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# THE GREEN KEY TO SLO: EVALUATING ENVIRONMENTAL IMPACT AS A DETERMINANT OF SOCIAL LICENSE TO OPERATE

ЗЕЛЁНЫЙ КЛЮЧ К ОБЩЕСТВЕННОМУ ДОВЕРИЮ: ОЦЕНКА ЭКОЛОГИЧЕСКОГО ВОЗДЕЙСТВИЯ КАК ФАКТОРА СОЦИАЛЬНОГО РАЗРЕШЕНИЯ НА ДЕЯТЕЛЬНОСТЬ

SLO-ҒА АПАРАР ЖАСЫЛ КІЛТ: ӘЛЕУМЕТТІК РҰҚСАТТЫ АНЫҚТАЙТЫН ЭКОЛОГИЯЛЫҚ ӘСЕРДІ БАҒАЛАУ

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**Dedication**

To my family, who taught me how to persevere, even in hardest times.

And to everyone in Oskemen who continues to live near the factories.

**Abstract**

This thesis looks at whether the environment can influence the Social License to Operate (SLO) in the industrial city of Oskemen, Kazakhstan. Using stakeholder theory, contractarianism, and environmental governance literature, the paper proposes and experimentally examines three hypotheses concerning the influence of environmental orientation, perceived benefit, proximity, trust, and justice on public willingness to grant SLO. By use of multivariate logistic regression models and original survey data (N = 118), the results refute the presumption that environmental concern is the main driver of SLO. Rather, perceived gain repeatedly turned up to be the best indicator of SLO granting; perceived fairness also had a noteworthy impact. There were no discernible moderating effects and environmental concern did not demonstrate direct or mediated effects via trust or justice. These findings imply that instrumental and procedural legitimacy exceed normative environmental orientation in determining public acceptability in environments burdened by pollution and economic dependence for the case of Oskemen. The paper ends by addressing post-Soviet implications for environmental governance, participative legitimacy, and industrial strategy.

**Keywords:** Social License to Operate; case study; environmental orientation; contractarianism.

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## Chapter 1. Introduction

How do industries secure their place in the modern world? Many decades have passed since global industrialization, and in these decades, we can see changes in the relationship between industries and society,. Because of a history of exploitation of labor and resources, it became required for companies to  secure political permits, formal regulations, and something less material but essential: the Social License to Operate (SLO). Unlike a legal license, the government cannot grant SLO. Instead, it mainly depends on the trust and acceptance of the community that  grant the company legitimacy (Thomson and Boutilier 2011). This trust oftentimes is earned via community engagement, ethical conduct, and – a relatively new aspect – environmental accountability (Giurco et al. 2014; Melé and Armengou 2016; Thomson and Boutilier 2011). SLO is seen as crucial for industries with significant societal and environmental impacts, such as wildlife use industries (Hampton and Teh-White 2019), but what about other sectors?

SLO serves as an informal social contract between corporations and the community. Community, specifically referring to the geographically and socially situated population which are exposed to, and form opinions about, local industrial activity. This may include not only formally empowered actors, but also vulnerable or passive groups, whose views are rarely insititutionalized – such as retirees, low-income residents, or those living near the facility. An additional aspect of SLO that has developed in recent years and goes beyond compliance and approval is the depiction of the alignment of corporate actions with societal values. Why does SLO matter? The research finds that failing to secure it can lead to costly delays, reputational damage, and even complete stopping for some projects (Jijelava and Vanclay 2018; Smith and

Richards 2015). However, this research is limited in scope because it does not study the role of SLOs in emerging economies, and whether the communities in these countries will grant an SLO, as in general, but rather focuses on specific case of an industrialized city.

Why does it particularly matter for Kazakhstan? Kazakhstan, an emerging economy rich in hydrocarbon sources, is on the road to rapid development, followed by increased industrialization and population growth (Tsafos and Carey 2020). In this scenario, the state must balance managing its economic and ecological decisions, an example of which we can observe from the recent referendum on building a nuclear power plant (NPP). In October 2024, Kazakhstan held a national referendum on constructing its first NPP, with official results indicating that over 70% of voters supporting the initiative. But the legitimacy of this outcome has been questioned by observers and civil society groups. Reports highlighted several issues, including the suppression of dissenting voices during public hearings, arrests of anti-nuclear activists, and allegations of voting irregularities (Vlast.kz 2024). In addition, the extractive industries faced backlash numerous times; the discontent among the population was expressed in the form of social unrest and protests, especially in heavily industrialized cities, where the citizens bear most of the ecological costs and are heavily reliant on the city-forming enterprises, e.g., cases of Zhanaozen and Zhetybai (Sindelar and Toiken 2012; Toiken et al. 2023). These cases indicate a possible gap between the study of corporate behavior and the impacts on the community, which needs to be addressed. Ultimately, this provides a rationale for this thesis. In addition, it is crucial to consider the growing impact of the environmental narrative on the international arena and the rising awareness of negative corporate behavior (Saenz 2021; Xu et al. 2023). Altogether, these lead us to a puzzle, with a research question that this research aims to

answer: “Under what conditions do communities in Kazakhstan, specifically in the industrial city of Oskemen, grant or withhold the SLO to local industrial facilities?”

Even though the literature on SLO continuously expands on the global scale, there is a complete absence of studies that examine how this concept manifests and operates in Kazakhstan. Existing work focuses heavily on Latin America, Canada, and Australia, i.e., regions with stronger traditions of stakeholder participation and general involvement of public in resource governance (Boutilier and Thomson 2011; Owen and Kemp 2013; Prno and Slocombe 2014). Whereas Kazakhstani post-Soviet industrial cities remain an underexplored setting where environmental degradation, weak institutional trust, and economic dependence converge. The thesis aims to make an original contribution by applying established SLO theory to Oskemen, a strategically important industrial city in Kazakhstan. It offers an empirical attempt to examine how environmental and institutional factors shape public’s willingness to grant or withhold SLO.

The thesis proceeds as follows: first, it presents the literature, the main trends, patterns, and areas of inquiry. Further, it discusses the chosen methodology and thoroughly explains the rationale behind case selection and methods. After that, the thesis presents the study’s empirical findings, followed by a discussion of findings and a conclusion that incorporates future research directions and discusses the limitations and obstacles that this research met.

## Chapter 2. Literature Review

The concept of a SLO for corporations first emerged in the mining sector during the 1990s, and then quickly expanded to other fields, particular those that value corporate social responsibility (CSR) and sustainability (Hall et al. 2015; Komnitsas 2020). Though SLO and CSR are often used interchangeably, it is crucial to understand that they differ in their very nature. CSR is an ethical behavior that concerns different stakeholders, including practices that address social, environmental, and economic responsibilities (Bolaños and del Brío 2020; Saenz 2021; Steurer et al. 2010). For a precise understanding of the matter, refer to Table 1 below (Komnitsas 2020; Saenz 2021).

*Table 1. Key Differences between CSR and SLO*

| Aspect | CSR | SLO |
|---|---|---|
| Nature | A corporate strategy or framework | An informal social contract granted by society |
| Origin | Internally initiated by companies | Externally conferred by stakeholders |
| Purpose | To fulfill ethical, legal, and sustainability expectations | To gain and maintain community acceptance and legitimacy |
| Guarantees | May support but does not guarantee SLO | SLO can be lost even when CSR is present |
| Formality | Often formalized and reported (e.g., ESG reports) | Always informal and unwritten (no legal standing) |

A SLO is essential for understanding industry interaction with communities in which industries are located. Since industries are facing increased scrutiny from stakeholders, there is a call for a system beyond legal and regulatory compliance. An unwritten social contract – an SLO

– captures local stakeholders' and communities' continuous embrace and support for an enterprise's activities. Unlike every formal license, an SLO is not usually enshrined in law; it is based on trust, legitimacy, and conformance with societal values (Komnitsas 2020; Pósleman and Sallan 2019).

Upon initial inspection, the purpose of the SLO may seem simple since it can help avoid risks tied to community resistance, reputational damage, and project delay (Jijelava and Vanclay 2018; Smith and Richards 2015). However, the idea is fraught with complexity. The dynamic, informal nature of the SLO, which stems from its development with societal values, presents a problematic but imperative piece of any corporate approach. Awareness of discourse calls for demarcating and discussing the nomenclature framework used in this thesis.

Firstly, it is essential to clarify what is meant by "stakeholders." Within this work, the concept of stakeholders is defined inclusively. While traditionally it is associated with actors who possess institutional or economic power, such as local businesses, unions, or regulatory agencies, stakeholders also include groups and individuals who may lack formal power but are nonetheless impacted by industrial activity. Including children, the elderly, people with health conditions or impairments, and other marginalized or low-visibility segments of the population. While it can be argued that such groups may not directly participate in corporate negotiations, their wellbeing and perception are as important to public legitimacy and community acceptance.

Is "community" always equivalent to "stakeholder"? Although literature uses these two terms synonymously, this is not applicable everywhere. To make sense of this differentiation, one can refer to Blokland's (2017) understanding of community from a social constructional perspective influenced by various narratives, discourses, and powers. That is, an entity which is

socially constructed, and produced through interaction, narrative, and performance, with an additional emphasis on the power relations between the community members, with often contested nature. From this perspective, "community" refers to stakeholders, which are interested and concerned in the nature of the facility's operations. Since the idea of SLO relies on investing in the public good, it is necessary to acknowledge that as well. It is also important to remember that communities may have intra-community conflicts, especially concerning fairly distributed benefits from corporate activities. Implying that communities are heterogeneous by nature and conflict-prone (Blokland 2017; Owen and Kemp 2013).

While early SLO frameworks do equate stakeholders with economic actors or vocal institutions, contemporary literature increasingly recognizes and acknowledges the legitimacy of concerns raised by vulnerable or passive community members (Komnitsas 2020; Owen and Kemp 2013). To follow this trend and enrich the understanding of a SLO which is not linked strictly to stakeholders, this thesis would adopt the contemporary view of the concept of community.

To restate this clearly, in this study, "community" refers not only to geographically proximate residents but also to all residents affected by or holding opinions about the industrial activity in Oskemen. This includes both actors that possess power (local officials, company managers) and marginalized groups such as the elderly, youth, and low-income residents whose concerns often remain unvoiced. Followingly, I should also clarify, that communities are temporally and spatially fluid because their membership is constantly changing. Sealing a company's social license at a given moment will involve different approaches than securing it at some other moment; similarly, so will the community's geographical and cultural profile. This

allows to see community not as a fixed demographic group, but as a socially constructed collective of individuals whose views matter for legitimacy (Blokland 2017). Additionally, allowing for a broader interpretation of who can grant or withhold social license, which aligns with the more inclusive view practiced in the contemporary literature.

This thesis aims to comprehensively depict the community while examining environmental awareness rather than solely power distribution among community members. In addition, it is crucial to emphasize that while theoretical foundations of SLO are well developed in global literature, academic studies rarely put an emphasis on the specific cases of industry-heavy cities in Central Asia, particularly Kazakhstan (Mete, Kozhabayeva, and Yamamoto 2020). The general picture of the SLO seems to be more prevalent focus, for the Central Asian region that is. This geographical gap leaves open critical questions about how communities in post-Soviet industrial contexts understand and negotiate legitimacy. The present research addresses this gap by testing the relevance of environmental concern, perceived benefit, and institutional trust as determinants of SLO within Kazakhstan's industrial context. Especially considering the levels of environmental degradation that was primarily caused by exploitative nature of operations at numerous sites, including Oskemen city.

Having defined the central lexicon and conceptual differences, most notably concerning the contested status of the concept of community, we are ready to explore the historical development of the SLO concept and its increasing relevance more deeply.

The concept of SLO can be defined as a framework for understanding the relationship between industries, particularly extractive sectors like mining and oil, and the communities in which they operate. SLO refers to the ongoing acceptance and approval of a company's

operations by local communities and stakeholders, which is often viewed as an informal social contract rather than a legally binding agreement (Pósleman and Sallan 2019; Komnitsas 2020). However, unlike formal legal or political licenses, the SLO is not a noted or codified agreement; rather, it is a dynamic and informal "social contract" based on trust, legitimacy, and alignment with societal values. It is a modern concept interpretation, but it has evolved quickly.

