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# Sustainable Public Procurement and Human Rights: Barriers to Deliver on Socially Sustainable Road Infrastructure Projects in Mexico

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**Abstract:** Public procurement involves a process through which the public sector buys goods, services and works from private suppliers to accomplish its functions, including road infrastructure projects. Sustainability, both within the procurement process and the infrastructure outcome, comprises economic, environmental and social dimensions. Sustainable Public Procurement (SPP) is acknowledged as a core dimension of sustainable development goal 12 (SDG12) on sustainable consumption by States and production by businesses, and as a State-business nexus within Pilar I of the UN Guiding Principles on Business and Human Rights (UNGPs). Clearly, SPP delivering sustainable infrastructure involves broad positive effects and benefits for involved stakeholders and leveraging power over business suppliers to include social sustainable criteria within the procurement process is in the State's hands. However, SPP has been little implemented in developing States such as Mexico resulting in unsustainable infrastructure outcomes. This article explores, through two case studies, the barriers of socially sustainable public procurement of road infrastructure developed by businesses contracted by the State in Mexico. By identifying such barriers, the Mexican State could be able to implement measures to tackle them and deliver on social sustainable infrastructure aligned with its commitments on sustainable development goals and its international obligations on human rights.

**Keywords:** sustainable infrastructure; UNGPs; sustainable public procurement and human rights; social sustainability; State-business nexus; business and human rights



**Citation:** Treviño-Lozano, L. Sustainable Public Procurement and Human Rights: Barriers to Deliver on Socially Sustainable Road Infrastructure Projects in Mexico. *Sustainability* **2021**, *13*, 9605. https://doi.org/10.3390/su13179605

Academic Editors: Olga Martin-Ortega, Valerie Nelson, Renginee G. Pillay, Fatimazahra Dehbi and Sofia Gruskin

Received: 27 May 2021
Accepted: 16 August 2021
Published: 26 August 2021



## 1. Introduction

Public procurement is a process through which the public sector buys, from private suppliers, goods, services and works it needs to accomplish its functions or needs to obtain the best "value for money" "in a timely, economical and efficient manner" [1]. The procurement process can be divided into three main phases: (1) planning and decision-taking of award criteria and contract performance conditions; (2) bidding and award of the contract; (3) contract management, monitoring effective performance of the contract [2]. The range of goods, services and works States can procure is wide and diverse, from office paper and maintenance services to mega-infrastructure projects such as ports, railways or roads. This article is focused on the latter, procurement schemes to develop road infrastructure. In Mexico, there are two key procurement mechanisms: public private partnerships (PPPs) that involve high participation of private actors not only as developers but also as investors, and traditional public procurement of works in which private actors participate, but the active is purchased with public funds [3].

While historically, States have recognized their international obligations to protect, respect and fulfil human rights, the duty to protect them in the business and procurement context did not develop until the past decade [4]. Traditional understanding of procurement's key aim of best value for money, economically based, was redefined to give space to non-economic objectives through the so called sustainable public procurement (SPP) [5]. SPP pursues economic, environmental and social goals through the purchase of

goods, services and works [6,7]. While SPP demands private suppliers to take actions that otherwise they would not take [8,9], it goes beyond market inclusion of certain vulnerable groups. Therefore, in the context of construction, SPP fosters sustainable infrastructure as an outcome. The latter has been defined as the one "planned, designed, constructed, operated and decommissioned in a manner that ensures economic and financial, social, environmental (including climate resilience) and institutional sustainability over the entire life cycle of the project" ([10], p. 7), [11].

SPP is acknowledged as a core dimension of SDG12 which refers to sustainable consumption by States and production by businesses. This recognition implicates an international political commitment by States. Besides, SPP is recognized as a State-business nexus within Pilar I of the Guiding Principles on Business and Human Rights (UNGPs), which provides States of guidance to comply with their international legal obligations on human rights in a business context [12–14]. Guiding principles 5 and 6 establish and additional burden for States to protect human rights of abuses from businesses with whom they have a contractual relationship, including procurement of infrastructure [2]. While the 2030 Agenda and the UNGPs have different implications -one political and the other legal- procurement is a powerful tool that can facilitate to achieve them both, particularly because global expenditure in procurement goes up to 20% of countries' GDP [15]. Therefore, while procuring, States can leverage their purchasing power as mega consumers over companies to reshape markets, comply with their human rights obligations, attain their 2030 sustainable commitments, and enforce their suppliers' responsible business conduct. A State's duty becomes even more relevant when procuring large infrastructure projects that involve complex supply chains and frequently high human rights risks with workers, communities and users within the life cycle of the process.

