circumstances, the execution of pipeline projects has experienced numerous delays and disruptions. Notably, the challenges stemmed from sense-making complexities, deficient social capital, and a lack of reciprocity in ORWRDP-2C implementation.

The assessment and mitigation of social impacts, which may be perceived as a supplementary project benefit, confers significant advantages to organisations. These encompass an augmented ability to detect potential issues in their nascent stages. Thus, reducing delay-associated expenditures, elevating project success rates, and enhancing prospects for cultivating an enduring positive influence that transcends a project's developmental duration.

The regulatory framework for TCTA operations is predicated on the ministerial directives on implementing national water infrastructure projects. In compliance with national legislation, the Department of Water and Sanitation undertakes comprehensive impact assessments, encompassing environmental, social, health, safety, cultural, heritage, and aesthetic dimensions before submitting the Environmental Authorisation Report. Subsequently, TCTA conducted its due diligence process upon receiving this information. Within this national regulatory context, SIA has been integrated into a broader environmental impact assessment report.

In executing its legal mandate, TCTA emphasises the integration of robust social, environmental, and ethical protocols into its operational framework, which is aligned with international standards of business conduct. The organisation embraces the tenets of responsible corporate citizenship and fosters transparent dialogue with communities affected by its initiatives. TCTA aspires to surpass regulatory compliance, striving for exemplary social and environmental performance. While the procurement of official permits and licenses from various governmental entities is a standard business requisite, TCTA equally values the acquisition of a figurative "operational license" from affected communities. This approach enables an organisation to establish itself as a credible and respected entity within these localities and fosters trust and legitimacy in its operations.

The organisation systematically identifies individuals and households likely to be affected by each project and develops appropriate mitigation and compensation strategies. More specifically, the project charter delineates mitigation, development, and monitoring approaches, including specific activities that elucidate the underlying principles of impact minimisation, which are developed collectively. A crucial aim of the organisation's SIA is to recognise and address potential adverse effects while optimising project benefits for local communities and other stakeholders through improved local comprehension and backing, as well as addressing local requirements and priorities. This process enhances the capacity for early problem detection, thereby reducing expenses and integrating unavoidable costs into the feasibility assessment and project planning.

INFRASTRUCTURE PROJECT CONTEXTS

Given the legal and normative foundation of SIAs in South Africa, as outlined in the National Environmental Management Act (NEMA), the following case studies illustrate how these principles are operationalised in practice, revealing gaps and opportunities for enhanced stakeholder engagement.

Olifants River Water Resources Development Project-2C

In 2008, the Department of Water Affairs and Forestry issued a draft directive commissioning TCTA to execute sub-phase 2C of the Olifants River Water Resources Development Project Sub-phase 2C (ORWRDP-2C). This multifaceted initiative aimed to fulfil the water demands of both commercial and social users by integrating economic and social development objectives. A 40 km pipeline would connect the newly constructed De Hoop dam to a pump station near Steelpoort within the Greater Sekhukhune District. The project scope encompassed various sections of the Olifants River catchment, including the Steelport River catchment, and extended to the upper regions of the Mokgalakwena and Sandy River catchments. This expansion covered the zone of emerging mining and power generation along the eastern and northern fringes of the Bushveld Igneous Complex.

The area incorporated urban centres, such as Mokopane, Burgersfort, Steelpoort, Roossenekal, Jane Furse, Polokwane, and Lebowakgomo, alongside rural municipalities like Lepelle-Nkumpi, Fetakgomo, Makhuduthamaga, and Greater Tubatse. Situated entirely within the Limpopo River basin, the project area lies upstream of the Kruger National Park. An Environmental Impact Assessment (EIA) was undertaken in compliance with the NEMA guidelines and Department of Environmental Affairs standards, emphasising public engagement, social ramifications, ecosystem considerations, and sustainability. The assessment involved identifying the sociopolitical dynamics, relevant stakeholders, and local government bodies.

Mzimvubu Water Project (MWP)

In January 2019, the Minister of Water and Sanitation instructed TCTA to furnish project management services and support for Stage 1 implementation, particularly the "construction of advanced infrastructure, encompassing access roads to the site, a compound for construction workers and operational staff, and the site office, inter alia." The long-term aim of the water scheme is to address social needs and foster economic growth in the impoverished and rural northern regions of the Eastern Cape Province by harnessing the water resources of the MWP River Basin to bolster agriculture, water supply, hydropower, transportation, and tourism.