### *2.1. Origins and Development of the SLO Concept*

SLO as a concept has undergone many transformations over the past 3 decades. The importance of observing the evolution of the concept cannot be undermined. One of the more prominent works in this field of discourse is the work of Santiago et al. (2021). They distinguish five stages and locate the distinct features of each stage. Stages are also divided into periods, starting from 1996 to the present, see Table 2.

*Table 2. The Evolution of SLO*

| Years | Name of the stage | Prominent authors | Description | Features |
|---|---|---|---|---|
| 1996-2002 | Historical Bases | Moore 1996; Joyce and Thompson 2000; Wilson and Wilson 2001; Ednie 2002; | Initially, SLO was regarded as a tool for managing societal acceptance and avoiding operational risks and conflicts in the forestry and mining sectors. | 1. Emergence of SLO in non-academic but rather technical publications<br>2. Origin of SLO from specific cases of conflict |
| 2003-2006 | SLO recognition | Thornton et al. 2003; Kagan et al. 2003; Gunningham et al. 2004; Burton et al. 2006; Evangelinos and Oku | SLO was defined as complementary to legal and economic licenses. It is granted unofficially by those who do not necessarily have formal authority (Gunningham | 1. Laying theoretical ground for legal compliance and corporate environmental management. |

| | | | | |
|---|---|---|---|---|
| | | 2006; | et al. 2004).<br>SLO responds directly to community social pressure, surpassing principal legal compliance (Thornton et al. 2003 and Kagan et al. 2003).<br>SLO was also perceived as an informal agreement between community and industry without proper governmental regulations (Evangelinos and Oku 2006). | 2. Beginning recognition of broader societal expectations that surpass merely legal obligations.<br>3. Appearance of corporate social responsibility (CSR), which is linked but distinct from SLO. |
| 2007-2011 | First management models | Gifford and Kestler 2008;<br>Idemudia 2009;<br>Gjolberg 2009;<br>Esteves and Barclay 2011 | SLO was conceptualized in the frame of corporate-community partnerships. Proactive investments and collective activities make a strategic tool out of SLO (Esteves and Barclay, 2011).<br>Contradiction between social investments and genuine management of the negative impact aspect of SLO was criticized. Idemudia (2009) points out how crucial authentic community dialogue is. | 1. The first integration of SLO into a formal business management framework.<br>2. Development of SLO through specific clusters.<br>3. Emphasis on risk management from the company's view. |
| 2012-2016 | Evolution of SLO Models and Initial Critical Studies | Prno and Slocombe 2012;<br>Prno and Slocombe 2014;<br>Moffat and Zhang 2014<br>Boutilier 2014;<br>Owen and Kemp 2013;<br>Vanclay 2012; | SLO is an integrative model focused on trust, legitimacy, sustainability, and governance (Prno and Slocombe 2014).<br>Development of the model that measures social acceptance and building of trust between communities and companies (Moffat and Zhang 2014). | 1. Increased complexity of SLO as a concept in governance-community impact assessments.<br>2. Shift from purely company risk management to risk management of local communities.<br>3. Appearance of studies |

| | | | | |
|---|---|---|---|---|
| | | | | questioning superficial implementation of SLO. |
| 2017-2019 | Critical Studies and Increasing Complexity | Boutilier and Zdziarski 2017; Luke 2017; Luke 2018; Demajorovic et al. 2019; Gehman et al. 2017; Meesters and Behagel 2017; Measham and Zhang 2019; | Measurement models are further developed by integrating community perceptions and distributive justice issues (Boutilier and Zdziarski 2017). Luke (2017) proposes the "diamond model," which describes the dynamics of community resistance, procedural fairness, and legitimacy. The study examined how silencing genuine community concerns can lead to catastrophic outcomes in the context of the misapplication of SLO (Demajorovic et al. 2019). | 1. Consolidation of preceding integrative perspectives into theoretically coherent frameworks.<br>2. Bigger critique of superficial company practices that lead to ethical risks.<br>3. Development of SLO as a complete field of study, comprehensive in theoretical and empirical research. |

Operating with the primitive ideas of SLO and first introducing it into the scientific discourse happened from 1996 to 2002. The main conceptualization point is the instrumental capacity of SLO, viewing it as a tool to discuss the social acceptability of specific industrial actions (Moore, 1996). The actions constituted mainly operational risks and conflicts with the locals and indigenous communities (Ednie 2002; Wilson and Wilson 2001). Also, the ideas of sustainable development and CSR were added in small amounts.

Since 2003, the concept has been institutionalized, and in 2007, the idea of SLO was consolidated. These developmental stages can be characterized by emerging new management models and following practical applications. Most scholars and companies have started recognizing the SLO as an essential concept, leading to new conceptualizations and definitions

(Santiago et al. 2021). One prominent change would be that the SLO was began being defined as a complementary and not a fully formed license (Gunningham et al. 2004). In addition, SLO was a way for the company to respond to the conflict stemming from the community (Thornton et al. 2003; Kagan et al. 2003). Later on, it also became known as an informal agreement that replaces the legal licensing when it is not present (Evangelinos and Oku 2006).

Further development of the concept can be characterized as consolidation, because it has gained more traction both in academia, extractive industries, and companies. The new paradigm was to view it as a partnership between company and community (Gifford and Kestler 2008). A number of scholars began indicating that a sustainable dialogue is necessary for the partnership to persist (Idemudia 2009). The ideas of sustainable development and CSR have been more deeply ingrained in the debates regarding the true meaning of SLO (Esteves and Barclay 2011). Consolidating the concept led to establishing a consensus around what SLO is and how we should understand it. At the same time, it spurs growth in studies that focus on measuring and assessing SLO and how stakeholders promote it in their respective societies/communities.

After 2012, the concept began to expand. These stages are characterized by the expansion of SLO to other disciplines and the rising incorporation of SLO into business practices and strategies. During the expansion, scholars began to apply the concept to a broader range of contexts. With growing recognition of the idea as an effective and vital tool in addressing global challenges, the concept began to be applied to issues such as climate change and poverty, aside from the abovementioned mining and forestry industries (Prno and Slocombe 2014). This recognition of the SLO and its practical application has led to incorporating this concept into

most business practices and strategies (Moffat and Zhang 2014). By that, the involved stakeholders, such as industry representatives, could also contribute to promoting sustainability.

Although most of these strategies focused on gaining benefits, the SLO aligned with most of these goals, creating a beneficial situation for businesses and local communities. The measurement models that were developed and assessed throughout the previous stage had begun facing various criticism, mainly in terms of oversimplification of the existing relationship. Some scholars proposed their own models, that were including additional variables and factors such as distributive justice issues (Boutilier and Zdziarski 2017); community resistance and procerdural fairness (Luke 2017); and the potential outcomes of silencing and acting against the community (Demajorovic et al. 2019).

Obtaining the SLO is akin to maintaining public trust, which allows for benefits such as minimizing formal restrictions (Wilburn and Wilburn 2011). While public trust can be considered as one of the key inputs into SLO, the two are not identical. For a company, trust would mean that the society they're located in believes that the industry's activities are aligned with the stakeholders' social expectations and values. Whereas SLO is the broader collective outcome of legitimacy judgments that includes trust, benefit, fairness and other contextual factors, for example, environmental impact considerations. The typology of the sectors that need to obtain the SLO is vast and significant. However, one of the most problematic types of industries is related to extraction, manufacturing, and using natural resources. Mainly because it is believed that these industries damage the environment, and while some societies and governments do not necessarily care or are aware of the impacts, others abstain from giving these

industries SLO. These include mining, oil and gas, forestry, agriculture, nuclear energy production, food, and chemical industries.

While the concept of SLO has undergone definitional expansion, its theoretical grounding has also shifted across historical stages. In the early stages (1996-2002), conceptual development was mainly instrumental and lacked explicit theoretical grounding, serving as a risk management tool. During the recognition and institutionalization phases (2003-2011), stakeholder theory was the main framework which was used to assess SLO, especially its descriptive and instrumental forms. As SLO had developed further (2012-2016), contractarian perspectives gained prominence, which framed SLO as a form of negotiated legitimacy between companies and communities. In the critical phase, (2017-present) various theories emerged to identify the ideas and standing behind SLO. Including theories of moral legitimacy, fairness, pro-social stakeholder engagement and other theories that allow for a moral interpretation of the ideas behind SLO.

To further understand the use of SLO and why this concept has gained significant traction in recent scholarly discourse, we must know the paradigms within which it is usually discussed. We should focus on the theories of legitimacy, contractarianism, and stakeholder engagement.

### *2.2. Theoretical Foundations and Challenges of SLO*

#### *2.2.1. Theoretical Foundations*

Ultimately, what is meant by SLO, and what are its dimensions? To answer that question, it is essential to understand the grounding of the concept first. The very idea of SLO comes from a contract between company and community, i.e., contractarianism. As Demuijnck and

Fasterling (2016) argued, the concept of SLO provides a contractarian basis for the legitimacy of a company's actions since it is rooted in the idea of a social contract, which protects the interests of all parties involved, by understanding that businesses need the consent of the local communities to continue their work and that to obtain them they would also need to meet the social expectations and manage the demands of the said community. The complicated relationship between these concepts and ideas can be described as follows. Contractarianism and legitimacy can be considered contributors to the theory behind SLO, but SLO itself depends on the notion of contractarianism as its basis. On the other hand, contractarianism relies on the legitimacy of businesses, which is shaped by societal expectations and whether the company manages to achieve them. Another aspect of contractarianism is essentialized in the company's adherence to the social contract with the community. In other words, companies have to comply with societal norms and ethical standards. This ensures that they obtain and maintain SLO. The compliance creates a mutually beneficial relationship in which the company provides socioeconomic benefits, e.g., developing infrastructure and creating workplaces. In contrast, the local community permits them to nest and profit off the region's resources (Demuijnck and Fasterling 2016).

The importance of stakeholder theory in this topic cannot be disregarded since it considers the ideas of actors that exist and impact the problem, both positively and negatively. Effectively, these theories help us understand how organizations interact with the community. Different theories explain the levels of this communication. As Cesar (2019) argues, this explanation has three levels: descriptive, instrumental, and normative stakeholder theories. The descriptive stakeholder theory mainly focuses on the existing interactions of organizations with

their local stakeholders. As inferred from the name, this theory describes the existing state of the art. It provides a perspective from which we can look at stakeholder relationships empirically and understand their toll on organizational performance.

On the other hand, instrumental stakeholder theory examines whether it is beneficial for a company to engage with its stakeholders. Providing information for the said assessment and finding additional factors that impact the engagement. Last, the normative stakeholder theory considers the stakeholders from a moral standpoint. By suggesting collaboration via different means, normative stakeholder theory explains why organizations should act and contribute to creating a fair and just society. Stakeholder management can effectively earn a company the SLO in the region (Thomson and Boutilier 2011). By correctly understanding the power dynamics and interacting accordingly, a company can gain public trust, especially if its principles align with the moral principles of the community.

Another point regarding the stakeholder theory is that it emphasizes the need to balance the interests of different stakeholder groups. Rather than focusing on one stakeholder, companies must engage in a whole community, with other "smaller communities" from which the entire community consists. Then the company must find ways to satisfy various stakeholders' demands and needs while maintaining operational efficiency. It is also crucial that these stakeholders can hold the company accountable for its actions. When a company fails to satisfy their demands and needs, the stakeholders can withdraw their support, leading to a loss in SLO (Thomson and Boutilier 2011).

From these theories, the SLO mainly has two dimensions: acceptance and approval. Public acceptance acts as a threshold level for a company to enter the community by acquiring

basics, such as legal permits, but has a limited understanding of the local community. Approval, on the other hand, is a stage at which the community welcomes the company on its territory and supports and cooperates with the company, both fulfilling the terms of the social contract between each other. A vivid example of the difference between these dimensions is that we can accept the company because of the economic benefits it provides. Still, we may disapprove of its actions, thus making its presence a matter of time.

However, both dimensions are crucial for a company that wants to establish a long-term relationship with the community and continue its operations in the region.