To deliver sustainable infrastructure, States need to procure in sustainable ways. When they do so, stakeholders involved—States, business and communities—can benefit from positive results. Indeed, sustainable infrastructure can contribute to deliver on more than 70% of SDGs [16,17]. Economically, infrastructure has a relevant contribution to GDPs and job creation [18]. Environmentally, it can have big impacts on efficient use of energy and water, recycling materials and waste management, biodiversity preservation and mitigation and adaptation to climate change effects.

Socially, sustainable infrastructure can have a double impact on people by preventing negative and boosting social positive impacts. On one hand, it can serve to prevent human rights abuses against workers involved in the State's supply chains, impacted communities where projects are physically installed, and against final users or beneficiaries of infrastructure services [17,19–27]. On the other, sustainable infrastructure can boost its positive effects poverty-related through facilitating services such as energy, water or transport. However, increasing positive social effects implicates that infrastructure goes beyond its inherent benefits. In the case of road projects, such consideration would entail not only providing a physical resource for people to commute from one place to another in less time and money, but also looking at other poverty-related aspects such as decent job creation, adequate standards of living, access to water and sanitation, right to food, health or education.

Clearly, SPP delivering sustainable infrastructure involves positive effects and benefits for involved stakeholders, and leveraging procuring power over business suppliers to achieve such aims is in the State's hands. So why SPP is not implemented by developing States such as Mexico? This article focuses on the social dimension of sustainability within public procurement and addresses the barriers of socially sustainable public procurement of road infrastructure projects developed by businesses contracted by the State in Mexico with a business and human rights lens.

## 2. Research Design

This paper involves a literature review that explore the key barriers of socially sustainable infrastructure in different countries from the global north and south. The key aim is to drive attention to published articles about barriers that have hindered SPP globally. Identifying obstacles is relevant to policymakers and procurement practitioners to implement measures to tackle them throughout the procurement cycle to develop infrastructure, and therefore, could lead to more sustainable outcomes within road projects.

Through qualitative research methods, barriers of socially sustainable infrastructure within two road case studies developed in Mexico are identified. Necaxa-Avila Camacho (Necaxa) and Paso-Expres were chosen because of their similarities in procuring authority, total investment, type of infrastructure, geographic location and awarded business developers' nationality, alongside their radical differences in social sustainable outcomes. Necaxa was a project awarded as a socially sustainable project, whereas Paso-Expres' construction and operation derived in many social affectations against users and impacted communities.

Interviews with open questions were undertaken in July 2020 with multi-stakeholder experts who participated in the procurement process, worked with involved stakeholders or had relevant knowledge on each case study to have an in-depth view and better understanding of key barriers of socially (un)sustainable outcomes. Interviewees 1, 2, 3 and 4 are related to Necaxa, whereas interviewees 5, 6, 7 and 8 to the Paso-Expres project. However, this design has limitations. Findings are limited to the perceptions of a low number of interviewees, to a certain type of transport infrastructure and to the social dimension of sustainability. Therefore, findings are constrained to individual perspectives, so important information could have been disregarded or poorly addressed. Furthermore, only two case studies are analyzed; therefore, the results could be comparable to similar road infrastructure projects in Mexico, but they might be too ambitious to generalize in smaller road projects, other transport sectors and road projects in other countries.

A first comparative analysis is undertaken to determine whether the barriers of socially sustainable infrastructure in literature were present in an unsustainable project, Paso-Expres, and absent in a sustainable one, Necaxa. Findings contribute to literature by collecting key barriers that have been evidenced in multiple papers; confirming whether barriers identified in literature are found in practice; and adding new barriers that might have been overlooked by scholars but that are relevant in the Mexican road infrastructure context. A second comparative analysis is undertaken to determine whether the presence or absence of such barriers in both case studies led to socially sustainable or unsustainable outcomes in two similar projects. This methodology was followed to answer the research question: What are the key barriers of socially sustainable road infrastructure projects developed by businesses contracted by the State in Mexico?

The analysis of literature review and qualitative research findings is undertaken with a business and human rights approach, which entails a given understanding of the core principles set in the UNGPs, and the ways in which those principles are reflected or not in both case studies. This approach is undertaken regardless of the dates in which the projects were developed and the UNGPs adopted. Namely, the author focuses on the State's duty to protect human rights through procurement practice of infrastructure, and businesses' responsibility to respect human rights throughout their operations when they have a role as government contractors.

## 3. Literature Review

Five barriers of socially sustainable infrastructure and SPP practice can be identified in literature.

### *3.1. Non-Existent (or Existent but Unclear or Unenforced) Policies and Laws*

Procurement legal and policy frameworks have been barriers of socially sustainable infrastructure because they do not exist or because they exist, but they are not binding, comprehensive or enforced.