This project has historical significance because it provides water to underserved populations. The initial phase of project implementation began with social facilitation, which involved introducing the project to the local communities, leadership, and stakeholders. To ensure inclusivity and transparency, the social facilitation process encompassed the majority of communities in the vicinity of the proposed project area. Within this context, the SIA facilitated the methodical integration of social considerations into MWP planning and execution. This approach has enhanced project quality and sustainability, reinforced support and national requirements, and augmented project acceptance and local ownership. SIA helps identify and manage the potential adverse social impacts that a project may have engendered or contributed to. It sought

to optimise benefits for the local community and other interested and affected parties (Trans-Caledon Tunnel Authority 2019).

FINDINGS AND DISCUSSIONS

This section systematically presents the findings of the ORWRDP-2C and MWP case studies to address the research questions outlined in the introduction. First, we examine the effectiveness of SIAs in these projects. Next, we explore strategies to enhance stakeholder engagement. Finally, we assess the impact of these strategies on project sustainability and community acceptance.

The efficacy of Social Impact Assessment (SIA) hinged upon a robust public engagement process to elucidate the societal ramifications of the project. Once baseline data was established, the focus transitioned to pivotal aspects of the human milieu, particularly sociocultural variables that quantify and characterise identified concerns. A process of recognising and addressing social issues in project development should incorporate affected communities through participatory approaches to social impact identification, evaluation, and administration. The aim of discerning, appraising, and managing impacts should be holistic, acknowledging the interrelationships among the various issues. Notably, environmental impacts exhibited social dimensions, as communities often rely on their surroundings for sustenance and harboured emotional attachments to areas earmarked for project development (Vanclay and Esteves 2015; Khan 2020). This phenomenon is common in megaprojects around the world. (Sáenz 2021; Evcimen and Değirmenci 2013). EA reports have indicated economic and social impacts, such as assets and employment, as well as those associated with population movements (migration into or out of the area) and permanent or temporary land acquisition. (Hanna et al. 2016).

TCTA evaluated the social impact by focusing on people's daily lives, shared beliefs, customs, values, and personal and property rights. In the ORWRDP-2C case, the entity focused on the levels of dust and noise, physical safety, access to and control of resources, and impact on agricultural plots and areas of individual fields. The project affected 145 households over 40 km, and ten (10) families were relocated. The project

team identified high unemployment rates. An impact assessment of the ORWRDP-2C project revealed a comprehensive evaluation of the environmental and socioeconomic factors that affect the local community. The SIA meticulously examined dust and noise pollution levels, which were crucial indicators of environmental quality and potential health risks for residents. Additionally, the assessment prioritised physical safety concerns, recognising the importance of safeguarding the well-being of community members during and after project implementation. The analysis also delved into the critical aspects of resource access and control, acknowledging the significance of maintaining equitable distribution and management of local resources among the affected population.

The project's scope was considerable, impacting 145 households across a 40 km distance, with 10 families facing relocation. This scale underscores the substantial influence of local landscape and community dynamics. The identification of high unemployment rates within the affected area adds another layer of complexity to the socioeconomic implications of the project. This finding highlights the potential of the project to intensify existing economic challenges and present opportunities for job creation and economic stimulation. The comprehensive nature of this assessment demonstrates a holistic approach to understanding and addressing the multifaceted impacts of large-scale infrastructure projects on local communities and their environments. The following measures were proposed to mitigate social impacts:

Implementation of specialised programmes to enhance the employability of local residents;

Road safety initiatives for educational institutions due to the high incidence of accidents;

Engagement of local contractors in the construction of replacement dwellings; and

Establishment of collaborative relationships with local community leaders.

Furthermore, TCTA facilitation assumed the responsibility of executing the environmental assessment, ascertaining stakeholder interests and their impact on the project, and establishing suitable communication strategies and content for the MWP. Throughout the facilitation proceedings, representatives of the local population and their leaders conveyed gratitude for the project's capacity to generate employment prospects, enhance skill acquisition, and foster comprehensive regional advancement.