Continuing the idea of conceptualizing SLO, some scholars provide other frameworks to assess the concept. A rather interesting approach to the notion of SLO was demonstrated by Hurst et al. (2020). In their work, they show two contrasting perspectives from which the scholars in the field had assessed the concept of SLO: the pro-self perspective and the pro-social perspective. Whilst the first one conceptualizes SLO as a strategic approach to manage risk and reputation, which is functional, pragmatic, and managerial, the second one is a rather collaborative, relationship-building process to achieve mutual benefit, with a more reflective paradigm that constitutes a fully functional society within it. In other words, the pro-self perspective fits the business managerial understanding of SLO, where most scholars include stakeholder theory to assess it. Meanwhile, the pro-social perspective deviates from traditional knowledge and becomes more social contractarian. Mainly because the pro-social perspective has moral foundations and is values-based (the community's values), the thin line between those two is present as well, at first glance both can be seen as a mutually beneficial, even symbiotic relationship, the pro-self perspective has only episodic engagement with more powerful

stakeholders within the community. In contrast, pro-social is relational and involves continuous engagement with authentic representative stakeholders. These usually include indigenous people and marginalized and vulnerable communities. An example of that can be seen in the work of Poelzer et al. (2022). Their case study discusses two mining projects in which most of the power was given to the Indigenous communities and the self-governance created a more healthy and fruitful company-community relationship.

Can these theories fully explain SLO and its manifestation in the world? Not necessarily. The concept's complex nature and various approaches for explanation and understanding provide enough empirical gaps for scholars to fill in. This includes a meta-discussion of the idea—an epistemological approach to learning—which examines and challenges existing interpretations and explains these differences and ambiguities in use.

*2.2.2. Challenges and Ambiguities in Defining and Applying SLO*

Most concepts that aim to explain larger phenomena, and get defined countless times, can face many issues in explanation and understanding, thus leading to an issue of normative complexity.

As Brueckner and Eabrasu (2018) state, in that context, the issue of normative complexity refers to the conflict between norms, values, and expectations that various stakeholders hold regarding the impact that companies inflict on society and the environment. Essentially, there are four dimensions to this issue, with each being one of the significant factors that keep the problem unresolved.

First and foremost is the difference in stakeholders' expectations. An example of this is a standard case when local communities prioritize environmental protection and cultural

preservation, whereas business investors focus on the economic benefits of the projects. The most problematic aspect of this factor is that these interests often conflict, causing unrest, protests, and other forms of expressing discontent. The range of interests reaches higher numbers as more stakeholders are involved in the process, thus leading to a situation where no universally applicable solution exists to resolve the conflict. The interests depend on the context, which is not readily available for stakeholders trying to resolve the issue.

The next dimension is the lack of consensus. This factor relates to the concept of legitimacy and the non-existent consensus on what constitutes it. The idea that there is no universally accepted set of ingredients for legitimacy makes it difficult for companies to achieve social license. There is also a temporal aspect to this dimension – the fact that norms and values evolve, thus making the issue of acquiring legitimacy even more complex.

The third dimension is the nature of SLO, which is rooted in ethical and moral considerations. The concepts that constitute these considerations, such as justice, responsibility, etc., are also free to interpretation. Gaining moral legitimacy in such conditions would require knowledge and information about the community and large quantities of the company's resources.

All of these factors lead to the fourth dimension – the practical implications. Since the factors mentioned above are highly ambiguous and context-dependent, companies might face difficulty operating to gain a social license. In practice, the complexity involved in gaining SLO might make abandoning the concept altogether a better alternative. However, as Brueckner and Eabrasu (2018) argue, SLO fills the condition for a company's actions to be legitimate. As they've shown, there are also Actuarial License and Political License. These licenses do not

necessarily examine the legitimacy of a company's actions, especially in countries with more corrupt regimes. Thus, leaving us with continuing attempts to produce a universal SLO construct.

Along with the issue of normative complexity, I should note the idea that is closely linked to it, and simultaneously ingrained in the idea of SLO, its dynamicity. As some scholars argue, this concept's informal and dynamic nature means that the benchmarks for legitimacy are not static and evolve with societal values (Melé and Armengou 2015). The temporal stability for this concept is practically non-existent. SLO has altered its form multiple times during the last three decades, and while some aspects were once seen as beneficial, they are no longer. For example, coal industries were strong contributors to the economy, and having one was considered helpful for the region. Still, they are being scrutinized due to their adverse environmental effects. As discussed in Moore (1996), SLO was only a tool for measuring the social acceptability of a company's actions at specific points. Nowadays, they are marginally different from their 1996 counterparts.

Another side of the coin that produces challenges for using SLO theory as a valid concept in both the scientific community and the real world is the possible use of SLO as a window-dressing strategy for controversial business practices (Brueckner and Eabrasu 2018, 7). As scholars argue, this is the most common use of SLO in modern-day practice due to its highly ethical but far-limited operational appeal. Subsequently, SLO enhances the companies' public image to gain stakeholders' approval without fundamental changes. The superficial engagement of the companies manifests in such practices as tokenism and selective disclosure. At the same time, companies might be involved in symbolic actions and greenwashing to show the "changes" they supposedly made. Including the marketing campaigns, these practices might help the

company avoid raising production and resource consumption costs, simultaneously gaining the legitimacy and the SLO in the region.

Another quite significant challenge is the operationalization of the concept. The measurement is complicated since, unlike legal licenses, there are no standardized metrics to assess whether a company has achieved or maintained its SLO. That is especially true for regions that lack strong regulatory frameworks because documentation and monitoring of the company's actions might be non-existent there (Jijelava and Vanclay 2018; Smith and Richards 2015). It is essential when addressing the issue in authoritarian regimes because the existing regulations allow companies to report on a self-basis, which can show untruthful data when researching the topic.

This chapter mentioned many of the ambiguities, but the one that interests us is the practical application. What leads to SLO? What factors can contribute to its manifestation? To answer these questions, we can locate the literature that explores the factors that shape SLO. That will give us enough aspects to measure and use as a foundation for further data analysis. Having established the conceptual and theoretical basis for SLO, the following section would unravel the key factors that drive its formation in detail.

### *2.3. Factors Leading to SLO*

The questions mentioned in the last paragraph, ultimately converge into one single question, precisely: Under what circumstances do communities grant or withhold informal approval for industrial activity? This question lies at the heart of the SLO reserach, generating a substantial body of literature. Even though the SLO is not legally required in most cases, it has

gained major strategic significance, especially for contexts where community resistance can delay or halt operations (Prno and Slocombe 2014; Thomson and Boutilier 2011). In light of that relevance, it can be said that prior research had identified a recurring set of determinants that can influence SLO outcomes. These include: stakeholder engagement, environmental performance, perceived economic benefit, fairness and trust, and lived experience shaped by proximity and visibility. Although the primary focus of this thesis is on environment as a key predictor, it is necessary to situate it within the broader ecosystem of influences.

*2.3.1. Stakeholder Engagement*

One of the most widely cited predictors of SLO is the quality of engagement between companies and their host communities. Engagement is more than formal compliance activities. It entails meaningful, open, and inclusive dialogue with the community members. In the quality of engagement, scholars mostly use the concept of procedural legitimacy, which involves being heard, involved, and respected, as the most definitive and influential subfactor. To the extent that its importance is being equaled to the importance of outcomes (Jijelava and Vanclay 2018; Smith and Richards 2015). This procedural legitimacy usually manifests in the form of adaptation to local norms, allowance of grievance mechanisms, and regular feedback opportunities (Komnitsas 2020). While central to SLO formation, the procedural legitimacy sometimes has the most influence in the question of granting SLO, due to it being amplified by contextual factors.

In the semi-authoritarian environments, and environments where institutional avenues for deliberation may be limited, company-led engagement becomes even more crucial. Because of such contexts, transparency and operational visibility are significantly shaping community

perceptions of legitimacy. Including but not limited to media coverage, physical accessibility, and symbolic presence (Hall 2014; Owen and Kemp 2013).

*2.3.2. Environmental Performance*

Environmental accountability also has become a defining lens through which industrial legitimacy gets evaluated. This is mainly tied to the increasing demand for better living conditions, and communities in more democratic environments gaining a voice to speak to the companies and government on a more equal level. These demands are manifested in form of needing companies' transparency about environmental risks, such as pollution, water contamination, air quality, and resource extraction. While in the early conceptualizations of companies' legitimacy before communities there was CSR that was indicative of environmental performance and accountability, the modern understanding of SLO classifies these as a cornerstone for legitimacy (Owen and Kemp 2013; Saenz and Ostos 2021; Smith and Richards 2015).

As communities grow less willing to accept tradeoffs between economic development and environmental sustainability, the companies begin to face more pressure to not only demonstrate meaningful and inclusive dialogue, but also to show their efforts to avoid harming the locals. Ecological identity, visible environmental degradation in the region, and shared risk perceptions have also shown to amplify the environmental concerns (Hurst et al. 2020; Lyytimäki and Peltonen 2016; Saenz 2021).

This study uses the idea of environmental orientation as a conceptual framework, which is comprised of concern about environmental harm, awareness of ecological issues, and values-

based environmental commitments. Since these had shown most relevance in terms of understanding the environment as a determinant.

*2.3.3. Perceived Economic Benefit*

One of the factors that were long widely recognized from the times of early establishment of the SLO concept is perceived benefit. Precisely, it refers to the extent to which individuals believe that the company will generate positive outcomes for themselves or their community. Including but not limited to providing employment opportunities, developing infrastructure, or investment in the region. One of the most important aspects of the benefit is the rules of distribution. As scholars note, if benefits are widespread and equitably distributed among community members, SLO is more likely to be granted (Cesar 2019; Prno and Slocombe 2014).

Hence, for this thesis perceived benefits are understood as an aggregate of personal material and symbolic benefits, and community-level material and symbolic benefits. What company brings specifically brings to the person and to the community.

Another idea which is rooted in the scholarly understanding of perceived benefit is the moderation of influence of other factors, in particular environmental concern. The idea of trade-off between the environment and economy is ingrained in the understanding of SLO, and studies had shown that for some contexts the perceived benefit might matter more (Hall 2014). These are primarily contexts of economic dependency on the company or economic hardships experienced by the citizens. In such contexts, benefit may outweigh the potential costs, even environmental costs, especially if the risk is normalized within said context's society (Stephen and Robinson 2021). This understanding is crucial for this thesis, since it forms a basis for the second hypothesis, moderation of the influence of environmental orientation.

### *2.3.4. Risk, Proximity, and Visibility*

In the context of perceived benefit, I briefly mentioned the potential costs that can impact the decision-making of locals. However, it would be necessary to expand these factors as they have much more impact on the granting SLO or not, depending on the context. These can be unified under the umbrella of proximity to the facility. Individuals that live closer to the facility, and/or interact with it on a daily basis may have more ambivalent attitudes (Brueckner and Eabrasu 2018; Saenz 2021). Mainly because they are more exposed to both benefits and risks that facility can provide. Thus, affecting their judgments of benefit and trust to the facility. Effectively, these help to from a complex evaluation which hardly can be captured with attitudinal measurements. Many of the individuals that interact with the facility on a daily basis, can be working for the facility, and thus willing to move closer to facility for a more comforting commute or other reasons. This, in turn increases their exposure to the risks that facility produces, such as higher concentration of pollutants in the air, water, and soil. As noted by Lyytimäki and Peltonen (2016) prolonged exposure to these risks also seem to normalize and integrate the perceived risks produced by the company into the local identity.

Another subfactor that can contribute to the perceptions of the company is their visibility. If the company provides and announces what goods they provided for the community, the community may be more willing to grant SLO. As Hall (2014) notes, direct experience with the facility, can temper, i.e., counterbalance, concerns and perceptions of risks. Especially for the contexts when the company is seen to act in good faith by the locals, and has better reputation in general.

### *2.3.5. Trust and Fairness*

What underlies all these factors is the question of institutional fairness and corporate trustworthiness. As noted by scholars, when individuals believe that they are treated fairly, that decisions are made transparently, and that concerns are listened to, they are more likely to grant SLO, even in cases when risks are visible and already impact their living (Hurst et al. 2020). These findings are also consistent with the early notions of SLO based on the normative stakeholder theory, which contributes to the argument that legitimacy is partially based on ethical quality of relationships, not only outcomes (Brueckner and Eabrasu 2018; Smith and Richards 2015).

Fairness and trust should not be seen as abstract ideals neither, instead it would be necessary to perceive them as experienced through inclusiveness of meetings, transparent share of information, and meaningful responses to grievance from the companies. For this thesis, I treat procedural fairness and trust as mediating variables that can influence pathway from environmental orientation to SLO support, forming a certain understanding of how SLO can work in chosen context. As Prno and Slocombe (2014) argue, these factors form the "invisible infrastructure" of social license.

