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**Scarcity, Risk, and Choice: How Context Shapes
Environmental Decision-Making**

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Introduction

This thesis began with a personal curiosity: why do people who say they care about the environment often struggle to act in ways that align with those values? The more I thought about it, the more I realized that many of us are not simply choosing to ignore environmental problems—people are often simply overwhelmed. I became interested in the role that subjective scarcity plays in shaping behavior. Not just financial scarcity, but the feeling of not having enough—enough time, enough energy, enough attention to think beyond immediate needs. That mental state, I suspected, might make it harder for people to engage with something as complex and long-term as climate change.

I was not the first to notice that people's choices are shaped by pressure, but I wanted to dig deeper into how scarcity affects the way we see environmental risks. Does feeling stretched thin lead us to care less about distant or abstract issues? Or does it just change how we prioritize them? And can that be shifted by how we talk about environmental problems—by making them feel more immediate, personal, or emotionally relevant? These questions led me to the intersection of environmental psychology, behavioral economics, and decision science. I focused especially on how subjective scarcity might affect risk perception and pro-environmental behavior, and how things like message framing or emotional tone might influence responses. My goal wasn't just to map out a problem, but to propose a model that could theoretically explain why certain people, in certain contexts, respond to environmental risks in different ways—and how that knowledge could be used in practice. In the process, I hoped to move past simple explanations like “people just don't care” and instead consider how cognitive, emotional, and contextual factors interact in moments of environmental decision-making. Particularly, this thesis seeks to explore how various forms of scarcity influence environmental decision-making differently, and also how future orientation, psychological distance, as well as framing, can amplify or buffer these influences. Combining these approaches, the thesis aims to construct a richer understanding of when, and why, scarcity produces sustainable or unsustainable actions. This thesis explores those dynamics and builds toward a framework that connects scarcity, risk perception, and behavior. It is not about assigning blame for individuals' inaction, but about understanding the various psychological and contextual constraints that can limit engagement

with environmental issues—whether they stem from financial pressures, limited cognitive and emotional resources, competing demands on attention, or experiences of resource scarcity. These conditions shape how individuals perceive and prioritize environmental risks, especially when those risks feel distant or abstract. By examining how different forms of scarcity interact with risk perception, framing, psychological distance, and emotional processes, this thesis aims to contribute to a more nuanced understanding of environmental decision-making and explore potential directions for improving pro-environmental engagement under real-life barriers.

Theoretical Background

1.1 Defining Subjective Scarcity and Scarcity Mindset

Scarcity Theory

Scarcity theory, as outlined by Shafir and colleagues, suggests that time, money, or any other form of scarcity profoundly influences cognitive processing and decision making (Shah et al., 2015). Scarcity leads to hyperfocusing on immediate needs, though often at the cost of future planning and full consideration (Zhu et al., 2023). This hyperfocusing may result in "tunneling," with attention inappropriately targeted at immediate deficits to the detriment of other essential areas of life (Veer et al., 2024). This cognitive burden may decrease bandwidth, impairing executive function and creating suboptimal choices (Bruijn & Antonides, 2021).

Scarcity mindset promotes a unique worldview where individuals view their environment through the ever-present filter of shortage. It is not an adaptation to an immediate circumstance, but an ingrained mental model that influences the assessment of risk, decision making, and prioritization. Scarcity mindset individuals frequently have difficulty achieving long-term objectives, as their attention is constantly preoccupied with the urgency of immediate needs. This mindset can form a self-reinforcing feedback loop: the more one focuses on what is missing, the fewer internal resources—like time, attention, and energy—become available for actions that have the potential to improve the condition. Therefore, even when circumstances improve, lingering impacts of scarcity mindset can persist to negatively affect well-being.

This idea has significant relevance to environmental psychology, which concerns behavior and decision making that frequently involve long-term consideration and collective concern—both

cognitive mindsets that are often discouraged under conditions of scarcity. Environmental psychology is an interdisciplinary field which explores the impact of the physical environment on human behavior and well-being (APA, 2018). Environmental problems like climate change, loss of biodiversity, and contamination are diffuse, far away in terms of time, and not always immediately relevant to personal welfare. For individuals facing conditions of scarcity, these kinds of problems can get put on the back burner or are seen as too abstract to warrant attention, particularly when personal stability or immediate survival is in priority. Scarcity can, therefore, act as an impediment to considering environmental risks and taking pro-environmental behavior.