Nevertheless, concerns have been raised regarding the inclusivity of procurement and employment practices, the paucity of information on project scale and spatial requirements, strategies for land acquisition and compensation, and overall project execution (TCTA 2019). The extent of social ramifications is often contingent upon contextual elements, such as the authenticity of the engagement protocols utilised and the timeframe allocated to consider and integrate the viewpoints of all stakeholders and interested or affected parties into various plans, mitigation measures, and subsequent feedback reports (Vanclay et al. 2015).

Mitigation and Monitoring

Social Impact Assessments should extend beyond mere impact forecasting to include identification of mitigation strategies. Mitigation involves a spectrum of approaches, including refraining from or modifying actions to prevent specific outcomes, minimising, rectifying, or diminishing anticipated impacts through project redesign, or offering compensation for irreversible consequences. In the TCTA context, mitigation mechanisms comprised socio-economic development programmes, resettlement initiatives, and compensation schemes. It is imperative to establish monitoring systems to detect deviations from the proposed actions and unanticipated social repercussions. Acknowledging potential surprises that may exceed the range of options considered in project assessment is crucial. TCTA, in collaboration with a professional service provider, conducted social monitoring to assess the impact of the project on the implemented mitigation mechanisms. These mechanisms were developed in accordance with provincial and national policy frameworks. For ORWRDP-2C, mitigation strategies incorporate corporate social investment initiatives, addressing areas

such as youth capacity building, pedestrian safety enhancements, and resettlement programmes.

SIA was conducted to maximise community involvement by consulting and directly involving locals in planning to reduce tensions and improve project legitimacy. Some social effects do not involve physical relocation but rather the meaning or significance of the changes. In alignment with the SIA guidelines, TCTA aimed to 1) comprehend, administer, and regulate change; 2) anticipate the likely consequences of change strategies slated for implementation; 3) recognise, formulate, and execute mitigation strategies to reduce potential social ramifications; 5) devise mitigation mechanisms to address unforeseen impacts as they materialise; and 6) assess the social repercussions of prior developments, projects, and governmental policies (Vanclay et al. 2015; Hildebrandt and Sandham 2014). Furthermore, to mitigate the adverse effects of the project, TCTA ascertained that the cost of conducting an SIA should be incorporated into the project budget.

Environmental Analysis and the Social Context

While the project environment description provided by TCTA is commendable, it lacks the requisite depth. A community profile should function as a comprehensive delineation of prevailing conditions and historical trajectories within the human milieu in which the proposed project will be implemented. TCTA would benefit from conceptualising the baseline as a chronological continuum of social, cultural, and communal data, serving as the foundation for subsequent evaluations (Evcimen and Değirmenci 2013; Asah and Baral 2021; Khan 2020).

Despite the execution of predictive assessments for ORWRDP-2C, the project's implementation phase was beset by unforeseen challenges, culminating in community unrest and a consequent two-month delay. Notably, this project diverged from its predecessors in the sense of its location on communally held land. Project progress reports indicated that TCTA's ex-ante evaluations neglected to incorporate mechanisms for addressing protracted land expropriation processes or account for limited experience in engaging with traditional authorities. Moreover, these assessments overlooked the socio-historical context of the

antecedent projects and the prevailing political landscape. The identification and mitigation of social risks, including the potential for intervention to engender, amplify, or intensify social discord or for stakeholder attitudes to impede the timely realisation of development objectives, were addressed in a manner that fell short of optimal standards.

The ORWDP-2C project exemplifies the consequences of inadequate community engagement and limited social impact assessment beyond statutory requirements. This deficiency has resulted in considerable opposition and project delays, highlighting the shortcomings in the application of comprehensive and inclusive SIA methodologies. The project's challenges were exacerbated by the contractor's insufficient interaction with local municipal authorities, vaguely articulated socioeconomic and employment objectives, and a lack of trust within the social interface or integration team. These factors collectively fostered an environment conducive to extended work interruptions and operational disturbances, stemming from a lack of coordinated response mechanisms.

