

# ENVIRONMENTAL IMPACT ASSESSMENTS AND VALUE CREATION IN PPP PROJECTS

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## RESEARCH PURPOSE AND PROBLEM STATEMENT

Public-Private Partnership (PPP) projects are large-scale initiatives with long-term lifecycle implications (Hodge 2009; Yescombe and Farquharson 2018). They usually generate significant impacts and affectations on local communities and surrounding environments across construction and operation phases (Liu and Lai 2009). As a result, the public and private parties in charge of these projects have the responsibility to implement suitable mechanisms oriented toward preventing and mitigating potential negative social and environmental effects (Soria-Lara et al. 2020).

Environmental Impact Assessments (EIAs) have emerged as instruments to address the potential environmental difficulties associated with PPP development (Glasson and Therivel 2019). They are mechanisms through which private and public parties identify initial project conditions and analyze potential impacts. In most PPPs, EIA procedures are led and managed by Special Purpose Vehicle (SPV) partners, who are responsible for environmental licensing and decision-making processes within the project's lifecycle (Grimsey and Lewis 2007). This allows for government authorities to approve or deny PPP construction and operation procedures

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according to how expected impacts and their corresponding prevention and mitigation actions are addressed within EIA processes.

Despite the relevant role played by EIAs in PPP projects, they are commonly associated with bureaucratic processes seeking to obtain licensing permits with unclear practical implications (Lawrence 1997). This makes it difficult to improve the accuracy of these processes, as most of them are developed to merely comply with requirements outlined in PPP procurement documents (Caro-Gonzalez et al. 2021). It is not uncommon for public and private partners to exhibit a lack of control and supervision over decision-making procedures derived from these assessments. If one of the main goals of EIAs is to facilitate the protection of the project's surrounding environments from social and environmental affectations, such objective is far from being accomplished within multiple PPP initiatives worldwide.

One of the most important consequences of poor EIA performance on social and environmental aspects within PPP projects is the lack of value creation. Considering that project value can be examined as a socially constructed phenomenon that is created through aggregating benefits and costs across the project's lifecycle (Laursen and Svejvig 2015; Martinsuo 2020), EIAs can be analyzed as value-creation processes for PPPs. In this sense, given that EIAs are designed to incorporate short- and long-term expectations from multiple stakeholders within project front-ends, they are well suited to play an important role in identifying and creating value within the social and environmental dimensions of PPP projects.

Within the PPP literature, it is surprising the little evidence of the interplay between EIAs and value-creation processes. On the one hand, researchers have examined EIA effectiveness from multiple perspectives and analyzed real-world implementations through case studies

(Chanchitpricha and Bond 2013; Soria-Lara et al. 2020). On the other, several studies have explored value-related concepts by reviewing mechanisms associated with shaping and framing stakeholders' expectations; and inquiring about financial and non-financial drivers across the project's lifecycle (Liu et al. 2019; Martinsuo et al. 2019; Vuorinen and Martinsuo 2019). Overall, the evident fragmentation within these two research avenues indicates that, given the clear real-world connection between them, it is suitable to explore EIAs as value-creation vehicles.

Building on infrastructure and project management literature oriented towards examining EIAs and/or value creation processes, this paper focuses on PPP projects to better understand the role of EIAs as instruments to incorporate stakeholders' expectations and create value throughout the PPP lifecycle. In this sense, this research seeks to gain insight into the enabling features of EIAs at the moment of creating social and environmental value in PPP projects. Specifically, this study focuses on responding: 1) what are the factors enabling an effective interplay between EIA procedures and mechanisms associated with establishing stakeholders' expectations for social and environmental considerations? and 2) How do such factors interact to facilitate or impede value creation in PPP projects? In this way, the main contribution of this research is to highlight potential routes to create PPP value through effectively implementing EIA procedures.

## **RESEARCH METHODOLOGY AND APPROACH**

This study uses information collected by Castelblanco (2022) and employs a qualitative-based approach to analyze data from the development of 28 projects within the Colombian 4G PPP toll road program. The empirical evidence includes information from bibliographic references (i.e.,

literature from the EIA and value creation domains), archival sources (i.e., newspaper reports, PPP contractual information, and EIA documentation), and interviews (i.e., opinions of PPP participants).

The Colombian 4G PPP toll road program was selected because it involves the development of large-scale highway projects with multiple potential social and environmental impacts, as such initiatives are located in regions characterized by high levels of biodiversity (Caro-Gonzalez et al. 2021; Castelblanco et al. 2022). In line with that, Colombian legal and normative frameworks clearly specify the necessity to conduct the EIA process in accordance with predefined requirements. Additionally, most of the EIA-related documents are open-access documents published by the environmental licensing authorities.

The authors followed a multi-stage procedure with the intent to examine the enabling factors supporting the interplay between EIA processes and value-creation mechanisms in PPPs. First, a literature review was conducted in order to search for both the drivers of EIA effectiveness and evidence of social and environmental value creation within large-scale infrastructure projects. This helped to identify the complementarities between EIAs and project value mechanisms. Second, evidence of stakeholders' expectations was obtained from newspaper reports and PPP contractual information; at the same time, value-enabling strategies were established in EIA documents and reports associated with the development of the Colombia 4G toll road program. Third, the complementarities and the relationships between stakeholders' expectations and value-enabling strategies were confirmed through semi-structured interviews with PPP experts.

## **KEY FINDINGS AND IMPLICATIONS**

EIAs are useful instruments to establish the full scope of environmental and social impacts, as these processes facilitate the analysis of baseline conditions, the exploration and forecasting of potential impacts, and the assessment of such impacts in terms of their consequences on surrounding communities and natural resources. Based on the collected information, EIAs showed multiple value-enabling mechanisms associated with ecological and social considerations. Ecological value from projects was highlighted according to geological conditions and habitat fragmentation. The former may involve the potential destruction of ecosystems and the latter entail the artificial transformation of ecological flows across projects' surrounding areas. On the other hand, social value was emphasized in respect to economic (e.g., increment in GDP, employment, and tourism, among others), demographic (e.g., incentives to migration processes and better living conditions), and urban benefits (e.g., urban expansion and new developments); as well as in terms of legitimacy issues associated with toll tariffs (e.g., excessive fees and low service levels).

Findings reveal that social and environmental value is enhanced when EIAs are employed as instruments to harmonize fragmented regulations in order to develop integrated consultation processes, properly identifying key necessities from impacted stakeholders. To do so, it is necessary to develop comprehensive and participatory consultation processes with all surrounding communities; as this improves legitimacy and strengthens EIA trustworthiness.

Project-specific characteristics are also important at the moment of creating social and environmental value. For instance, context-related features associated with terrain and

geographic conditions may increase project technical complexity, as they increase construction risks and put extra pressure on establishing adequate toll fees and levels of service.

Overall, a proper interplay between responsible and impacted stakeholders is arguably the best enabling element when it comes to the use of EIA as a value-creation vehicle. In this regard, environmental consultants (hired by the concessionaire) play a crucial role in giving advice to both the contracting authority and SPV in terms of best practices for conducting environmental assessments. Non-preferred proponents are also relevant as they may constitute a key player to incentivize accountability over EIA procedures. Additionally, local communities also exert both positive (e.g., by giving suggestions to incorporate valid social and environmental considerations previously neglected) and negative (e.g., by exerting opportunistic behaviors) influences across the EIA process.

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