### *2.4. Environmental Orientation as a Determinant for Granting SLO*

Of all the factors influencing SLO results, environmental responsibility is becoming particularly pivotal. It is not just because of worldwide environmental consciousness but because environmental damages are nearby, visible, and emotionally meaningful. They impact health, land, and water—spaces deeply linked to everyday experience and cultural heritage. When corporations do not respond to them, community dissatisfaction may become strongly organized

and politically destabilizing. Empirical studies validate this. Xu et al. (2023) record how environmental neglect creates a loss of public approval and reputational loss. Prno and Slocombe (2012) illustrate how lack of environmental legitimacy can trigger protest, with particular effectiveness combined with wider community exclusion. Saenz (2021) underlines how crucial it is for company behavior to be consistent with territory-level environmental values, with economic compensation being unable to make up for perceptions of ecological negligence fully. The case study based in Poland by Woźniak and Jurczyk (2022) illustrates how public discourse will shift sharply where there is underperformance environmentally, despite initial high levels of approval.

I already mentioned the idea of environmental orientation few times, and for this thesis, I conceptualize this idea of "environmental orientation" and treat it as a multidimensional construct, consisting of (1) environmental concern, which refers to the extent of personal worry or perceived importance of environmental problems; (2) environmental knowledge, referring to self-assessed understanding of environmental issues; (3) environmental values, which indicate underlying moral and cultural attitudes toward nature and sustainability.

The conceptualization stems from Si et al.'s (2022) understanding of the idea of environmental attitudes. However, the idea of attitudes is ambiguous, because of the overlap with the values and concerns, hence I decide to use the concept of "environmental orientation" that acts as an umbrella term which encapsulates all of these components.

In Kazakhstan, these forces are not abstract. Oskemen City, for example, suffers chronic air and water pollution at facilities like KazZinc and UKTMP. While these are large employers and purveyors of infrastructure, these environmental records have received growing attention. It

is a question whether residents' decision-making regarding SLO matches these environmental conditions. More specifically, it tests whether environmentally oriented individuals are less likely to authorize SLO and whether these forces are mediated by lived experience, perceived benefit, and proximity. While these frameworks are being broadly applied in international contexts, there is a rationally explainable lack of peer-reviewed research examining SLO in Kazakhstan. The only contributing research that is relevant to the topic is the Mete, Kozhabayeva, and Yamamoto's work (2020), but their work focuses on the countries in Central Asia in general, without specifics. This empirical and geographical gap can limit our understanding of how communities in post-Soviet, resource-dependent societies engage with the legitimacy. By testing these variables in such context, this thesis can provide regional application of SLO theory and contribute to the foundational evidence for future research in similar contexts.

These five variables – environmental orientation, perceived benefit, proximity, trust, and fairness – constitute the theoretical framework for this thesis. They are based on various scholarly research and translated into the Kazakhstani circumstances of inherited industry, environmental degradation, and increasing public expectations. Each of these variables has been identified in global SLO literature as a key determinant of community approval or rejection of industrial operations (Hurst et al. 2020; Moffat and Zhang 2014; Prno and Slocombe 2014). The subsequent section will explain the hypotheses underpinning this study's empirical research.

### *2.5. Hypotheses*

It is important to note that the thesis strives to test the existence of a causal link, while assuming that the idea of SLO and social contract manifests in some form or another in the given

context. Based on what we already know from the literature, this research devised a set of hypotheses and justifications for their inclusion.

The first hypothesis goes as follows:

*H1: The more environmentally oriented individuals are, the more likely they will withhold the SLO from an industrial company*.

By understanding whether an environmental orientation plays a significant role in determining whether the SLO would be granted, I can answer the research question – is environmental orientation a significant determinant – and also see how the relationship works out. As Lyytimäki and Peltonen (2016) and Saenz (2021) pointed out, stronger environmental concerns can lead to lower acceptance, specifically in cases where local ecological risks are emphasized. Moreover, the salience of the environment as a determinant for obtaining SLO is especially strong where tourism and ecological identity are salient. Especially when local environmental risks are perceived as significant (Lyytimäki and Peltonen 2016), in addition, as posited by Smith and Richards (2015), ecological responsibility can become a determinant for SLO because of the recent sociopolitical trends, such as the spreading sustainability paradigm, which has amplified public concerns about environmental impacts. However, this issue has a different side – the companies' environmental responsibility can only partially affect SLO's obtainment (Saenz 2021). Nonetheless, this contesting perception only raises the necessity to test the relationship and the hypothesis accordingly. The measures of environmental orientation would be environmental values, concern, and knowledge, suggested by Si et al. (2022).

The proposed relationship between environmental orientation and SLO granting stems from a theoretically grounded causal pathway. Individuals with strong environmental orientation

are more likely to perceive industrial operations as environmentally risky or harmful. The perception of risk leads to negative moral and normative evaluations of facility's legitimacy, therefore lowering the probability that individual will grant a SLO. That pathway aligns with environmental psychology literature, where concern often predicts opposition to environmentally degrading practices, especially when perceived costs are local and affect community well-being (Lyytimäki and Peltonen 2016; Saenz 2021). However, the literature also notes that this relationship might, sometimes, be overridden or moderated by certain factors. Including economic dependence, trust in the company, or general familiarization to risk among populace (Hall 2014; Stephen and Robinson 2021). Thus, making environmental orientation impactful in cases where instrumental and procedural legitimacy factors do not overbear legitimacy judgments.

*H2: The effect of environmental orientation on granting SLO is moderated by proximity to the facility and perceived benefit.*

Up to this point, the possible moderating effect of other factors has been brought up several times. The dynamic nature of SLO allows it to fluctuate often, and depending on how strong it is, it can even be overridden by other contextually more crucial factors for the local communities. This hypothesis focuses on whether two contextual factors, namely, perceived benefit and proximity to the facility, modify the relationship between environmental orientation and SLO granting. As Hall (2014) shows, the impact of environmental orientation in some cases can be overridden by personal or economic experiences with the company, especially regarding the trust for the company, its effort in transparency, and the provision of local benefits. Prno and Slocombe (2014) also shared a similar view on the pressing matter by stating that in the Red Dog

Mine case, despite the potential for environmental orientation playing a role, other factors such as employment, revenue sharing, and decision-making participation led to strong local support for the mine. Another dimension to the issue was added by Stephen and Robinson (2021), who state that community perceptions may differ drastically depending on socioeconomic status. They note that the perceived benefit may be a more weighted factor than environmental concerns in poorer areas.

Another perspective from which I can examine the issue is that not every community member can benefit from the company. Lyytimäki and Peltonen (2016) made a good remark by stating how some local community members were more active and vocal than others because of the absence of benefits for these particular groups, e.g., cottage owners. A contrary view on the matter was proposed by Prno and Slocombe (2014), that effectively shows that broader sustainability concerns, e.g., environmental degradation, can delegitimize the SLO, ultimately leading to the company halting their operations. However, as they note, a specific period would be required for the costs to outweigh the benefits. That can be the case for some Kazakhstani cities because most of the industrial infrastructure is a Soviet legacy, indicating that it is probable that this effect would be taking place.

Overall, these two moderators are thus expected to shape the relevance or irrelevance of environmental orientation when people evaluate legitimacy of the facility.

Overall, these two moderators are thus expected to shape the relevance or irrelevance of environmental orientation when people evaluate legitimacy of the facility.

*H3: Trust in company intentions and perceptions of institutional fairness are associated with the SLO granting, whilst controlling for other potential factors.*

As outlined in the sections above, trust and fairness can be crucial for any company to secure SLO successfully. Hurst et al. (2020) explicitly identify procedural fairness and trust as the core predictors of SLO. By fairness, they imply "being listened to, respected, and having a meaningful voice in decision-making." Accordingly, transparent communication, which can also be identified as one of the aspects of fairness, seems to have a mediating effect, even when environmental concerns are present (Hall 2014). At the same time, Prno and Slocombe (2014) define those as 'building blocks' of SLO, which impact the SLO outcomes. Lastly, we should also perceive these factors' role in safeguarding the company in the case of a backlash, an idea that was deeply explored by Zhao et al. (2022). Perceived fairness and legitimacy seem vital for environmental concerns being prevented from transforming into strong opposition from the community.

## Chapter 3. Research Design and Methods

This thesis investigates the role of environmental orientation as a determinant of SLO in Kazakhstan's industrial context. The research and empirical investigation are grounded in a multivariable theoretical model that integrates contractarianism, stakeholder theory, and the environmental governance literature. These perspectives offer a foundation for the hypotheses created and a coherent framework to understand how community-level perceptions of environmental impacts, institutional fairness, and trust shape public acceptance of industrial operations.

This study's main empirical focal point is Oskemen city, a historically industrialized city in eastern Kazakhstan that continues to host primary metallurgical and extractive operations. The choice of Oskemen allows for a robust exploration of environmental legitimacy in a post-Soviet setting characterized by legacy pollution, centralized industrial power, and an emerging civil society. To investigate the role of the environmental orientation in the SLO decision-making process, the study applies a cross-sectional survey design and a quantitative analysis to the case of Oskemen city.

While SLO is inherently a dynamic and continuous process, this thesis uses a cross-sectional survey design due to practical and temporal constraints. This approach aligns with a number of prior studies (Jijelava and Vanclay 2018; Hurst et al. 2020) that have used single-time-point attitudinal measures to assess the perceived legitimacy of industrial activity. Although this design is not suited to capture the temporal fluctuations it provides insights into current patterns of support and opposition within the community. Moreover, the constructs measured are

relatively stable over short periods and can offer a meaningful snapshot of community attitudes at the time of data collection.

The study is organized around three key hypotheses articulated in the section above. H1 tests the direct relationship between environmental orientation and SLO granting. In comparison, H2 examines how the relationship is moderated by proximity to industrial activity and perceived benefit from the facility. Last, H3 evaluates whether this association is influenced and precisely mediated by respondents' trust in corporate actors and perceptions of distributive and procedural fairness. The hypotheses are grounded in international SLO literature, but I apply them to the specific context of Kazakhstan, precisely Oskemen. While the key variables have been widely studied in industrial contexts, mining specifically, across Latin America, Canada, etc., no empirical work has yet examined how these factors can shape public support for industrial operations in Kazakhstani cities. Chosen variables were selected mainly because of their prominence in global literature and their contextual relevance to Kazakhstan's industrial cities, where environmental degradation coexists with material reliance on facilities. The general strategy uses psychometric scale construction, logistic regression modeling, and causal mediation analysis to test the hypotheses empirically.

### *3.1. Case Selection: Oskemen City*

The city of Oskemen (previously known as Ust-Kamenogorsk) presents a prototypical case for studying industrial legitimacy in a post-Soviet, resource-dependent economy. The context of this case shows its importance for this study in particular. It has high environmental salience, with a legacy of centralized industrial planning and limited participatory governance.

The level of industrialization exceeds that of most cities in Kazakhstan, and the pollution levels in present times often exceed the normative levels. Nonetheless, the city remains economically dependent on the industrial base built during Soviet-era times, which may create a tension between material livelihood and ecological risks that are vital to the concept of SLO.

To reinforce the rationale, it can be said that the Oskemen's characteristics qualify it as a "critical case", a concept coined by Flyvbjerg (2006), which essentially shows a "most likely" case, that has the most possibility to reveal whether a theory applies under demanding or extreme conditions. Additionally, Yin (2014) notes that single-case studies are scientifically valid when they involve representative cases, i.e., criteria that Oskemen meets given that it's one of Kazakhstan's most industrialized and polluted cities. While this does not make the study statistically generalizable to other cities or regions, it has a potential to inform future comparative studies of environmental legitimacy in other post-Soviet or resource-dependent contexts.