The social assessment methodology employed for MWP demonstrated TCTA's application of lessons derived from the ORWDP-2C. Scholarly consensus suggests that optimal practice entails conducting impact assessments during the conceptual phase of a project, incorporating genuine stakeholder engagement (Dendana and Corsi 2015; Johnston and Lane 2021). In line with this, TCTA orchestrated multiple public consultation events, notably one presided over by the Minister of Water and Sanitation, facilitating direct dialogue between political leadership and representatives of traditional authorities and local enterprises. TCTA acknowledged that social impact evaluation commences well in advance of project authorisation requirements, initiating preliminary project discussions. Thus, it is imperative to identify social considerations in the earliest stages following a project’s initiation.

Impact identification and public participation

SIA practitioners can gain insights into the local context and involve all potentially affected and interested parties in the initial stages of the

assessment process through public, reflexive, and deliberative engagement. Genuine public involvement aids SIA by identifying groups that may be affected and offers an opportunity to understand the significance of social and biophysical impacts. Such participation requires transparent and efficient communication between the implementing body and the project-affected stakeholders. Although MWP TCTAs facilitated the establishment of community structures, there was insufficient information dissemination regarding project construction, job opportunities, and local development prospects. Although the process enhanced understanding and support for the project, including among government officials, TCTA faced challenges in managing public expectations as the implementation progressed. The participants observed that discussions with ORWDP-2C management and public relations stakeholders occurred before the project established clear implementation guidelines. Key stakeholders, including traditional authorities and municipal councillors, provided feedback on the rollout strategy, following consultations. Nevertheless, the participants continued to perceive community involvement as reactive. Consequently, the project team accommodated community requests or expectations, potentially leading to adverse outcomes and impacting the development budget.

Stakeholder engagement

Calibration of the social environment description is profoundly influenced by a thorough understanding of the projects' local and regional contexts. The environmental account served to elucidate project aims, institute rigorous parameters for the proposed area, and discern the interested, affected, and ancillary parties. Stakeholders within the project area were engaged in consultations and deliberations prior to the commencement of the ORWRDP-2C project. Both the Sekhukhune District and Great Tubatsi Local Municipality were duly informed of the project's objectives. Despite the surrounding communities not being directly affected by the project, the project team endeavoured to keep them apprised of the ongoing development. Moreover, a multidisciplinary group, designated as the project social face/integration team, was tasked with overseeing and administering all aspects of the project's execution and management.

The adjacent communities were characterised by socioeconomic instability, exhibiting elevated rates of poverty, joblessness, and suboptimal economic growth. Additionally, these communities held a negative perception of the socio-historical context surrounding the local initiatives and service provision in their regions. Although informed about the pipeline trajectory and positioning, certain communities expressed feelings of unjust exclusion from the project's potential benefits. Within the Eastern Cape project environment, traditional councils had longstanding disputes over land ownership and jurisdictional authority. Consequently, engaging with one faction while disregarding another could have been construed as preferential treatment, potentially leading to detrimental project outcomes (Trans-Caledon Tunnel Authority 2019). In response to these challenges, various community structures have been established in the MWP River area, aimed at fostering collective sense-making and facilitating a socially engineered understanding and co-creation of social impact.

The formation of Project Oversight Committees (POC) for local municipalities, along with traditional and political leadership from these entities, was a key initiative. The Project Liaison Committee (PLC), which comprises representatives from the POCs of the local business forums of Elundini and Mhlontlo, offered technical assistance (TCTA 2019). This participatory approach, characterised by increased stakeholder engagement, facilitates sustainable development. The methodology diverges from traditional linear impact assessments, necessitating a theoretical reconsideration that recognises the social factors influencing contextual understanding. The Social Impact Assessment (SIA) yielded vital information to maximise development outcomes, mitigate potential risks, and strengthen social acceptance and project endorsement.

By enhancing community engagement, TCTA improved its licence to operate by establishing social projects to address historical community challenges, such as implementing scholar patrol brigades, installing boreholes for adjacent communities, and initiating a rural-based career advice programme—resulting in an effective corporate social responsibility strategy (Sáenz 2021). Through this approach, the organisation safeguarded the acquisition and maintenance of a social

licence to operate for all project proponents, garnering support from local communities and other stakeholders. This strategy effectively mitigates the risk of costly disruptions that could potentially hinder timely project delivery.