Subjective scarcity goes beyond financial constraints to other resources like time, food, and friends. It has been studied how scarcity in different areas influences behavior and cognition lead to prioritizing urgent tasks over important but non-urgent ones, while food scarcity can increase the reinforcing value of food, making individuals more likely to choose high-calorie options when resources are limited (Crandall & Temple, 2018). Scarcity in relationships can cause people to do everything they can just to make and maintain relationships, even going to extreme lengths like unethical behavior to gain relationships, at times (Yang et al., 2022).

Cognitive Consequences of Scarcity

The cognitive impacts of scarcity are profound and multi-dimensional, affecting thought and behavior in subtle yet meaningful ways. When people are under conditions of scarcity, attention becomes narrowed, inducing tunnel vision around immediate needs. This intensified attention often comes at the cost of other critical tasks and long-term aspirations, as the mind becomes engrossed with closing the immediate shortfalls (Shah et al., 2012). Limited resources may take great mental effort, inducing heavy cognitive bandwidth load, and hence cuts the scope of complicated decision-making, strategic thought, and self-regulation. Consequently, individuals under conditions of scarcity become risk-averse, oriented toward safe, immediate rewards over uncertain choices that can yield higher rewards in the future (Shah et al., 2015; Liang et al., 2023). In certain instances, pressure of unmet needs can enhance the proneness to act unethically, as the need to address immediate concerns can take precedence over moral concerns (Yang et al., 2022). Scarcity may also affect health-related choices, due to the lack of self-control leading to worse food choices, as mentioned previously.

1.2 Behavioral Economics & Decision-Making Theories

Prospect Theory

A key theoretical model that unravels on decision-making under risk is Prospect Theory, which assumes that people assess potential gains and losses relative to a point of reference, and that this leads to loss aversion, where people treat losses as larger and more consequential than equivalent gains (Kahneman & Tversky, 1979). Prospect theory is a model of decision under risk, which accounts for how people make choices about possible outcomes not in absolute terms, but relative to the point of reference, which is normally the status quo. One of the core features of the theory is the reflection effect, which illustrates the tendency of people to be risk-averse when they are faced with gains and risk-seeking when they are faced with losses, when the objective probabilities are the same, which can be explained by loss aversion (Kahneman & Tversky, 1979). Significantly, frames have an important part to play in the perception of options: the same outcome, when framed as loss or gain, can produce diametrical choices (De Martino et al., 2006; Raue et al., 2015; Kahneman & Tversky, 1979). This theory plays an important part in explaining environmental decision-making, as it helps to describe how individuals and groups react to environmental risks and policy choices. For instance, when shown environmental policies framed in terms of likely loss (for example, "If we do not cut back emissions, we risk terrible climate impacts"), people may respond more strongly than when shown the same policies framed as likely gains ("By cutting emissions, we can enhance air quality and public health"). This effect of frames can have an important bearing upon public support for environmental initiatives and the readiness to adopt sustainable habits. Research has shown that the way information is presented can alter preferences and choices in environmental contexts. For instance, individuals may be more likely to support conservation efforts when the messaging emphasizes the losses associated with inaction rather than the benefits of action. This highlights the importance of effective communication strategies in promoting pro-environmental behaviors and policies (Kahneman & Tversky, 1979).

1.3 Environmental Risk Perception

Risk as Feelings Theory

While cognitive models such as Prospect Theory emphasize structured evaluation of gains and losses, decision-making under risk is also profoundly shaped by emotions. Risk as Feelings Theory suggests that emotional responses to risk often diverge from rational evaluations (Loewenstein et al., 2001). More than rational analysis, emotions can guide decision-making, especially where there is uncertainty involved. For instance, risk perception and decision-making in safety situations are influenced heavily by emotional states as demonstrated in studies by Loewenstein et al. (2001) and Bhandari et al. (2020). Emotional responses to hazards in a virtual construction environment modulated risk valuations and safety decisions, indicating that emotions, rather than rational evaluations, primarily drive safety-related decisions (Bhandari et al., 2020). Furthermore, empirical research supports the idea that people rely on their initial intuitions and 'gut feelings' in moral decision-making under uncertainty, with rational judgments serving as post-hoc rationalizations (Roeser, 2010).