We select two enterprises for detailed reference in the survey instrument, mainly due to their prominence within the city's dynamics:

1. KazZinc, a non-ferrous metallurgical enterprise, operates under foreign ownership (Glencore Group) and has received persistent criticism for its environmental practices. Despite its economic relevance, its community relations and ecological transparency have been evaluated poorly. According to the ESGQ Rating Agency, the KazZinc facility, had very limited information on its official website, and does not display compliance to any of ESG goals, thus creating an impression of a facility that should have lower SLO. ESG score of 5/22. (ESGQ 2025)

2. Ulba Metallurgical Plant (UMP) is a partially state-owned enterprise that processes uranium and beryllium and holds military-industrial and civilian significance. While perceived as an environmental risk, it was reported to have better engagement practices and relatively improved ESG credentials. The official website has detailed reports on community support and compliance with the ESG goals. ESG score: 11.5/22. (ESGQ 2025)

These cases represent not only sectoral contrast but also divergent community reputations. Additionally, implications might follow in the form of further exploration of variance in SLO attitudes within a single setting.

The choice of case for this research – Oskemen city, can also explain how the variables situated in the literature review are relevant for this case in particular. Environmental concern reflects the city's chronic air and water quality issues; perceived benefit accounts for local reliance on factory-based employment and infrastructure; proximity captures the variation in exposure to industrial activity across the city; and trust and fairness address the relational and procedural dimensions of legitimacy, which are particularly crucial in contexts with weak public involvement.

### *3.2. Operationalization and Measurement*

The questionnaire was designed to translate theoretical constructs into measurable variables. Questions were inspired, informed, and adapted from works of Xu et al. (2023) and Si et al. (2022) for respective measurement of the approval level and environmental orientation level. In addition, a pilot test was conducted with a smaller N, which effectively showed the

flaws of the first survey version, leading to the creation of the latest version. The perceptions were recorded using Likert-type scales where appropriate, and indices were constructed to capture complex attitudinal structures. A careful explanation of how each variable is related to each variable would be provided below, as well as the explanation for variables' details.

First hypothesis (H1) investigates if those who have more environmental orientation are less inclined to provide a SLO. Environmental knowledge, environmental values, and environmental concern form the key predictors for this hypothesis.

The second hypothesis (H2) looks at whether two contextual elements—perceived benefit and proximity to the facility—moderate the link between environmental orientation and SLO granting. These find place as interaction model moderators.

Original intended as mediators, hypothesis 3 (H3) looks at whether trust and perceived fairness act as explanatory processes for SLO decisions. Although modest direct effects prevented mediation from being sought, these two variables remained as major predictors.

To help to explain variance in replies, extra demographic factors including age, gender, and educational level are provided as controls. Every variable is quantified using either single- or multi-item indices, as will be shown below.

*Table 3. Variables Codification*

| **Conceptual Variable** | **Short Description** |
|---|---|
| Environmental Concern | General worry about environmental issues and concerns over specific types of pollution |
| Environmental Knowledge | Awareness of how the facility affects the environment |
| Environmental Values | Belief in the normative importance of protecting the environment |
| Perceived Benefit | Perceived economic/social benefit from the facility |
| Proximity to Facility | Distance from the facility (ordinal) |
| SLO Granting | Whether the individual supports the SLO |
| Trust and Fairness | Trust in company and perceived fairness |

Table 3 provides a summary of the key variables used in the empirical analysis, including their short description and clarifications about measurement when necessary. But while multiple factors shape the granting of SLO, this study mainly focuses on the role of environmental orientation. The following section would thoroughly explain how each variable was assessed in the scope of this thesis.

*3.2.1. Dependent Variable: Granting SLO*

The dependent variable in this study – SLO Granting – is a binary indicator derived from a direct item asking respondents whether they support the continued operation of a specific enterprise in their city (1 = yes, 0 = no). The question was formulated as follows: *"If my decision would be final in deciding whether this facility should or should not stay in my community I would a) Allow it to stay in my community b) Prohibit it from staying in my community"*. This was done specifically to get a definite answer from the respondents.

*3.2.2. Independent Variables: Environmental Orientation*

The core independent variables asses how environmentally oriented the respondent is. As explained in Section 2.6, these three dimensions form the broader construct of environmental orientation, which is treated here as disaggregated for analytical clarity into : environmental concern, environmental knowledge, and environmental values.

Environmental Concern (a constituent IV) was operationalized as a composite of five cognition indicators and one general concern question for cross-reference and internal reliability (Si et al. 2022). The cognition indicators were measured on a 5-point Likert scale from -2 to 2, indicating different levels of concern over a particular issue. The questions were framed as follows:

*"On the scale from -2 to 2, please indicate how strongly you agree with the following statements. I am concerned about the air problem in my place of residence"* (Environmental Concern Variable #1)

Other questions assessed the concern for local water, soil quality, noise pollution, and greening of residential areas.

Environmental Knowledge (a constituent of IV) was operationalized as a composite of three items that measured participants' awareness of the sources of pollution and how it is related to environmental protection. Additionally, survey looks for understanding of the general links between the environment and other key aspects of human lives, such as, economics, society, and health. Similarly, the indicators were measured using a 5-point Likert scale. The questions were framed similarly to the environmental concern questions.

Environmental Values (a constituent of IV) captured the prioritization of the respondents, mainly looking at how strongly the respondents agreed to the statements, as such:

*"I think everyone should participate in protecting the environment"* (Environmental Values Variable #1)

The items probed the value orientations by assessing how strongly they feel that the environment should be protected.

The reason why it was divided into three instead of one single environmental orientation variable, is that in creating a model for this relationship, it would have been more meaningful to divide those, since each of them consists of multiple questions. While these questions are tangent to each other, they are not the same. Another reason was not to overcomplicate the process of computing, because uniting an overall of 11 questions as single variable may have impacted the

results negatively. Since checking for internal reliability and construct validity would require correlation of 11 variables, which can be plausible, but best done on a larger-scale data.

*3.2.3 Moderators, Mediators, and Controls*

These are put in a different section because of their role in the models and the primary aim of this research. These can act mostly as moderators, mediators of the effect, or control variables. Because the primary interest of this thesis is the impact of the environment, and while some scholars do argue for the importance of these concepts, for the purpose of this thesis it was decided to put them in this category of the variables.

SLO Attitudes are a 9-item index reflecting cognitive and affective dimensions of SLO, including trust in the company, perception of fairness, sense of inclusion in decision-making, and symbolic legitimacy. To measure those, a 5-point Likert scale was used with a key focus on the agreement or disagreement with the statements that were framed as follows:

- *"I, as a representative of the community, believe that the facility would be a positive direction for the future"* (SLO Attitudes Variable #1)

The second part of the question changes depending on the item.

Perceived Benefit measured respondents' evaluation of whether their household or community gains from the presence of a facility, including how content they are with its impact on the local economy and community. In the scope of this study, it was included both as a control and a theoretically grounded moderator. In general, the concept refers to the respondent's evaluation of the tangible and intangible gains their household or community derives from the facility's presence. These may include economic security, infrastructure, and symbolic value. In the existing literature perceived benefit was primarily viewed as a determinant of instrumental

legitimacy (Prno and Slocombe 2014; Cesar 2019); and as a factor that can override or moderate the influence of normative concerns, including environmental risks (Hall 2014; Stephen and Robinson 2021). Precisely, for this study the variable operationalized as a composite of two items that asked respondents how satisfied they are with the facility's contribution to the local economy and broader community. The responses were recorded on a 10-point Likert scale measuring the intensity of their agreement with the statement.

Proximity was recorded on an ordinal scale: 1 meaning very close to 4 meaning very far. And was based on self-reported distance from the facility. This is used as a control and a moderator in the interaction models. The framing of the question entails that the measurement does not measure the literal distance from the facility but how much it appears in their lives. The options to choose from for an answer are using words as "vicinity", "same city, but not close", "different city, but often visit it," etc. In this way, the survey ensures that it measures actual proximity to the facility because the area of the city is quite large, and some districts are located in areas with cleaner environmental conditions.

The larger indices are defined as constructs, and each one is matched to a theoretical role within the hypotheses' structure and evaluated for distributional properties and multicollinearity before analysis.

To test whether these variables measure the proposed constructs, I conduct Exploratory Factor Analysis (EFA) and measure the Cronbach's Alpha value for each of the construct. EFA provides empirical validation that these constructs are not an average of several items, but a coherent construct with an underlying factor structure, it also provides the justification for the validity of the construct. On the other hand, Cronbach's Alpha measures the internal consistency,

and provides meaning and rationale for using them as a single variable, instead of several variables. It is crucial to ensure that, because the constructs that I aim to dissect are not directly observable, whereas these tests confirm whether they behave as variables with similar structure (Hair et al. 2021).

#### *3.2.4. Open-Ended Reflections*

Along with the structured survey questions, the questionnaire featured an open-ended question that asked participants to describe what in particular they know of the facility's activities for the city and the community. The question specifically wanted to gather additional insights to enhance quantitative data. Respondents are able to answer the question only if they indicate that they enjoy what facility does for the community.

Thematic analysis of the responses identified recurring trends, including emphasis on economic benefits, concerns regarding environmental harm, and divergent views on the facility. This qualitative component facilitated the contextualization and interpretation of the data results, particularly regarding the perception and articulation of advantages and hazards.

### *3.3. Data Collection and Sampling*

Survey data were collected in April 2025, and the questionnaires were distributed online. The sample was constructed using a waterfall sampling strategy. The method was considered the best available for this particular case, as it was an iterative process that was first distributed through the author's professional and social networks, subsequently and naturally expanding from the initial respondents further. The method allows for organic diffusion, that is, social network-based expansion of survey reach, via cascade sharing across friend, family, and

colleague ties. Resembling a snowball sampling, but maintaining semi-structured distribution channels which were initiated by researcher.

This sampling method is also known for its flexibility and adaptability in non-randomized urban settings. It can facilitate an efficient outreach, especially toward demographically and geographically diverse subgroups within society. Although the approach is non-probabilistic, it can maximize heterogeneity across the key demographic variables, because I tried dispersing it among different demographic subgroups and channels.

Survey recruitment relied exclusively on further distribution after initial contacts. The initial contacts were encouraged to share the survey link within their networks, creating a cascade effect consistent with a waterfall sampling strategy.

The survey was administered through a secure online platform (Qualtrics) and made available in Kazakh, Russian, and English for the respondents' convenience. Additionally, participants were informed about the survey's voluntary nature and provided digital consent before beginning the questionnaire.

The original dataset included 128 observations. After removing invalid entries, such as entirely incomplete forms, refusal to answer the SLO question, and other reasons, the final sample size was reduced to 118 respondents. The sample was deemed sufficient for exploratory regression modeling, including interaction and mediation. Table 4 shows the demographic statistics for the sample. As it can be seen from the table there are several issues with the sample that may jeopardize the results of the research. The sample is heavily concentrated around 35-54 age span group. With very few participants from a younger and older demographics. Essentially, it shows that the younger and older perspectives are underrepresented in the sample, that implies

the results of the moderation by age should be interpreted cautiously. Similarly, most of the population is concentrated on the undergraduate and graduate and above levels of education. The sample may not represent the majority of the community. Whereas gender is approximately represented equally.

One of the problems that I encountered during the data collection, which then led to the missingness in the results, is the limited attention span of the respondents. Since I was limited in the temporal and financial aspects, the survey was not administered by me directly. This, in combination, with the lengthiness of the survey design may have contributed to the missingness in the results, further reiterated as sample attritition.

It is crucial to note that these demographics are likely to have more stable employment, higher environmental literacy, and better access to digital surveys, which may influence their attitudes toward SLO. Thus, the generalization of findings beyond this demographic group should not be done at all, especially it comes to assuming that these results reflect the attitudes of the broader Oskemen population.

*Table 4. Distribution of Demographic Variables Across the Sample*

Panel A: Age × Gender Distribution

| Age group | Female | Male | NA | Prefer not to say | Total |
|---|---|---|---|---|---|
| 18-24 | 2 | 0 | 0 | 0 | 2 |
| 25-34 | 8 | 5 | 0 | 0 | 13 |
| 35-44 | 24 | 32 | 1 | 0 | 57 |
| 45-54 | 12 | 17 | 0 | 1 | 30 |
| 55-64 | 5 | 0 | 0 | 0 | 5 |
| 65+ | 4 | 1 | 0 | 0 | 5 |

Panel B: Education

| Education level | N | Percentage (%) |
|---|---|---|
| High school | 3 | 2.68 |
| Junior college | 7 | 6.25 |
| Undergraduate | 80 | 71.43 |
| Graduate and above | 21 | 18.75 |
| | 1 | 0.89 |

Panel C: Facility Distribution

| Facility | N | Percentage (%) |
|---|---|---|
| KazZinc | 57 | 50.89 |
| UMP | 55 | 49.11 |

Although the initial sample did have 128 participants on each stage of regression the full data suitable for regression analysis was reduced. Attrition was mainly due to incomplete responses, or participants failing to finish the survey. It may have happened because the survey is self-administered, and digital, which may fail to capture the attitudes of those who lack access to internet, and are unfamiliar with technology in general.