Lack of procurement laws and policies has hindered embedment of social and human rights criteria throughout the procurement of infrastructure cycle. In contrast, existing binding laws have created contexts in which sustainable infrastructure is achieved because "if governmental policy and legislation is supportive of sustainable procurement, public sector organisations are more likely to implement" it [28], p. 472.

On the other hand, some existing laws and policies have been barriers for SPP of infrastructure implementation because less sustainable options are still allowed, or more sustainable options remain discretionary [16,29–36]. Voluntary or rewarding measures have not had a meaningful change regarding sustainability, unless they involve economic incentives for private developers such as tax reduction and subventions [36–38].

Furthermore, some existing procurement laws and policies are vague, unclear or uncomprehensive on how and when social sustainability should be addressed. As a result, sustainability is not included throughout each phase of the procurement process of projects [28,31,32,36,37,39]. For example, the European Commission's Buying Social Guide establishes "protecting against human rights abuse and encouraging respect for human rights", but it fails to provide guidance on the mechanisms through which such rights should be protected by contracting authorities and private contractors [40], p. 9.

Often, particularly in developing countries such as Malaysia, Ghana and Nigeria, legal sustainable frameworks on sustainable procurement are not fulfilled. Lack of enforcement has proved to be a common cause of unsustainable infrastructure outcomes [41–43].

### *3.2. Political Opposition and Corruption*

Political opposition to sustainability from high-rank decision makers is a strong barrier of socially sustainable infrastructure [32,43–45]. Indeed, political influence and support facilitated sustainable infrastructure in China and the United Kingdom, whereas in Ghana, Europe, Brazil, Malaysia, United States and Canada, these elements hindered it [28,29,46,47]. Individual leadership is a great enabler of sustainability in public procurement, but also a driver to shift unsustainable procurement patterns of an organization's culture [28,43,48]. If senior managers embrace sustainability and embed it into planning and strategies, their team will implement sustainable procurement, too [28].

Political opposition to sustainable infrastructure emerges due to incompatibility between political short-term interests and sustainability long-term results, emerging risks related to a lack of technical expertise and corruption.

Long-term sustainable benefits are not attractive to decision-making politicians. Often, they prefer "quick results" because their short-term political interests are incompatible with long-term benefits that sustainable infrastructure offers [31,39,41–43,49,50]. Besides, sustainable options are time-consuming and involve commitment that developers are not willing to take [16,41,42].

Furthermore, opposition is driven by higher risks related to technical expertise that sustainable infrastructure often demands [51], deep-rooted construction practices and models alongside fear of unfamiliar techniques [18,34,47]. Likewise, reluctancy toward sustainable procurement is related to few examples in developing countries that "convince" stakeholders to construct in sustainable ways [16]. Sometimes, uncertainty on sustainable construction is linked to cultural barriers. In Ghana, Cambodia and Brazil, deep-rooted construction methods, practices and models mirrored in neglect of unfamiliar techniques [18,34,47].

Finally, corruption feeds political opposition to sustainable infrastructure because rules that govern decision-making are based on corrupted parties' individual interests, rather than best social outcome. As a consequence, corruption will likely negatively impact the award of contracts and definition of technical specificities, including on short-cutting required social assessments or human rights inclusion [43,45,52].

### *3.3. The Economic Dimension Is Prioritized over Non-Economic and Budget Is Limited*

The generalized perception of the idea that sustainable options involve higher costs and capital investment is a barrier that reflects in dismissing sustainability in projects

beforehand [16,28,30,32,39,41–43,50,53]. While increase in costs is not a rule, sometimes sustainable constructions do need higher investment than traditional construction due to innovative design, more assessments, new technologies and sometimes unavailability of suppliers and materials [28,35–37,41,42,46,49–51,54,55].

The cheapest price and cost reduction are prioritized within organizations, and resistance "to paying more to buy sustainable" is generalized [28,31–34,38,50]. Social sustainability is "secondary" to the objectives of procurement, and therefore, only pursued when it entails economic savings, which are often only visible in the long-run [13,16,31,56].

However, sometimes paying for sustainability is not an option, even for developed countries, because public budgets are commonly limited. Funding and resource limitation was a major barrier for sustainable infrastructure in China, the United Kingdom, the European Union, the United States, Australia, Malaysia and Canada [28,29,32,39,44]. Money puts pressure on decision makers to choose the "lowest-cost option rather than the best value or pursue assessment of more sustainable options" [39], p. 232. Besides, authorities frequently face time limitations on the available funding, which prevents them from undertaking appropriate design and construction of sustainable infrastructure [39,57].