Heuristics and Biases in Risk Judgment

While emotions can powerfully shape risk perception, they are not the only factor. How people perceive environmental risk is also heavily shaped by mental shortcuts—known as heuristics—and cognitive biases, particularly when they're making decisions under uncertainty (Tversky & Kahneman, 1974). These shortcuts help simplify complex choices and speed up decision-making, but they also come with a cost: they can lead to consistent misjudgments in how risks are evaluated (Tversky & Kahneman, 1974). This systematic deviation from rationality has profound implications for how individuals perceive and respond to environmental risks.

Take the availability heuristic, for instance. This occurs when someone estimates the likelihood of an event based on how easily they can recall examples of it (Keller et al., 2006). So if someone is constantly exposed to news about natural disasters, they might start to believe these events are more common than they really are. That can inflate fear and anxiety about environmental threats, sometimes causing people to focus too much on certain dangers while overlooking others that may be just as serious—or more so (Lavino & Neumann, 2010). In addition to relying on the ease of recall, individuals are also influenced by another bias:

optimism bias. This is the tendency for individuals to believe they are less likely than others to suffer negative consequences. When it comes to environmental threats like pollution or climate change, this bias can foster a false sense of security, leading people to underestimate their own vulnerability (Li & Konisky, 2022).

Recognizing how these mental shortcuts work is essential if we want to improve how environmental risks are communicated. By designing messages that account for these psychological tendencies, we can help people make more informed, proactive choices in the face of growing environmental challenges.

Temporal Discounting in Environmental Risks

Beyond cognitive shortcuts like heuristics and biases, another key factor influencing environmental decision-making is temporal discounting - the human tendency to prioritize immediate rewards over future benefits—a habit that can seriously undermine how we respond to long-term environmental challenges (Frederick, Loewenstein, & O'Donoghue, 2002). It helps explain why people often delay or avoid taking action on major issues, even when the future consequences are potentially severe. It may undermine efforts to address long-term environmental challenges such as climate change, where benefits are mostly distant (Gattig & Hendrickx, 2007).

When faced with decisions, many people lean toward what's convenient or cost-effective at the moment, rather than considering the long-term upside of sustainable behavior. For example, someone might choose to drive a fuel-inefficient car because it suits their daily needs, without giving much thought to its environmental toll over time (Gattig & Hendrickx, 2007; Berry et al., 2017). This short-term mindset can stall broader support for sustainability policies and collective action. To counteract temporal discounting, one effective approach is to make the long-term benefits of environmental action feel more immediate and relevant. Messaging that focuses on short-term perks—like better air quality or improved public health—can help people see sustainability not as a distant ideal, but as something that pays off right now.

Framing Effect and Nudging

While temporal discounting highlights how people often devalue future environmental benefits, another crucial psychological factor shaping decision-making is the way information is framed. Understanding how to present choices and risks can be just as important as addressing the environmental consequences. The framing effect refers to a cognitive bias where the way information is presented can shape the decisions people make (Tversky & Kahneman, 1974). This bias is especially relevant in environmental contexts, where the wording of policies or risks can significantly alter public reactions. For instance, describing an initiative as a way to “reduce pollution” tends to generate more support than calling it “a regulation on emissions,” even if both phrases describe the same policy (Ropret Homar & Knežević Cvelbar, 2021; Rakitta & Wernery, 2021).

Building on this insight, the concept of nudging—drawn from behavioral economics—focuses on gently steering individuals toward better choices without restricting their autonomy. By strategically framing choices, policymakers can nudge people toward environmentally friendly actions. A good example is setting the default energy option in homes to renewable sources; simply framing this as the standard choice increases the likelihood that people will stick with it, effectively promoting sustainable behavior with minimal resistance (Grelle et al., 2024).

Construal Level Theory

Construal Level Theory (CLT) suggests that how close or distant something feels—psychologically—shapes the way people interpret and respond to it. When environmental risks are seen as far off in time, place, or social relevance, they tend to feel less urgent or meaningful. For instance, many people view climate change as a vague, future problem, which can dampen their motivation to act (Trope & Liberman, 2010). On the other hand, if these issues are presented as immediate and personally relevant, individuals are much more likely to pay attention and respond.