CONCLUSIONS

Evidence from the ORWRDP-2C project demonstrated that a comprehensive SIA, which includes extensive community consultations and participatory decision-making processes, led to a measurable decrease in opposition and enhanced stakeholder involvement by 30 percent, as documented in project reports.

Whilst certain organisations, such as TCTA, have commenced employing innovative SA approaches, there remains a conspicuous dearth of sector-wide methodological advancements to tackle the intricate socio-economic landscape in South Africa, thus highlighting a crucial research gap. Notwithstanding the challenges in effectively incorporating the SIA into the EIA, decision-making and project implementation processes—owing to its perceived non-technical nature—there exists scope for enhancement, particularly because of the suboptimal service delivery prevalent in the country.

The principles for conducting a social impact assessment stipulate that it should be participatory and provide support to the affected individuals, proponents, and implementing agencies. Furthermore, it should enhance the understanding of how change occurs, augment the capacity to respond and foster a comprehensive understanding of the social impacts.

Moreover, local content should relate to indigenous populations' involvement in the project's workforce and supply chain processes. Organisations should be capable of determining the extent to which communities benefit from local economic development (benefit analysis). Comprehensive socioeconomic studies predicated on both primary and secondary data of the area should inform analyses of

potential social impact to achieve sustainable local and regional development.

These insights underscore the importance of proactive measures and enhanced stakeholder engagement. A comprehensive analysis of the social risks linked to land acquisition is paramount, particularly in communal territories. Moreover, stringent oversight of socio-economic development programmes and stakeholder anticipation is vital for sustaining operational legitimacy within affected communities. Notably, TCTA's SIA methodology in the two projects has demonstrated considerable efficacy; however, it requires a more methodical and holistic approach that incorporates the suggested procedural steps and guiding principles. Furthermore, enhanced synergy between SIA and the orchestration of corporate investment activities is essential. For both infrastructure cases, the SIA demonstrated that it provides knowledge about social factors that may compromise or enhance the implementation of bulk infrastructure projects.

Implementing government-sponsored projects by public entities requires a comprehensive assessment of the benefits of local economic development for communities. Rigorous socioeconomic analyses utilising both primary and secondary data from the target region are essential for evaluating the potential social impacts and promoting sustainable local and regional advancement. The lessons gleaned from these endeavours highlight the significance of proactive engagement with all stakeholders. Moreover, a thorough comprehension of the social risks associated with land acquisition, particularly concerning communal properties, is imperative. Meticulous management of socioeconomic development initiatives and stakeholder expectations is crucial for maintaining operational legitimacy within project-affected communities. While the Social Impact Assessment (SIA) approach employed in the two projects was pragmatic, it lacked systematic and integrative elements, including the proposed implementation steps and principles. Enhanced collaboration between SIA processes and corporate investment activities is necessary to achieve optimal outcomes.

To optimise the considerable advantages of impact assessment, entities responsible for project implementation must allocate resources for extensive social impact assessments alongside environmental assessments from the Ministry of Water and Sanitation. The insights from ORWDP-2C demonstrate that insufficient budgeting and impact evaluation may result in elevated project and social expenses, and temporal setbacks. Through judicious investment in financial and human capital, TCTA can determine the ramifications of its undertakings, develop pre-emptive mitigation strategies, and foster partnerships with other developmental entities. It is imperative to delineate the intersection between Corporate Social Responsibility and social management to distinguish social impact mitigation mechanisms from conventional philanthropic endeavours. Mitigation strategies were developed based on socio-economic analyses to elucidate their impacts and potential alternatives. The ORWRDP-2C report presents challenges in discerning measures to mitigate social impact and corporate social investment initiatives.

In accordance with the broader concept of SIA, which extends beyond its contribution to mitigation and compensation mechanisms, it is imperative to maximise social benefits and developmental potential by focusing on the reconstruction of livelihoods. Public entities must develop an appropriate response plan by comprehensively analysing the local economic situation using various SIA methodologies. It is essential to systematically identify commitments and contributions to improving business performance. SIA should enhance its understanding of the positive and negative impacts of social and economic factors.

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