### *3.4. Analytical Strategy*

This study aims to understand what can influence people's decision to support or withhold an SLO. To do so, I used a statistical method called logistic regression. That approach allows us to estimate the probability that someone supports SLO based on their environmental orientation, demographics, and perceptions of benefit, trust, and fairness. For this analysis, I used R Studio (v. 4.3.1).

The outcome (DV) was whether the respondent supports granting SLO (1 = yes, 0 = no). The main factors that I examined (predictor variables) were environmental concern, environmental knowledge, and environmental values, i.e., environmental orientation level. Rather than treating environmental orientation as a single index, its three components were modeled separately to reduce construct conflation. Each dimension was independently validated through factor analysis and internal reliability testing. Providing us with justification, both empirical and conceptual, for their separate inclusion. In addition, I included demographic variables like age, gender, and education, as well as proximity to the facility and perceived benefit from it.

To assess the moderation effect (H2), interaction terms were created between environmental orientation and perceived benefit, and between environmental orientation and proximity. These terms combine two variables to check whether one modifies the impact of the other. Then, a logistic regression was employed using these interaction terms.

In exploring Hypothesis 3, I initially contemplated conducting a formal mediation analysis utilizing the causal mediation framework proposed by Imai et al. (2010), which was executed through the mediation package, to see if trust and fairness explained how environmental orientation level affects SLO. Given the lack of a substantial direct influence of

environmental concern on the granting of a SLO, I chose to focus on modeling trust and perceived fairness as direct factors influencing SLO granting. The two variables were obtained from validated subcomponents of the SLO Attitudes Index and are understood as indicators of institutional legitimacy. This alternative approach resonates with recent critiques regarding the over-extension of causal mediation in observational settings characterized by weak identification.

An additional effort was put to ensure internal consistency and structural validity of all index-based variables, through Cronbach's Alpha and Exploratory Factor Analysis, which help to ensure that composite indicators (environmental orientation components) reliably reflect latent constructs.

To make sure that the models are valid I ran several diagnostic checks, firstly I checked for multicollinearity using Variance Inflation Factor (VIF). Because a high degree of similarity between the variables can distort results. Effectively all values are below 2, which is acceptable. The Hosmer-Lemeshow test assessed how well the model fits the data, in other words how much it can explain the changes in the data. In addition, I also checked for unusual residuals, that could bias the results.

Overall, the choice of logistic regression was the best for this situation, because it can predict binary outcomes, like existence or non-existence of support, much better. Despite the limited sample size, which was reduced even more due to missing values, logistic regression allows for interpretable coefficients and a parsimonious estimation (a one that uses relatively few variables to obtain a good fit to the data). This method was deemed appropriate also because the study aims to explore and needs to identify directional relationships rather than to make

population-level predictions. Regression analyses were conducted on a reduced number of cases (52 and 45) due to some internal inconsistencies, such as missing values for predictors or outcomes.

While there are alternatives the current analytical strategy effectively balances rigor, interpretability, and suitability for both dataset and hypothesis's structure. It allows for transparent hypothesis testing while aligning with theoretical expectations and data limitations.

In the next chapter, I present the empirical results and assess the statistical support for each hypothesis to interpret further the general implications for environmental governance and SLO for Kazakhstan's industrial sector.

# Chapter 4. Findings

This chapter presents the statistical analyses and qualitative observations' results. First, we evaluate the quality of the measuring tools. Before testing the hypotheses, one must first ensure that the basic constructions—environmental concern, knowledge, values, trust, justice, and benefit—are internally consistent and empirically valid.

I thus begin with structural validity using Cronbach's Alpha and internal consistency tests based on exploratory factor analysis (EFA). These investigations provide a foundation for knowledge of regression models since they ensure that the components of each index reflect a coherent and consistent dimension.

Once this is verified, using logistic regression with models of mediation and moderation, the chapter tests each hypothesis one after the next. The chapter closes with thematic concepts developed from open-ended remarks about the purpose of the amenities in the local communities.

## *4.1. Exploratory Factor Analysis*

I checked the validity and statistical dependability of the scales used to gauge important variables before testing the hypotheses.

Internal consistency—that is, how truthfully the items in a scale measure the same underlying concept—was evaluated using Cronbach's Alpha. $\alpha > 0.70$ is a generally agreed threshold whereby the elements are sufficiently linked to be regarded as a single index (Hair et al., 2014). The indices all exceeded this barrier, meaning that the survey items covering

environmental concern, values, knowledge, trust, justice, and perceived benefit are internally compatible.

I also tested structural validity by means of an exploratory factor analysis (EFA). EFA supports the confirmation of whether the several objects meant to quantify a construct—such as "environmental values"—actually cluster as expected. Standard methods for spotting underlying factor structures, this study applied Principal Axis Factoring and Varimax rotation.

Every set of elements loaded strongly on a single latent factor, according the EFA results. This helps to justify using these scales as composite variables. All above reasonable levels for social scientific research, the percentage of variance explained ranged from 57.3% (Environmental Knowledge) to 70.1% (Perceived Benefit).

Table 5 shows for every build the complete EFA loadings and Cronbach's Alpha ratings.

*Table 5. The Results of EFA and Cronbach's Alpha*

| **Construct** | **Item** | **PA1 Loading** | **Cronbach's Alpha** | **SS Loadings** | **Proportion Var.** |
|---|---|---|---|---|---|
| Environmental Concern | | | 0.86 | 3.188 | 0.638 |
| | Environmental concern over air pollution | 0.801 | | | |
| | Environmental concern over water pollution | 0.969 | | | |
| | Environmental concern over soil pollution | 0.815 | | | |
| | Environmental concern over noise pollution | 0.609 | | | |
| | Environmental concern over greening in residential areas | 0.757 | | | |
| Environmental Knowledge | | | 0.878 | 1.719 | 0.573 |
| | Environmental knowledge about the environmental protection | 0.6 | | | |
| | Environmental knowledge about the relationship between the environment and economics | 0.779 | | | |
| | Environmental knowledge about the relationship between the environment and health | 0.867 | | | |
| Environmental Values | | | 0.899 | 2.407 | 0.602 |
| | Environmental values about protection of the environment | 0.869 | | | |
| | Environmental values about how strongly environmental damage resonates within the respondent | 0.711 | | | |
| | Environmental values about the protection of the environment, and consequences of not protecting it | 0.742 | | | |
| | Environmental values about the future of the environment and its importance for mankind | 0.772 | | | |
| SLO Attitudes Index | | | 0.943 | 5.919 | 0.658 |
| | Facility being a positive direction for the future | 0.817 | | | |
| | Facility's management being transparent about potential impacts | 0.675 | | | |
| | Status of a relationship with the facility | 0.728 | | | |
| | Similarity of a vision of future | 0.871 | | | |
| | Facility being more beneficial than harmful | 0.852 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Facility belonging to the region | 0.919 | | | |
| | Facility is part of the regional economy | 0.786 | | | |
| | Facility is necessary for achieving regional goals | 0.753 | | | |
| | Expected fair treatment from the facility | 0.869 | | | |
| Perceived Benefit | | | 0.77 | 1.402 | 0.701 |
| | Respondent likes what facility is doing for the local economy | 0.837 | | | |
| | Respondent likes what facility is doing for the community | 0.837 | | | |

*4.2. Effect of Environmental Orientation on SLO Granting (H1)*

To evaluate whether the environmental concern, knowledge, and values influence the likelihood of granting an SLO, I estimate a multivariate logistic regression model. The model included indices for environmental concern, environmental knowledge, and environmental values as predictors, alongside age, gender, education, proximity to the facility, and perceived benefit as control variables.

The results indicate that neither of the environmental orientation variables were statistically significant predictors of SLO granting: environmental concern ($p = 0.277$), environmental knowledge ($p = 0.353$), and environmental values ($p = 0.440$) did not independently predict the likelihood of granting SLO. However, perceived benefit emerged as a significant predictor ($p = 0.039$), which effectively suggests that, controlling for all other variables in the model, individuals who perceived greater benefit from the facility were more likely to grant the SLO. Below is the Table 6, for the full results of the regression.

*Table 6. Logistic Regression Results: Environmental Orientation and Predictors of SLO Granting*

| | *Dependent variable:* |
|---|---|
| | Granting SLO (1 = Yes) |
| Environmental Concern | 0.365 (-0.293, 1.024) |
| Environmental Knowledge | -0.625 (-1.942, 0.693) |
| Environmental Values | 0.453 (-0.698, 1.605) |
| Age | -0.247 (-0.861, 0.366) |
| Gender | -1.000 (-2.271, 0.270) |
| Education | -0.325 (-1.438, 0.787) |
| Proximity | -0.621 (-1.537, 0.294) |
| Perceived Benefit | 0.270** (0.014, 0.525) |
| Constant | 3.461 (-2.242, 9.164) |
| Observations | 52 |
| Log Likelihood | -30.078 |
| Akaike Inf. Crit. | 78.156 |
| *Note:* | *p<0.1; **p<0.05; ***p<0.01 |

These results show that Hypothesis 1 is not supported by the data. None of the environmental orientation variables were statistically significant predictors of SLO granting. This suggests that environmental orientation, at least in this context, cannot determine whether the individuals would grant SLO to the facility.

### *4.3. Moderation by Perceived Benefit and Proximity (H2)*

In order to evaluate the potential moderation of the relationship between environmental concern and SLO granting by perceived benefit and proximity, I estimated two interaction models. The initial model explored how environmental concern interacts with perceived benefits (see Table 7), whereas the subsequent model investigated the potential interactions between various dimensions of environmental orientation—such as concern, knowledge, and values—and

proximity to the facility (refer to Table 8). Both models took into account factors such as age, gender, education, and other relevant environmental indices.

In the model examining Environmental Concern and Perceived Benefit, the interaction term did not reach statistical significance ($p = 0.364$), and neither did the main effects of concern or perceived benefit. Gender appeared as a significant negative predictor on $p < 0.10$, indicating that there may be differences between men and women in their likelihood of granting SLO. Nonetheless, it is important to approach this result with caution, considering the broad confidence intervals and the restricted sample size.

*Table 7. Logistic Regression: Environmental Concern × Perceived Benefit*

| | *Dependent variable:* |
|---|---|
| | Granting SLO (1 = Yes) |
| Environmental Concern | -0.254 (-1.717, 1.208) |
| Perceived Benefit | -0.085 (-0.873, 0.702) |
| Age | -0.270 (-0.909, 0.368) |
| Gender | -1.144* (-2.476, 0.189) |
| Education | -0.305 (-1.442, 0.833) |
| Environmental Knowledge | -0.446 (-1.805, 0.912) |
| Environmental Values | 0.405 (-0.770, 1.580) |
| Proximity (SLODist) | -0.651 (-1.600, 0.297) |
| Concern × Benefit | 0.100 (-0.115, 0.315) |
| Constant | 5.388 (-1.740, 12.516) |
| Observations | 52 |
| Log Likelihood | -29.656 |
| Akaike Inf. Crit. | 79.313 |
| *Note:* | *p<0.1; **p<0.05; ***p<0.01 |

The Environmental Orientation × Proximity model did not reveal any statistically significant interaction terms. The interaction between environmental values and proximity was close to being significant ($p = 0.107$). This indicates a potential trend where individuals who hold

strong environmental values may exhibit heightened sensitivity to spatial proximity in their judgments regarding SLO. Nevertheless, this trend does not meet the established thresholds of conventional significance. The perceived benefit once again appeared as a statistically significant positive predictor ($p = 0.022$), supporting previous findings that individuals who recognize advantages from the facility are more inclined to grant SLO. In this model, gender approached statistical significance at 10% level ($p < 0.10$), whereas all other covariates did not reach significance.