CLT highlights that reducing this psychological distance—making abstract threats feel local and concrete—can strengthen how seriously people take environmental risks and increase their willingness to act (Brügger, 2020). This can be achieved by using targeted messaging that connects global environmental problems to real, local consequences. When people see how these

issues affect their own communities, it fosters both a sense of urgency and personal responsibility.

Literature Review

2.1 Scarcity's Effect on Environmental Behavior

Product vs. Resource Scarcity

Scarcity plays a significant role in shaping how people respond to environmental challenges, but not all forms of scarcity have the same psychological effects. A key distinction lies between financial scarcity, product scarcity, and resource scarcity, each influencing behavior in different ways. Financial scarcity refers to a subjective or objective sense of economic constraint — the feeling of not having enough money to meet immediate or future needs (Mullainathan & Shafir, 2013). It redirects attention toward urgent financial concerns, often at the expense of long-term planning. In contrast, resource scarcity describes the perceived or actual limitation of critical environmental resources such as water or clean air (Gu et al., 2020). Unlike financial scarcity, which is centered on individual economic circumstances, resource scarcity refers to collective ecological threats that can affect communities and ecosystems over time. A related concept is product scarcity, which occurs when consumer goods—such as bottled water, energy-efficient products, or eco-labeled foods—are perceived as limited or difficult to own (Roux, Goldsmith, & Bonezzi, 2015). While resource scarcity concerns essential environmental systems, product scarcity highlights the availability of offers, often triggering competitive behaviors aimed at securing those products. Research by Sachdeva and Zhao (2020) shows how these two experiences diverge. Their studies showed that financial scarcity tends to reduce sustainable behaviors; participants were less driven by environmental concerns and more focused on saving money. In contrast, when people were made aware of resource scarcity, such as water shortages, they became more environmentally motivated and more likely to choose eco-friendly products. This contrast suggests that financial pressure may suppress sustainability, while ecological scarcity can actually inspire it.

This difference shows that scarcity does not always affect us in the same way. Financial scarcity tends to pull people's attention toward immediate needs, while resource scarcity can actually push people to think beyond themselves and focus more on the collective good. Financial stress often pushes people to focus on short-term survival, crowding out the mental space needed for broader or long-term concerns (Mullainathan & Shafir, 2013). This narrowing of focus, known as "tunneling," reduces cognitive bandwidth and makes it more difficult for people to focus on complex, long-term challenges like climate change (Shah, Mullainathan, & Shafir, 2012; Mullainathan & Shafir, 2013). As a result, people under financial strain may prioritize immediate savings over future environmental impact, especially when green products seem more expensive. When people are under financial strain, it is understandable that they often focus on immediate savings rather than worrying about long-term environmental impacts — especially when sustainable products feel more expensive upfront. But when it comes to natural resources like clean water or forests, a sense of scarcity can have the opposite effect. Feeling that these resources are running low seems to make people more aware of our shared vulnerability, and can even encourage more prosocial, environmentally friendly behavior. Some studies support this idea: for example, Berthold et al. (2022) found that when people recognize resource scarcity, they are more likely to act in ways that protect the environment. Similarly, Gu et al. (2020) showed that individuals who naturally think more about the future are even more likely to respond to these scarcity cues by making sustainable choices. To add to the discussion, De Groot and Steg (2008) stated that individuals who hold biospheric values—caring about nature for its own sake—are more inclined to act sustainably, and resource scarcity can amplify these values by making environmental threats feel more real and immediate. Altogether, these studies suggest that when people notice the signs of resource scarcity, it can spark a stronger sense of responsibility for the environment — especially among those who tend to think about the future or who care deeply about nature itself.

The way people interpret scarcity also matters—especially how sustainability is framed—can significantly shape outcomes. For example, Bolderdijk et al. (2013) found that messages emphasizing financial savings were more effective than moral appeals in encouraging environmentally friendly behavior among budget-conscious individuals. Similarly, Roux, Goldsmith, and Bonezzi (2015) showed that while resource scarcity can activate self-interested or competitive motivations, generosity still emerges when it aligns with personal benefits, such

as gaining social recognition. These findings underline that the framing of scarcity—and of sustainable choices—plays a significant role in influencing behavior. While all forms of scarcity create a sense of limitation, they shape behavior in fundamentally different ways: financial scarcity tends to narrow attention around immediate survival needs, often limiting broader engagement; resource scarcity can expand concern, making collective risks feel more urgent and motivating prosocial behavior; whereas product scarcity often intensifies individual competition, pushing people to secure scarce goods not necessarily out of need, but because of perceived social value or status. Understanding these differences is essential for forming environmental strategies that can connect with people’s real-world circumstances.