### *3.4. Lack of Technical Capacity, Understanding, Awareness, and Knowledge about Sustainability*

Poor understanding of sustainability is a barrier for sustainable construction [37,41,54]. The lack of a common understanding, technical knowledge, skills and expertise, and awareness of sustainability was a significant obstacle to constructing and procuring in sustainable ways in Australia, China, Ireland, the United Kingdom, Norway, Ghana, Nigeria, South-East Asia, Malaysia, Kuwait and Cambodia [16,18,29,31–34,41–43,45,46,48,50,57].

Particularly, how to incorporate "ethical and social issues" remains unclear for many purchasing managers [28]. Sustainable infrastructure requires efficient management of knowledge and information, good communication and cooperation between relevant stakeholders, including internally amongst procurement teams [37]. In contrast, awareness of the social and environmental impacts of infrastructure and technical knowledge on how to deliver sustainability can improve construction efficiency [58].

Decision makers are unaware or do not have the required information to smart-choose and assess more sustainable design or suppliers [35,43]. The lack of awareness about sustainability provokes a failure to stimulate demand of goods or services beyond minimum compliance with regulations [31], p. 420, [39,57]. Consequently, reluctancy to embrace new sustainable technical knowledge or technology emerges. Indeed, if contracting States lack awareness about sustainability, they will not be able to demand it from their business suppliers. Moreover, vagueness of sustainability terms, that are interpreted differently by each person, can be matter of conflict with suppliers in the tendering phase of procurement [31], p. 420, [39,57].

### *3.5. Sustainability Is Not Considered from the Early Design of Public Procurement*

The lack of sustainability embedment throughout the project's life cycle can build barriers to sustainable outcomes, particularly when it is not considered from the early design of procurement [32,38,57,59,60]. The most common explanation of failing to address sustainability in five case studies in the United Kingdom was that "it was simply not considered by the stakeholders involved" and not required by purchasers [35], p. 140. This was also a common factor in the Chilean construction sector [38].

"Hastily prepared design details can lead to neglect principles of sustainable construction" [61], p. 47. For example, the design is often not completed when public authorities select and award the contractor, which gives uncertainty to what is going to be constructed, including sustainable outcomes, and hinders assessing who has the best capacity to deliver on sustainable aspects [35], [61], p. 47. Failing to include sustainable considerations throughout the process is linked to lack of awareness and knowledge and poor management of decision makers, as well as with disarticulation between procurement teams [47,54,62].

Project design depends regularly on "individual initiatives" rather than on structured and assessed plans [61].

## 4. Road Project's Overview

The Necaxa and Paso-Expres were both road infrastructure projects. Necaxa involved a construction of 36.6 km entailing 4 lane roads, 6 double tunnels and 12 bridges that established a connection between the cities of Puebla and Veracruz in Mexico [63]. In contrast, Paso-Expres comprised an addition of 6 lanes to 4 already existing of a high-speed motorway that connected Mexico City and the city of Cuernavaca within 14.5 km [63,64].

Both projects were procured by the Mexican Ministry of Communications and Transport (SCT) and developed by a consortium of Spanish and Mexican companies. While economic conditions and different timings in which both projects were structured and constructed, the original cost of both projects was USD 75 million [63,64].

The works of Necaxa started after July 2007 and finished in April 2012, whereas Paso-Expres' works began in November 2014 and finished in April 2017. Therefore, the former finished years before the adoption of the UNGPs, whereas the latter finished years after.

Another key difference between both projects was the procurement scheme that was used. Necaxa followed a public-private partnership that involved transferring risks to the developers and private financing of the project. In contrast, Paso-Express used the traditional public procurement model, under which the public entity purchased actives developed by private contractors with public funds [63,64].

While similarities between projects are many, including their aim to address mobility needs and reduce commuting time of users, the social outcomes were radically different. Necaxa received the Infrastructure 360° award by the Inter-American Development Bank jointly with Harvard University due to its outstanding sustainability practices in infrastructure investments in Latin America [63]. This road project included both positive and negative social and human rights impact within its development.

The positive social impacts in Necaca were taken beyond constructing a physical pathway that connected two cities and reduced commuting time and costs of users. Necaxa's business developers also boosted the project's positive social outcome by contributing to address poverty-related aspects in communities surrounding the project. They had within its corporate policies a "Handbook for Implementing Social Responsibility in Projects". It outlined measures to identify and enhance household, education and health of people surrounding the project, which were tailored to the needs of the community and involved local participation and knowledge [63].