*Table 8. Logistic Regression: Environmental Orientation × Proximity*

| | *Dependent variable:* |
|---|---|
| | Granting SLO (1 = Yes) |
| Environmental Concern | 1.338 (-1.201, 3.876) |
| Proximity | -3.547 (-9.866, 2.772) |
| Environmental Knowledge | -0.211 (-4.058, 3.636) |
| Environmental Values | -1.725 (-4.752, 1.301) |
| Age | -0.361 (-1.036, 0.314) |
| Gender | -1.304* (-2.722, 0.114) |
| Education | -0.420 (-1.640, 0.800) |
| Perceived Benefit | 0.338** (0.048, 0.627) |
| Concern × Proximity | -0.407 (-1.387, 0.574) |
| Knowledge × Proximity | -0.284 (-2.122, 1.554) |
| Values × Proximity | 1.271 (-0.276, 2.817) |
| Constant | 8.562 (-3.717, 20.841) |
| Observations | 52 |
| Log Likelihood | -27.817 |
| Akaike Inf. Crit. | 79.634 |
| *Note:* | *p<0.1; **p<0.05; ***p<0.01 |

The findings from the models indicate that there is no significant support for Hypothesis 2. The anticipated moderation effects did not achieve statistical significance, yet it is possible that proximity could have a small influence on the impact of environmental values. The results

highlight how instrumental factors, especially the perceived benefits, play a crucial role in influencing public acceptance.

### *4.4. The Impact of Trust and Perceived Fairness*

Third hypothesis suggested that institutional legitimacy elements—more especially, confidence in the corporation and perceived fairness of its activities—would buffer the association between environmental orientation and SLO granting. But as the past models showed, environmental orientation did not much influence SLO granting, implying that a formal mediation mechanism was not supported. In response, with environmental orientation components' values, demographic and contextual factors, trust and justice were explicitly incorporated directly as predictors in a multivariate logistic regression model.

Even with all other factors considered, the results (Table 9) show that perceived fairness was a statistically significant predictor of SLO granting (b = 1.587, 95% CI [0.216, 2.957]). Trust shown a positive but non-significant correlation with SLO. Crucially, environmental concern stayed non-significant in this enlarged model implying that institutional trust channels its effect neither directly nor substantially. Table 9 below represents complete results of the regression.

*Table 9. Logistic Regression: Trust, Fairness, and Environmental Orientation as Predictors of SLO Granting*

| | *Dependent variable:* |
|---|---|
| | Granting SLO (1 = Yes) |
| Trust | 0.197 (-1.133, 1.527) |
| Perceived Fairness | 1.587** (0.216, 2.957) |
| Environmental Knowledge | -0.715 (-2.533, 1.103) |
| Environmental Values | 0.389 (-1.173, 1.950) |
| Environmental Concern | 0.130 (-0.863, 1.124) |
| Age | 0.240 (-0.695, 1.175) |
| Gender | -2.314** (-4.496, -0.133) |
| Education | -0.189 (-2.254, 1.876) |
| Proximity (SLODist) | -0.775 (-2.112, 0.562) |
| Perceived Benefit | 0.099 (-0.265, 0.463) |
| Constant | 0.275 (-9.684, 10.234) |
| Observations | 45 |
| Log Likelihood | -17.005 |
| Akaike Inf. Crit. | 56.009 |
| *Note:* | *p<0.1; **p<0.05; ***p<0.01 |

This outcome supports a new view of H3: rather than acting as mediators, justice and trust serve as independent, more proximal predictors of legitimacy assessments. AIC = 56.01, which allows comparison with other models, though it does not indicate absolute model fit; gender once more proved to be a significant covariate (b = –2.314, 95% CI [–4.496, –0. 133), hence suggesting possible systematic variations in SLO evaluations between male and female respondents.

These results show generally the primacy of procedural legitimacy — specifically perceived fairness — over normative environmental orientation in forming public opinions of whether a corporation deserves a social license to exist. While H3 was not supported statistically, the observed patterns may suggest that fairness can have a direct, rather than mediating, effect.

However, there was no significance in the environmental orientation variables, thus leading us to a conclusion that fairness is rather a direct predictor than a mediator.

### *4.5. Qualitative Reflections: Perceived Contributions and Possible Tensions*

One of the questions in the survey questionnaire included an open-ended prompt asking respondents to describe what the facility is doing for the community — conditional on their earlier indication that they supported the facility's community engagement. A clear thematic contrast was observed between those who granted the SLO and those who withheld it.

*Table 10. Thematic Differences by SLO*

| **Theme** | **Grantors** | **Withholders** |
|---|---|---|
| Economic Benefits | Work provision, job creation, budgeting, pensions | Not emphasized |
| Community investment | Beautification, urban development | Sponsorships, youth programs, social events |
| Strategic ambiguity | Budget/pension benefits | "City financing" (undefined), public works |
| Risk perception | Absent | Present: nuclear byproducts, environmental threat |

Grantors of SLO commonly emphasized direct economic contributions, including job provision, pensions, and the facility's role in stabilizing the local economy. Community investments were often listed in tangible terms, such as urban beautification, infrastructure upgrades, and youth programs. Responses framed the facility as a source of material support and long-term security.

In contrast, SLO holders did not deny these contributions but framed them with caution. Several responses highlighted environmental risks—especially those associated with nuclear

byproducts—and expressed concern about long-term ecological safety. For these respondents, legitimacy was compromised by structural and reputational risks that outweighed the benefits.

These qualitative distinctions reinforce the pattern observed in the quantitative findings: Perceived benefit and attitudes toward the company influence SLO behavior, but concerns about risk and fairness complicate this relationship. Even when engagement is acknowledged, it does not guarantee legitimacy if more profound anxieties about environmental harm remain unresolved.

### *4.6. Summary of Findings*

Although none of the three hypotheses received formal statistical support, patterns in the data, in particular the consistent influence of perceived benefit, may allude to potential avenues for further exploration. As can be seen environmental orientation alone did not significantly predict SLO granting (H1), and neither proximity nor perceived benefit moderated this effect in a statistically robust way (H2). However, the perceived benefit consistently emerged as a significant independent predictor. The mediation analyses (H3) showed no significant indirect effects through either trust or perceived fairness. These findings may indicate that while environmental orientation's impact is relevant, perceived material gain may play a stronger role in shaping SLO decisions — especially when concerns about risk are unresolved.

Qualitative reflections from respondents further might reflect this pattern. SLO grantors and withholders recognized the company's contributions, but withholders anchored their responses in environmental risk and ambiguity, indicating that engagement without legitimacy is insufficient.

Overall, the results point to a complex interplay of perceived benefit, risk sensitivity, and trust in shaping the SLO in environmentally burdened contexts like Oskemen. However, the findings should be interpreted cautiously due to the sample size and case-specific nature of the data. While suggestive of patterns, they are not statistically definitive and require further testing in broader or more representative contexts.

# Chapter 5. Discussion

This chapter will interpret the empirical findings presented in the section above. The interpretation would be done in terms of the general framework of SLO and other literature that helps to explain environmental governance most understandably. While the hypotheses were not fully statistically supported, the results offer a degree of understanding of how individuals may navigate the trade-offs between environmental values, economic security, and institutional trust. The findings of this study may indicate that legitimacy is not granted based only on environmental orientation but stems from rather nuanced interactions of material interests, symbolic alignment, and perceived accountability. Through synthesizing quantitative patterns and qualitative narratives, this chapter repositions environmental orientation as a secondary driver, amplified or constrained by contextual and relational factors.

## *5.1. The Role of Environmental Orientation*

Contrary to expectations rooted in environmental psychology and stakeholder theory, environmental orientation components did not predict SLO granting, that is for the context of Oskemen. This may challenge the assumption that heightened environmental awareness leads to increased opposition to industrial operations within contexts like Oskemen, where economic reliance may complicate opposition. One interpretation is that “orientation”—as measured in general attitudinal terms—may lack the specificity or immediacy required to influence more materially or socially embedded decisions. This reflects broader critiques in the literature regarding the attitude-behavior gap, especially in contexts where trade-offs between economic survival and ecological risk are salient. In Oskemen, where industrial development underpins

local employment and infrastructure, even environmentally aware individuals may compartmentalize their concern or subordinate it to pragmatic considerations. The implication is that environmental orientation must be situated within a broader framework of lived experience and perceived opportunity costs rather than treated as a standalone variable.

### *5.2. The Importance of Perceived Benefits*

The major predictor of SLO granting, for Oskemen's citizens, was perceived benefit, underscoring the importance of instrumental legitimacy. This aligns with contractarian readings of social license, in which community support is transactional and dependent on real benefits. Residents who perceive the enterprise as providing jobs, pensions, infrastructure, or local development are more likely to approve—regardless of their broader attitudes toward environmental issues. Notably, the absence of a significant interaction between benefit and environmental orientation's components can indicate that, in cases such as Oskemen, these two dimensions operate independently rather than in conjunction with one another. That is, high benefits can motivate support even among those who are environmentally oriented, and low benefits may lead to withholding support even among the indifferent. This may indicate that perceived benefit can, in some cases such as Oskemen, override other considerations in practice, becoming the central axis around which legitimacy judgments are organized.

### *5.3. The Role of Proximity and the Ambiguity of Risk Perception*

Proximity was hypothesized as a moderator of environmental concern, assuming that physical closeness to the industrial facility in Oskemen would heighten risk perception and thus

amplify the effect on SLO. However, no significant moderation was found. Several interpretations are plausible. First, proximity may not have served as an effective proxy for exposure or risk salience, especially given the use of self-reported categories rather than geospatial data. Second, in a city like Oskemen, where heavy industry has long been normalized, proximity may signal habituation, dependency, or even identification with the facility. The symbolic and material familiarity with the industrial presence may dull the psychological distance needed for concern to transform into resistance. This may complicate simplistic assumptions about spatial logics of legitimacy and calls for more nuanced spatial and narrative understandings of risk experience.

### *5.4. Trust, Fairness, and the Boundaries of Mediation*

According to the mediation models, neither perceived fairness nor trust had any statistically significant indirect impacts in the case of Oskemen. This result encourages more in-depth consideration of the structure of legitimacy itself, even though it is disappointing given the theoretical emphasis on distributive and procedural legitimacy. One possibility is that trust and fairness are not channels through which environmental orientation operates but are end-products of benefit perception, historical engagement, or identity alignment. Another explanation lies in methodological constraints: limited sample size and potentially overlapping conceptual boundaries between predictors and mediators. Precisely, this refers to the potential overlap in content between predictors, for example environmental orientation components, and mediators (trust and fairness), especially since trust may partially reflect concern about company ethics or ecological risks. Such conceptual proximity can complicate formal mediation modeling.

Additionally, while trust and fairness are normatively valued, they are not decisive in contexts where existential economic concerns dominate. Nonetheless, their inclusion in the model remains valuable, as they reflect the broader evaluative terrain within SLO decisions—even if they do not statistically mediate the effect of environmental orientation.

### *5.5. Learning from Qualitative Notes*

The open-ended answers enhanced the study by exposing how citizens of Oskemen view and defend their support or rejection of the facility. SLO grantors stressed tangible contributions—employment, pensions, infrastructure—and sometimes presented the facility as a stabilizing or even patriotic force. Their stories moved forward and were pragmatic. In contrast, withholders recognized many of the same efforts but positioned them in a story of environmental risk and mistrust. A few specifically mentioned nuclear byproducts, long-term environmental hazards, or opaque decision-making. The groups vary not so much in their access to benefits but rather in their confidence in the management and sustainability of those benefits. This fits more recent conceptions of legitimacy that stress moral alignment and narrative consistency above crude cost-benefit calculations. The qualitative insights thus confirm that SLO, in particular for Oskemen, is a moral appraisal formed by values, memories, predicted futures, and a cognitive judgment.

### *5.6. Considerations for Policy and Industry*

For those in positions of policy-making and businesses functioning within environments that are both ecologically delicate and economically reliant, these findings underscore the

constraints of using material exchange to establish legitimacy. Providing benefits is essential, but it should go hand in hand with a genuine demonstration of long-term dedication, care for the environment, and active involvement in the community. In post-Soviet cities such as Oskemen, the interplay of historical memories rooted in industrial paternalism and present-day skepticism highlights the necessity for SLO to be cultivated through transparent, participatory, and narrative-driven engagement. Single sponsorships or promotional campaigns are unlikely to achieve lasting impact unless integrated into a wider shared governance framework and meaningful alignment.