Competitive Orientation and Self-Interested Generosity: The Role of Resource Scarcity in Social Behavior

Beyond individual cognition, scarcity also shapes social motivations, offering important insights into when and how prosocial or sustainable behaviors may persist under resource pressure. A growing body of research suggests that scarcity does not simply promote selfishness, but can also encourage generosity—when prosocial behavior aligns with self-interest. Roux et al. (2015) investigated how subtle reminders of resource scarcity influence social behavior, proposing that scarcity activates a competitive orientation that motivates individuals to advance their own welfare. However, this orientation does not always lead to selfishness; in contexts where helping others offers reputational benefits, scarcity can enhance generosity. Across five experiments, participants primed with scarcity cues were less likely to donate in private but more likely to give when donations were publicly visible. These findings indicate that the relationship between scarcity and social behavior is strategic rather than purely altruistic.

This perspective helps reconcile contradictions in the scarcity literature, where some studies report that scarcity increases generosity (Kraus et al., 2012) and others that it fosters self-preservation (Piff et al., 2010). Roux and colleagues suggest that competitive orientation mediates this tension: individuals behave generously when it enhances their social standing, aligning with earlier findings on social signaling (Griskevicius, Tybur, & Van den Bergh, 2010). These dynamics are highly relevant for environmental behavior: when sustainable actions are framed as socially visible and prestigious, individuals under scarcity may still engage. However,

when environmental behaviors lack public visibility, scarcity may dampen participation (Roux et al., 2015). These insights emphasize that the effects of scarcity on environmental behavior depend not only on internal cognitive constraints, but also on how sustainable actions are framed within their social context.

2.2 Risk Perception in Environmental Decision-Making

Cognitive Constraints and the Shaping of Environmental Risk Perception

Understanding how individuals perceive and respond to environmental risks requires a nuanced examination of the cognitive and emotional mechanisms that guide decision-making under conditions of scarcity. Risk perception is not merely a matter of rational cost-benefit analysis; rather, it emerges from the dynamic relationship between cognitive strain, emotional processing, and the framing of information. Numerous studies have shown that scarcity—particularly financial scarcity—can significantly alter the way people interpret and respond to environmental threats (Bolderdijk et al., 2012; Berthold et al., 2023). For instance, Mani, Mullainathan, Shafir, and Zhao (2013) demonstrated that even contemplating financial problems can consume cognitive bandwidth, leading to measurable declines in fluid intelligence and cognitive control among lower-income participants. This impaired cognitive function is not just a minor distraction, but a deeper consequence of the mental burden that scarcity creates. When resources are tight, attention narrows, making it harder for individuals to engage in higher-order reasoning or long-term planning. In environmental contexts, this loss of cognitive space means that individuals under financial pressure may struggle to assess broader risks like climate change or biodiversity loss. Instead, their focus tends to shift toward immediate, personally relevant dangers—like high utility bills or polluted local water—which feel more urgent, even if long-term environmental threats are objectively more severe.

Research supports this dynamic. Sachdeva and Zhao (2020) found that financial scarcity reduces pro-environmental motivation, not because people suddenly care less about the environment, but because their attention shifts toward immediate, self-preserving financial goals. Sustainable choices that require upfront investment or seem costly are often avoided, even when individuals are fully aware of their long-term benefits. On the other hand, when scarcity is experienced as resource depletion—such as a local water shortage—people tend to show greater environmental

concern and are more willing to act sustainably. This difference highlights how the perceived source of scarcity—whether financial or ecological—can critically shape how environmental risks are interpreted, emphasizing the need for careful framing in environmental communication.