Direct and indirect employment was created by developers. Local workers were recruited to construct the road and local suppliers provided food and beverages to companies' staff in the working site, creating new sources of income to local families [65]. Health was addressed through a vaccination program of several diseases that benefited 221 workers [63]. Levels of education and employment opportunities were improved through partnerships between developers and public institutions in a long-term fashion. Unskilled workers were certified with basic education by partnering with the National Institute for Education of Adults. Local engineering students received professional training through internship programs in the company [65]. Living standards of locals were also considered regarding economic accessibility for the road services, local mobility and resilience to disasters such as flooding [65].

Additionally, negative social impacts regarding prevention of human rights abuses were also considered. Although the project was developed before the UNGPs' adoption, State and businesses implemented several features set within the UN framework. The State leveraged its procurement power to establish environmental and social obligations to private contractors, such as compliance with environmental impact assessments (EIA) [66]. While several differences between the language used in this project and the one referred to in the UNGPs were identified, some steps of due diligence on human rights were undertaken. Adverse social impact assessments were undertaken to identify and mitigate

negative impacts on communities within the EIA [66]. Risks related to noise levels coming from machinery, affectations to local pathways and communication and to accidents of workers and local pedestrians were identified and mitigated through noise-reducing equipment and monitoring during construction, adequate pathways connecting agricultural fields and other localities and traffic-decreasing and evacuation signages.

While these risks and mitigating measures are directly related to human rights of a safe and healthy environment, right to adequate living and to decent work, whilst also linked to guiding principles 17 and 23, the process had several limitations. There was no human rights language, particularly in risk identification, which was very narrowed. There were no clear indicators to monitor and measure mitigation activities' effectiveness with stakeholder participation, nor consideration to supply chains or to differentiated gender or indigenous people's affectations within the risk assessment. Furthermore, the process had no clarity on transparency, dissemination and publication of the process with all involved stakeholders as the UNGPs call for [66].

Further on redress-related negative social impacts, an operational-level grievance mechanism was implemented and managed by private developers to address social concerns and affectations both related and unrelated to the project. This mechanism fulfilled several criteria set in guiding principle 31 such as "legitimate" because communities knew their existence and used it. It was also "accessible", "equitable" and "based on engagement and dialogue" because of its bottom-up method in which locals determined how to approach businesses to file their complaints either through workers in the project site or directly in their offices close by [65]. However, this grievance scheme had limitations on alignment to other criteria set in guiding principle 31, particularly on "predictability", "transparency" and "rights-compatibility".

In contrast, Paso-Expres had no consideration to boosting positive social impacts or preventing and redressing abuses of human rights. The road collapsed three months after its opening despite promising low maintenance rates and durability of over 40 years [64]. Due to excessive water pressure and waste in the drainage pipeline system crossing the motorway, an eight-meter in diameter sinkhole opened in the middle of the road. After the collapse, two people who were driving to work fell inside the hole and died of asphyxiation minutes later. Other human rights and social affectations were evidenced because of the construction and operation of Paso-Expres, including the right to access water and sanitation of Cuernavaca's residents and right to life of 130 people after more than 100 car accidents [67].

Despite of the adoption of the UNGPs years before the start of the procurement process to develop Paso-Expres, there was no evidence of compliance with this framework. Besides lack of consideration to environmental risks, the project failed to undertake any assessment to identify, mitigate and monitor human rights risks [63]. Redress was also undermined through the procurement process. Regarding non-state grievance mechanisms, businesses failed to implement an appropriate operational level grievance mechanism to address human rights affectations and other social concerns deriving from the construction and operation of the project. As for state-based grievance mechanisms, businesses hampered the National Human Rights Commission's investigation on human rights abuses deriving from the project by failing to collaborate and provide the requested information [64,65].

## 5. Barriers of Socially Sustainable Infrastructure

The presence or absence of barriers to deliver on socially sustainable infrastructure in both infrastructure projects are seen in Table 1. Presence of barriers identified in literature review coincided with those in Paso-Expres case study. Conversely, most of these obstacles were absent in Necaxa. Both case studies further enabled to identify a sixth barrier, consisting of the lack of financial risks for business, which have an important degree of influence on whether business take seriously a project's social positive and negative impacts.