### *5.7. Constraints and Suggestions for Upcoming Investigations*

This study faces several limitations that affect its interpretive power. The sample size was relatively small, especially for mediation analysis, and the cross-sectional design limits our ability to draw causal conclusions. Additionally, I should understand that the nature of the sample, cannot necessarily be random due to cascade sampling. While it can be used for achieving a spread of responses, it did not ensure demographic representativeness. The sample's concentration in middle-aged, educated groups most likely had its share in impacting the environmental orientation and perceptions of legitimacy. For that reason, future studies should consider quota-based or stratified random sampling to better capture age, education, and occupational diversity. Moreover, the proximity measurement relied on self-reporting, which constrained spatial data accuracy. Although the attitudinal scales demonstrated strong internal consistency, their one-dimensional structure might not have fully reflected the complexity of ambivalence or conditional responses. Future research has the potential to fill these gaps by

integrating geospatial analysis, employing longitudinal designs, and utilizing mixed-methods case studies. Furthermore, examining various industrial sites throughout Kazakhstan or other post-Soviet nations could provide valuable insights into the contextual and cultural boundaries of the effects observed.

### *5.8. Conclusion*

This chapter has interpreted the empirical findings in light of stakeholder theory, environmental psychology, and contractarian approaches to legitimacy. While environmental orientation, for the context of Oskemen, did not play the decisive role hypothesized, perceived benefit emerged as a powerful and consistent predictor of SLO. Similarly, while trust, fairness, and proximity are essential concepts, they did not show significant statistical effects. However, qualitative data indicates that these factors continue to play a meaningful role in narratives. The findings collectively propose a complex and negotiated understanding of SLO, highlighting how material benefits, symbolic connections, and risk perceptions influence legitimacy judgments. In that regard, symbolic connections refer to the sense of cultural, emotional, or historical attachment to the facility, for example seeing it as part of the city's identity. Which can be argued for, considering that Oskemen is primarily known for the heavy concentration of industries within the city's premises. Effectively, counterbalancing the perceived risk by pride or nostalgia. This can "modulate", or in other words, transform or soften, the way proximity or benefit influence citizens' judgments about legitimacy. Ultimately, instead of viewing support and opposition as a strict binary, SLO in this context can emerge as a complex and evolving landscape that encourages deeper exploration and more integrated engagement approaches.

### *5.9. Broader Implication and Future Research*

While this thesis is grounded in a single case, its structure provides a transferable framework for future research. Other regions in Kazakhstan or Central Asia, that are affected by extractive industries, can face similar tensions between environmental degradation and economic reliance. Applying this model to other cases would allow for comparative generalization and could inform national-level strategies for stakeholder engagement and environmental legitimacy. These findings may inform longitudinal or cross-regional studies that aim to assess how social approval for industrial activity can behave and change under different political, cultural, and ecological conditions.

## Chapter 6. Conclusion

This thesis aimed to assess if, in an urban environment plagued by pollution, environmental impact may be taken into account while deciding whether a SLO should be granted. Drawing on environmental governance literature, contractarian legitimacy models, and stakeholder theory, the study investigated three basic hypotheses using actual survey data from Oskemen, a post-Soviet industrial city noted by great pollution and strategic economic importance.

The data cast doubt on the presumption that SLO is driven mostly by environmental orientation by itself. Against predictions, knowledge, environmental concern, and values did not much influence whether people would give or deny the social license. Rather, the study again highlighted the major influence of perceived advantage as the main one explaining agent. Regardless of their environmental views, respondents who thought the company was contributing economically—by jobs, pensions, or infrastructure—were more likely to give SLO.

The second hypothesis investigated whether environmental orientation's effect changed depending on perceived benefit or proximity. Although proximity revealed some suggestive trends in modulating environmental orientation components' values, no statistically significant interactions were found. These results may possibly suggest that although not in a straight or consistent manner, lived experience and spatial proximity could affect legitimacy assessments. Crucially, perceived benefit once more showed to be a persistent predictor, therefore underlining the centrality of instrumental legitimacy for this particular context.

Originally written as a mediation test, the third hypothesis—which lacked a complete effect of environmental orientation—was rebuilt into a direct effects model. Here, trust exhibited

a positive but non-significant correlation while perceived justice turned out as a major independent predictor of SLO. These findings may imply that public approval is much shaped by procedural legitimacy, especially whether respondents feel they are handled fairly, rather than by environmental orientation alone.

These results taken together provide three important new perspectives. First of all, for a sample of Oskemen's citizens environmental orientation is not less important; but institutional and pragmatic factors may overwhelm its influence. Second, SLO results are more determined by material and procedural legitimacy—expressed as benefit and fairness—than by anything else. Third, legitimacy decisions are impacted by relational, economic, and cultural processes requiring more than surface-level participation; they are not only attitudinal.

This thesis adds to the expanding corpus of studies on SLO in non-Western, post-industrial settings. It emphasizes the need of businesses and legislators interacting with communities not only in terms of advantages but also in terms of justice, openness, and consistent trust building. In Kazakhstan and related environments, where environmental degradation and economic dependency co-exist, SLO is best seen as a negotiated, dynamic, changing social compact — not a fixed right.

The rather small sample size (n = 52 for full regression models) limits this work even with strong modeling approaches and theoretical basis. Although the data let a few important assumptions, the small respondent pool limits the generalizability of the results outside this particular situation. Especially, the overrepresentation of middle-aged and well-educated people in the sample could have influenced the SLO support and environmental orientation recorded here. To confirm the consistency of these correlations in more general or more heterogeneous

populations, more studies including bigger and more geographically representative samples is required. Even though these findings provide important new perspectives on the processes of SLO generation in the industrial environment of Kazakhstan and provide a basis for more broad research to expand upon, the conclusions should be interpreted in light of the study's sampling constraints. As mentioned above, the findings primarily reflect the attitudes of a middle-aged, educated subset of Oskemen's population and should not be generalized to other segments, such as youth, elderly, or rural residents. Hence, these results should be seen rather as indicative and exploratory, at the same time providing a foundation for future and larger-scale comparative research.

Furthermore, by extending the geographic and sectoral scope of the analysis, combining geospatial and longitudinal data, and assessing narrative or discursive conceptions of legitimacy, future study can build on these conclusions. By doing this, the empirical measurement and theoretical knowledge of what it means for businesses to be accepted by the communities they impact—as well as how that acceptance is gained, maintained, or withdrawn—would be refined.

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# Appendix

*Appendix A. Survey Questions*

| **R Studio Variable name** | **Question asked** | **Coded value (before the bracket) / Options** |
|---|---|---|
| DQ1 (Age) | How old are you? | 1) Younger than 18<br>2) 18 to 24<br>3) 25 to 34<br>4) 35 to 44<br>5) 45 to 54<br>6) 55 to 64<br>7) Older than 65 |
| DQ2 (Gender) | How do you describe yourself? | 1) Male<br>2) Female<br>3) Prefer not to say |
| DQ3 (Education) | What is the highest level of education that you received | 1) No education<br>2) High school<br>3) Junior college<br>4) Undergraduate<br>5) Graduate and above |
| KAZZINC | In the region that you're currently residing, there are several of these facilities, from now on consider that the questions are related to the KazZinc facility. Please click "Yes" below if you're willing to proceed further. | 1) Yes<br>0) No |
| UMP | In the region that you're currently residing, there are several of these facilities, from now on consider that the questions are related to the UMP facility. Please click "Yes" below if you're willing to proceed further. | 1) Yes<br>0) No |
| SLODist | How far do you reside from the extractive and refining facilities located in your region | 1) I live in close vicinity to the facility<br>2) I live in the same city in which facility is located, but not close to it<br>3) I live in a different city, but oftentimes visit it<br>4) I live in a different city, and rarely visit the city which has the facilities |
| SLOInteract_1 | On a scale of 0 to 10, please tell how strongly you agree with the following statements:<br>I interact with facility on a weekly basis | 0-10 Likert scale |
| SLOInteract_2 | On a scale of 0 to 10, please tell how strongly you agree with the following statements:<br>The facility impacts my lifestyle | 0-10 Likert scale |

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|---|---|---|
| SLOInteract_3 | On a scale of 0 to 10, please tell how strongly you agree with the following statements:<br>I like what facility is doing for the local economy | 0-10 Likert scale |
| SLOInteract_4 | On a scale of 0 to 10, please tell how strongly you agree with the following statements:<br>I like what facility is doing for the community | 0-10 Likert scale |
| SLOQ_1 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>The facility would be a positive direction for the future. | -2 to 2 |
| SLOQ_2 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>The facility's management will inform us about things that could affect our community. | -2 to 2 |
| SLOQ_3 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>Our relationship with the facility is good. | -2 to 2 |
| SLOQ_4 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>The management of the facility and our community have a similar vision for the future of this region. | -2 to 2 |
| SLOQ_5 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>The facility would bring more benefits than problems for us. | -2 to 2 |
| SLOQ_6 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>The facility should be in this region. | -2 to 2 |
| SLOQ_7 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>The facility is a valuable part of the regional economy. | -2 to 2 |
| SLOQ_8 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>Our community needs the facility in order to reach our region's goals. | -2 to 2 |

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|---|---|---|
| SLOQ_9 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. -2 depicting strong disagreement, 2 is strong agreement.<br>I, as a representative of the community, believe that...<br>The management of the facility will treat everyone fairly, in terms of employment opportunity, etc. | -2 to 2 |
| SLOQ_BIN | If my decision would be final in deciding whether this facility should or should not stay in my community I would | 1) Allow it to stay in my community<br>0) Prohibit it from staying in my community |
| ENVQ1 | In general, in what extend do you concern about the environmental issues, such as climate change, air pollution, biodiversity loss, etc.? | 1) Extremely concerned<br>2) Rather concerned<br>3) Rather not concerned<br>4) Not concerned at all |
| ENVQ2 | Which of the following statements applies to you (check all that apply)? | 1) I am personally affected by environmental issues<br>2) I have family and/or friends that are affected by environmental issues<br>3) I am aware that people in my region have been affected by environmental issues<br>4) I am aware of people in my country that have been affected by environmental issues<br>5) None of the above/I don't believe that environmental issues affect people in Kazakhstan |
| ENVQC_1 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. I am concerned about...<br>About the air problem in my place of residence | -2 to 2 |
| ENVQC_2 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. I am concerned about...<br>About the water quality in my place of residence | -2 to 2 |
| ENVQC_3 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. I am concerned about...<br>About the environmental problems of the soil in my place of residence. | -2 to 2 |
| ENVQC_4 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. I am concerned about...<br>About the noise problem in my place of residence | -2 to 2 |
| ENVQC_5 | On the scale from -2 to 2, please indicate how strongly you agree with the following statements. I am concerned about...<br>About the greening of residential areas | -2 to 2 |
| ENVQK_1 | Additionally, we would also like to know the following. Again, on a scale from -2 to 2, please indicate how strongly you agree with the following statements.<br>I understand many points related to environmental protection (such as that formaldehyde poses a threat to human health, | -2 to 2 |

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|---|---|---|
| | laundry detergent containing phosphorus will cause water pollution, the use of excessive chemical fertilizers will damage the environment, etc.). | |
| ENVQK_2 | Additionally, we would also like to know the following. Again, on a scale from -2 to 2, please indicate how strongly you agree with the following statements. I consider the relationship between the environment and the development of economics and society. | -2 to 2 |
| ENVQK_3 | Additionally, we would also like to know the following. Again, on a scale from -2 to 2, please indicate how strongly you agree with the following statements. I understand the relationship between environment and health | -2 to 2 |
| ENVQV_1 | Lastly, we would like to know the following as well: Again, on a scale from -2 to 2, please indicate how strongly you agree with the following statements. I think everyone should participate in protecting the environment. | -2 to 2 |
| ENVQV_2 | Lastly, we would like to know the following as well: Again, on a scale from -2 to 2, please indicate how strongly you agree with the following statements. I become angry when seeing reports about environmental damage. | -2 to 2 |
| ENVQV_3 | Lastly, we would like to know the following as well: Again, on a scale from -2 to 2, please indicate how strongly you agree with the following statements. If the environment is not protected, it will lead to an environmental disaster. | -2 to 2 |
| ENVQV_4 | Lastly, we would like to know the following as well: Again, on a scale from -2 to 2, please indicate how strongly you agree with the following statements. I feel very uneasy when you think of the high probability that our next generation will live in a poor living environment. | -2 to 2 |