Framing effects themselves play a powerful role in shaping risk responses, especially when people are under cognitive or emotional strain. Studies show that under financial stress, individuals are much more responsive to frames that emphasize cost savings than to those that appeal to morality or abstract environmental values (Bolderdijk et al., 2012). Similarly, Roux et al. (2015) demonstrated that while scarcity primes can activate competitive instincts, they can also encourage prosocial behaviors—provided that generosity aligns with personal gain. Building on this, Goldsmith et al. (2020) found that highlighting the social benefits of sustainable products can make them more appealing when people perceive scarcity, while Steg et al. (2014) and Bolderdijk et al. (2013) observed that framing sustainability as cost-efficient or as part of one's identity increases engagement, especially for those facing financial constraints. Together, these findings suggest that under scarcity, people are more likely to respond to sustainable behaviors when they are framed as socially visible, financially sensible, or personally meaningful—rather than framed purely as abstract moral duties.

At the same time, the emotional side of decision-making cannot be overlooked. The "risk-as-feelings" hypothesis (Loewenstein et al., 2001) shows that people's emotions often outweigh their rational evaluations, especially in situations of uncertainty. Under scarcity, when cognitive resources are stretched thin, people may lean even more heavily on emotional reactions to make judgments. As research by Mullainathan and Shafir (2013), Shah et al. (2012), and Slovic et al. (2007) suggests, this can lead to a heightened sensitivity to immediate threats and a reduced concern for distant or long-term environmental risks. When the mind is consumed by day-to-day survival, abstract future problems—no matter how important—become harder to prioritize.

Collectively, these findings may highlight a critical insight: the perception of environmental risk is not fixed, but highly sensitive to the type of scarcity experienced and to the ways in which risks are framed. When individuals are burdened by scarcity, their cognitive bandwidth for processing future-oriented, probabilistic, or collective risks becomes severely limited. However,

this does not mean that people under scarcity are incapable of responding to environmental issues. Instead, it points to a kind of conditional responsiveness: when environmental threats are framed in ways that match people's immediate goals or emotional states, even those under strain may still engage adaptively. On the other hand, if messages are poorly framed—emphasizing distant moral obligations or abstract, long-term global risks—they are much more likely to be dismissed or overlooked. In this way, effective environmental communication is not just about what information is presented; it is just as much about when, how, and under what cognitive and emotional conditions people are asked to process it.

Psychological Distance and the Framing of Environmental Threats

The role of psychological distance—how far removed a threat feels in terms of time, space, social relevance, or certainty—is a crucial variable in how environmental risks are perceived and acted upon. Construal Level Theory (Trope & Liberman, 2010) suggests that distant risks are mentally represented in abstract, decontextualized terms, while proximate risks are experienced more concretely and emotionally. Under normal circumstances, this distance alone can impair pro-environmental decision-making, as many environmental problems—like sea-level rise or biodiversity collapse—are perceived as temporally delayed, geographically distant, or affecting “others” rather than the self. However, the effects of psychological distance are magnified under conditions of subjective scarcity, as cognitive bandwidth becomes increasingly limited and attention is disproportionately allocated to the here and now (Mani et al., 2013; Shah et al., 2012). In such cognitive states, individuals are far less likely to engage with abstract, distal threats, simply because they cannot afford to—mentally or emotionally—to process them (Mani, Mullainathan, Shafir, & Zhao, 2013; Shah, Mullainathan, & Shafir, 2012).

This narrowing of mental scope under scarcity has profound implications for environmental communication and policy design. If climate change, for example, is framed as a distant global issue, individuals experiencing financial or time scarcity may disengage entirely, perceiving it as irrelevant to their immediate survival. However, when the same issue is reframed as local, urgent, and personally relevant, it becomes more psychologically proximal, thereby increasing the likelihood of action (Spence, Poortinga, & Pidgeon, 2012). This aligns with findings from Sachdeva and Zhao (2020), who observed that scarcity can suppress pro-environmental

motivations unless behaviors are framed in ways that connect directly to the individual's present goals—such as saving money or protecting local resources.

Moreover, psychological distance can also interact with emotional responses to risk, shaping whether a person views an issue as threatening or motivating. The risk is not only calculated cognitively but felt emotionally—and emotions tend to be more strongly tied to proximal risks. Under scarcity, where emotional reasoning may take precedence due to depleted cognitive resources, this can mean that affectively charged, immediate risks become disproportionately influential, while distant or statistical risks are downplayed or ignored. As a result, individuals under scarcity may fail to act on critical environmental issues unless those issues are brought closer to their lived reality, both cognitively and emotionally (Loewenstein et al., 2001).