**Table 1.** Identified barriers of socially sustainable road infrastructure in both case studies.

| Barriers | Necaxa | Paso-Expres |
|---|---|---|
| 1. Non-existent or existent but unclear or unenforced policies and laws | Present | Present |
| 2. Political opposition and corruption | Absent | Present |
| 3. The economic dimension is prioritized over non-economic | Present | Present |
| 4. Lack of understanding, awareness and knowledge | Absent | Present |
| 5. Social sustainability is not considered from the early design of the procurement process | Absent | Present |
| 6. No financial risks for private developers | Absent | Present |

### *5.1. Non-Existent (or Existent but Unclear or Unenforced) Policies and Laws*

No domestic laws enforce positive nor negative aspects of socially sustainable infrastructure. Environmental law does not include social or human rights risk assessment within mandatory EIAs. There is no legislation demanding businesses to undertake human rights due diligence to prevent negative impacts on workers, supply chains and communities; to implement operational-level grievance mechanisms or handle complaints; to collaborate with state-based non-judicial grievance mechanisms such as the National Human Rights Institution; or to consider local engagement and participation. Interviewees 1 and 6 mentioned that consideration of social aspects within infrastructure "still depends on businesses", because it is neither a legal nor contractual obligation. "The lack of protection for people within regulation leads to giving little importance". However, Necaxa included several social sustainable criteria within the contract, such as the obligation to comply with the EIA's mitigation measures by the awarded consortium.

Alongside inexistent domestic laws, there is a lack of enforcement of existing international treaties in both projects. Even though Mexico ratified ILO conventions regarding indigenous consultation (169), equal remuneration (100), prohibition of child labor (182) and forced labor (105) years before the call for tenders of both projects, they were not enforced in Paso-Expres nor Necaxa. Furthermore, Necaxa's EIA identified indigenous groups surrounding the project site [66], yet there was no free, prior and informed consultation "because it wasn't required, there was no need", according to interviewees 3 and 4 there were no visible gender considerations in any project.

### *5.2. Political Opposition and Corruption*

Both infrastructure projects were constructed in a context where political interests heavily influenced their decision-making, according to half of the interviewees. Interviewees 6, 3 and 7 mentioned, respectively, that often, "decisions on infrastructure answer more to political rather than technical reasons"; "preparation processes are strongly contaminated by the political aspect" and "political aspirations" are incompatible with "securing sustainability aspects"; and there is no compliance "if there is no political will to integrate different sustainable factors".

Despite this context, political support to social sustainability in Necaxa allowed the SCT to undertake the EIA with a socio-environmental assessment, to establish in the contract the obligation for private developers to comply with the EIA, and to approach construction business associations to promote that their affiliates, amongst them the Mexican developer company, to recruit local workers and suppliers to activate the local economies of the project's site. Furthermore, none of the interviewees 1–4 mentioned corruption in Necaxa.

On the contrary, lack of political buy-in for social sustainability and corruption were both barriers present in Paso-Expres. Putting people's human rights at the center of public works policies "is not in the agenda, it is not in the objectives nor the purposes of

public works". "The company was told look, don't worry, you just build and forget about everything else". Political influence hampered undertaking an EIA, and disregarded the problems of saturation of the pipeline crossing under the road, despite knowledge of the technical issues. Moreover, the project had an original design to add 4 lanes to the 4 that already existed. But in the middle of the procurement process, the design was changed to 6 additional lanes to have a total of 10 lanes, rather than 8 [64]. The transformation of the project's original design from 8 to 10 total lanes responded to a determination of a "high-rank official who is not even an engineer", rather to a technical assessment, said one interviewee. Interviewees mentioned that corruption affected contractors' selection, as well as weakened supervision and compliance of technical requirements. Interviewee 6 said corruption was further present in the redress of social affectations, because no high-ranking officer nor participating enterprise was immediately sanctioned by the auditing authority, despite all shortcomings and issues deriving from the construction and operation of the highway.

However, some similarities regarding a political failure to use the State's procurement leverage over private suppliers to consider preventing and addressing negative social impacts and boosting positive impacts. SCT did not request private developers of any road project to include positive social sustainability (education and health benefits for surrounding communities, inclusion of local participation and knowledge) nor negative social sustainability (prevent human rights abuses through human rights due diligence and redress them through operational-level grievance mechanisms and collaboration with state-based non-judicial mechanisms). Although measures to identify and mitigate some social risks and operational level grievance mechanisms were implemented voluntarily by private developers in Necaxa, they were neglected by businesses in Paso-Expres.

### *5.3. The Economic Dimension Is Prioritized over Non-Economic and Budget Is Limited*

The economic dimension was prioritized in both projects. In Necaxa, interviewee 2 mentioned that the contracting model PPP was chosen over others because it had more financial advantages. For example, it does not require immediate availability of public resources and is financed by private funds. Through this contracting model, "the efficiencies that the private sector can develop are harnessed which allows to reduce the cost for the government and maximize the value for the use of public funds". Interviewee 4 mentioned that preliminary assessments in Mexico are frequently undertaken in relation to the budget, rather than the needs of the project.