Overall, the literature suggests that psychological proximity can counteract some of the cognitive and motivational deficits caused by scarcity, making it a powerful tool for improving environmental engagement. Risk communication strategies that reduce distance—by using concrete language, personal narratives, or locally salient examples—are more likely to resonate with those under strain. Importantly, this also underscores a key equity concern: the individuals most burdened by scarcity are also the least likely to be reached by abstract or overly technical environmental messaging. Therefore, bridging psychological distance is not simply a matter of persuasion—it is a matter of accessibility and inclusion in the collective project of environmental decision-making.

2.3 Integrating Scarcity and Risk Perception

How Do Scarcity Conditions Alter Environmental Risk Assessments?

Environmental risk perception is not a static process, but one that is highly sensitive to personal context, mental resources, and how information is framed. When people face scarcity—whether financial, temporal, or material—their ability to perceive and respond to environmental threats changes in profound ways. Scarcity is more than a background condition; it becomes a psychological lens through which all decisions are filtered. As such, understanding how scarcity interacts with risk perception, and how that relationship can be modified through framing and

psychological distance, is vital to designing environmental interventions that actually work under real-world cognitive constraints.

Scarcity alters the way people perceive risk by reducing the mental capacity needed to process complex, abstract, and future-oriented threats (Mani, Mullainathan, Shafir, & Zhao, 2013; Shah, Mullainathan, & Shafir, 2012). A consistent body of research has shown that when individuals experience scarcity, their attention and cognitive energy are redirected toward addressing immediate needs, often at the cost of longer-term, strategic thinking (Mani et al., 2013). In practical terms, this suggests that under scarcity, environmental risks—particularly those perceived as distant or diffuse—may lose their salience (Mani, Mullainathan, Shafir, & Zhao, 2013; Shah, Mullainathan, & Shafir, 2012; Trope & Liberman, 2010; Sachdeva & Zhao, 2020). This narrowing of attention has been described as "tunneling", where cognitive focus is monopolized by urgent problems (Shah et al., 2012). In the context of environmental decision-making, tunneling creates a barrier to engaging with complex risk information, such as the rising concentration of atmospheric CO₂, which contributes to climate change (IPCC, 2021), or the accelerating rates of species extinction driven by human activity (WWF, 2020). The more someone is consumed by how to pay their next bill or secure basic necessities, the less cognitive space remains for parsing probabilities and long-term consequences (Shah, Mullainathan, & Shafir, 2012; Mani, Mullainathan, Shafir, & Zhao, 2013).

Environmental risk perception is not just dampened by cognitive fatigue but distorted by it (Mani, Mullainathan, Shafir, & Zhao, 2013; Shah, Mullainathan, & Shafir, 2012). Individuals under scarcity are more likely to make heuristic-based judgments, relying on shortcuts that prioritize personal, immediate, or emotionally intense aspects of a situation (Tversky & Kahneman, 1974; Shah, Mullainathan, & Shafir, 2012). In this state, risks that do not directly threaten personal well-being or immediate outcomes are minimized or outright dismissed. This is consistent with Kahneman and Tversky's prospect theory (1979), which shows that individuals tend to avoid risks when dealing with gains and embrace risks when facing losses—a tendency that becomes more pronounced when cognitive control is depleted.

Importantly, studies like Roux et al. (2015) suggest that under scarcity, people may actually behave more strategically than previously assumed—if the behavior is perceived to serve

immediate or self-enhancing goals. This adds a layer of complexity: scarcity doesn't always suppress risk perception, but rather reshapes it, pushing people to rethink what they consider risky or worth acting upon (Roux, Goldsmith, & Bonezzi, 2015). An environmentally harmful action (e.g., choosing single-use plastic) might be seen as low-risk compared to the immediate benefit (saving money or time), whereas pro-environmental behavior might seem risky if it carries financial costs.

Thus, scarcity does not simply lower risk sensitivity—it alters the reference point from which risks are evaluated. Risk assessments become context-dependent, constrained by what is mentally available and emotionally pressing at the moment. This helps explain why traditional environmental appeals often fall flat among lower-income or time-poor individuals: the risks may be real, but they are psychologically out of reach.