Likewise, in Paso-Expres, interviewee 8 mentioned the assessments of the project were based on the most convenient project, "but mostly on the less expensive". Interviewee 7 stressed that assessments can be "easily avoided" with economic consideration, even if they do not necessarily coincide with a sustainable approach.

Ironically, lack of social consideration in Paso-Express undermined the economic dimension of sustainability. Indeed, the original contract signed between SCT with the consortium of Spanish and Mexican companies was modified four times. As a result, the original amount of due payment increased by 71.78%, and works were delayed 177 days [64]. Three out of four modifications derived from reschedules and amendments to the performing works provoked by social and environmental issues that were not forecasted during the planning stage of procurement [64].

In addition to the mentioned cost increase, the project resulted even more expensive due to more than half million USD the municipality had to pay to repair pipeline damage caused by private developers that prevented Cuernavaca's inhabitants to access water, as well as related costs to rebuild the 8 m in diameter sinkhole that collapsed few weeks after the road started to operate [64]. These numbers confirm the importance of considering sustainability's three dimensions jointly when developing road projects, rather than separately as independent one from another. Focusing on the economic dimension of projects whilst overlooking social sustainability aspects can undermine the former by increasing costs rather than optimizing savings.

### *5.4. Lack of Technical Capacity, Understanding, Awareness and Knowledge about Sustainability*

Technical capacity, understanding and awareness of both the contracting authority and the private contractors was superior in Necaxa than in Paso-Expres. Indeed, the way in which sustainability was understood and implemented clearly reflects a comprehensive understanding in the former, and a very poor and almost inexistent awareness of any sustainable element in the latter.

Interviewee 3 mentioned that at the time Necaxa was constructed, "there was no other building company in Mexico with more experience, production force and trustworthiness" than the awarded company. Interviewee 6 said "private contractors that execute these works do not always address social issues adequately, and when they do, it tends to be because within their philosophy and their principles they consider it appropriate, not because it is part of a practice of how public works are done in Mexico". The Mexican developer of Necaxa had several corporate governance mechanisms to address social issues deriving from the project, such as the Handbook for Implementing Social Responsibility in Projects [63].

However, Necaxa's developers were selected within the tender process because of their previous technical experience, not due to their socially sustainable policies, knowledge or capacity. The lack of attention to business responsibility in the award of the contract is similar in both Necaxa and Paso-Expres, as interviewee 8 mentioned, "businesses are trustworthy because they have the technical and economic resource to undertake the works", regardless of their human rights background or their responsible business conduct to perform them.

### *5.5. Sustainability Is Not Considered from the Early Design*

Almost all interviewees mentioned the importance and added value of good planning and rigorous assessment and management of negative social impacts for social sustainable projects. Interviewees 5 and 6 further mentioned impacts on human rights.

Necaxa's planning stage was long, which enabled maturity of the project. Due to risks related to harsh climatic conditions, the geographical location of the project's site, as well as its development over a protected natural area, more stringent assessments were undertaken to determine the project's viability. This context demanded public and private actors pay more attention to socio-environmental considerations from the early design, for example, through the EIA. However, many social considerations (such as improvements of local roads) were not foreseen during the design, but rather during the construction stage of procurement, when developers were able to tailor the plans to the local needs and integrate local knowledge and inputs to address social positive and negative impacts. Interviewee 1 mentioned "You cannot adjust the plans until you are with them" because it is only then, "when communities see you waking every day at 7 in the morning or identify that you eat lunch in a particular place that you earn their trust".

In contrast, Paso-Expres had very poor planning with no social sustainability considerations in the design nor the construction. For example, no EIA was undertaken and there were no mentions to human rights in the tender process, according to interviewee 8. Many decisions were taken "on the go", focusing exclusively on the project rather than on the people. Although interviewee 8 insisted the SCT had the final ten-lane design when the call for tender was published, interviewee 7 said it did not. The latter expressed that by the time it was published, SCT had only the previous eight-lane design, which coincided with the National Human Rights Commission findings [64].

### *5.6. No Financial Risks for Private Developers in Procurement Scheme*

An additional cause to those identified in the literature review was found in the responses of half the interviewees regarding the lack of financial risks for private developers. This element was present in Paso-Expres but absent in Necaxa, due to different contracting models (traditional public works and PPP, respectively).

In Necaxa, under a PPP procurement model, private developers assumed the risk of design shortcomings, cost overruns during construction and maintenance, delay of works, hidden defects of the construction and interest rates. Both public and private parties shared some risks. SCT assumed the risks derived from obtention of permits such as EIA and rights of way. Interviewee 2 mentioned that under a PPP, "the risks are mainly transferred to the private developer".

Poor management of socio-environmental risks can stop or delay the works and consequently, increase costs. "Usually there is a very important social reaction . . . [people] obstruct the road and block transit" when there are no social considerations in construction projects. In order to limit costs that can derive from the transferred risks, the company "has to take things much more seriously and rigorously". By constructing a socially sustainable road, businesses in Necaxa respected communities' rights, secured their investments and avoided money loss.

In contrast, under a traditional public works procuring scheme, private contractors in Paso-Expres had no financial risks, since they were assumed by the contracting authority. Thus, they had no incentive to boost positive social impacts or prevent and redress harm on human rights. Finally, interviewee 6 highlighted that "in Mexico, it would've been very difficult for what happened in Paso-Expres to occur under a PPP model", because if preliminary assessments (including socio-environmental elements) are missing, "investors will not accept to finance [the project] due to technical weaknesses. And that doesn't occur in traditional public works".

## 6. Discussion

On one hand, five barriers of sustainable road infrastructure found in literature review were present in Paso-Expres: non-existent (or existent but unenforced) policies and laws; economic dimension prioritized over non-economic; political opposition and corruption; lack of understanding, awareness and knowledge of social sustainability; and failure to consider social sustainability from the early design of the procurement process. The presence of these barriers explains the project's socially unsustainable outcome.

While most barriers of socially sustainable road infrastructure were absent in Necaxa, two of them were present. Contrary to literature review, no laws supporting social sustainability and prioritization of economic dimension over non-economic were found in Necaxa. While neither of them constituted an impediment for the project to be socially sustainable, their presence could explain the project's limitations on social sustainability, particularly regarding human rights. These constraints were related to lack of integration of labor standards in supply chains, gender perspective and indigenous consultation, and inexistent selection of business contractors based on their socially sustainable capacity, and their responsible business conduct policies, knowledge or experience in the procurement process.

Notably, when social sustainability is non-binding, there is a possibility to be voluntarily implemented, as in Necaxa. Yet, there is also a high risk of not being enforced, as it happened in Paso-Expres. In a context like the Mexican one, where road projects respond more to political interests rather than to sustainable benefits, an appropriate legal framework establishing obligations for governments and businesses on social sustainability and human rights respect during the entire project's lifecycle can have significant differences in the outcome. While having sustainable laws does not necessarily entail enforcement, their existence could positively contribute to mitigate the risk of non-compliance and to foster social sustainability in all infrastructure projects, regardless of the procurement scheme by which businesses are contracted.

On the other hand, an additional barrier of social sustainable infrastructure to those found in the literature review was identified: the lack of financial risks for private developers in procurement schemes. In Necaxa, some socially sustainable aspects were implemented by businesses because they were part of the contractual obligations set by the contracting authority through the use of its procurement leverage, such as compliance

with the EIA with social considerations. Similar obligations were absent in Paso-Expres. However, other socially sustainable actions including local engagement, education and vaccination programs and operational-level grievance mechanisms were adopted voluntarily by private contractors in Necaxa and were disregarded by private developers of Paso-Expres.

Voluntary adoption of socially sustainable measures in Necaxa could be explained by the project's risk transfer to private developers. Through the PPP contracting model, they assumed several risks, including those related to construction cost overruns. Therefore, businesses were interested in addressing and managing effectively all social risks to avoid increasing costs that would have been paid with money from their own pockets. By considering social sustainability in a comprehensive way, developers were securing their investments. Conversely, private developers of Paso-Expres did not adopt on their own initiative any socially sustainable measure because they were not assuming any of the project's risks. When contracted through a traditional public works scheme, businesses had no financial incentive to address any social risk because if the project went wrong due to social opposition, tensions or affectations, they had no money to lose.

## 7. Conclusions

This paper confirms three out of five barriers of socially sustainable infrastructure found in literature with empirical practice, but also contributes by uncovering an additional barrier of socially sustainable road infrastructure that has not been yet explored: financial risks for private developers deriving from the type of public procurement that is used.

Although further research is needed to deliver on broad conclusions of sustainable road infrastructure, both case studies suggest that efforts from both the public and private parties are needed within the procurement process to tackle barriers and achieve socially sustainable road projects. If senior procurement practitioners support inclusion of social sustainability criteria from the early design throughout the entire procurement process, and private developers have good incentives, such as financial risks, to take a project's social impacts seriously, then Mexico would be orienting development of road infrastructure to more sustainable outcomes.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Interviews were conducted under the London School of Economics' Research Ethics Policy and Procedures and Informed consent guideline.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Data are available on request.

**Acknowledgments:** I would like to acknowledge anonymous interviewees, reviewers and scholars, particularly to Olga Martin-Ortega.

**Conflicts of Interest:** The author declares no conflict of interest.

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