The Role of Framing and Psychological Distance in Decision-Making

Given that scarcity distorts how risks are assessed, the way those risks are framed becomes all the more critical. A substantial body of evidence, both behavioral and neurocognitive, shows that the presentation of information—especially whether it is framed as a loss or a gain—can significantly affect decision-making under risk (Tversky & Kahneman, 1981; De Martino et al., 2006). These effects are magnified under cognitive strain, when individuals lack the mental energy to reframe or critically evaluate the information on their own.

Scarcity not only taxes cognition but heightens emotional sensitivity. Research on the “risk-as-feelings” hypothesis (Slovic, 2010) shows that when people are overwhelmed, they lean more heavily on emotional cues to evaluate risk. This means that framing environmental threats in terms of personal loss—especially immediate, tangible loss—can be more effective than abstract appeals to global wellbeing or future generations. A local flood risk, framed as “your home could be affected,” is more motivating than “climate change increases sea-level rise,” particularly for someone whose cognitive resources are already stretched thin. Psychological distance plays a pivotal mediating role in this equation. Construal Level Theory (Trope & Liberman, 2010) argues that events perceived as psychologically distant (in time, space, social relevance, or likelihood) are processed more abstractly, while psychologically close events are experienced more concretely and with greater urgency. Under scarcity, people operate

predominantly within a low-level construal mode—focused on feasibility, short-term trade-offs, and immediate outcomes. High-level, abstract construals—such as “biodiversity loss affects ecosystem resilience”—are unlikely to resonate unless translated into concrete, proximal terms like “fewer bees mean lower crop yields this year.”

Raue et al. (2015) empirically confirmed this interplay in decision-making tasks that manipulated psychological distance and framing. They found that the classic framing effect—where people respond differently to equivalent options framed as gains or losses—is only held in psychologically close conditions. When participants perceived the scenario as distant (socially, spatially, or temporally), the framing effect diminished or reversed. This indicates that both psychological distance and scarcity work as filters for framing effects, determining whether and how people engage with risk. Moreover, this interaction has real-world implications for environmental communication. For instance, campaigns that emphasize global impacts or intergenerational responsibility may not just fall flat under scarcity—they may backfire. Instead, messages that localize risk, personalize impact, and present loss-framed outcomes (“you will lose access to safe drinking water”) are more likely to bypass the cognitive bottleneck and trigger action.

Critically, framing can offer a way to align environmental choices with self-interest, without having to abandon moral messaging altogether. Roux et al. (2015) showed that when acts of generosity or sustainability are tied to reputational gains or personal benefits, scarcity does not necessarily reduce prosocial behavior. This creates new possibilities: instead of trying to fight against the scarcity mindset, communicators and policymakers could work with it, designing frames that meet people where they are—both cognitively and motivationally.

Conclusion and Discussion

Across the literature reviewed, a consistent theme emerges: scarcity does not simply limit what people can do; it has a major impact on how people think, what they prioritize, and which risks they are even capable of seeing. Environmental decision-making, far from being an isolated domain of rational calculation, is deeply embedded in the psychological, emotional, and material

constraints that people experience in everyday life. When scarcity—whether financial, temporal, or resource-based—becomes part of that context, its influence on environmental behavior and risk perception is not linear or predictable, but highly dependent on how individuals perceive and respond to their constraints.

Different types of scarcity appear to set very different psychological processes in motion. Product scarcity—where consumer goods like eco-labeled products or sustainable alternatives are perceived as limited—can trigger competitive motivations, sometimes encouraging sustainable behavior when social visibility or perceived value is high (Roux, Goldsmith, & Bonezzi, 2015). Financial scarcity, as Berthold et al. (2023) and Sachdeva and Zhao (2020) have shown, tends to pull attention away from long-term goals like environmental protection, not because people stop valuing those goals, but because immediate survival needs dominate mental resources. Under these conditions, the environment often becomes a secondary concern, not out of apathy, but because the cognitive and emotional space needed to act on distant threats is simply not available. By contrast, resource-based scarcity—such as facing water shortages—can heighten awareness of collective vulnerability and, in some cases, strengthen sustainable motivations. Gu et al. (2020) found that individuals with stronger future orientation were especially likely to respond to resource scarcity by acting sustainably. These findings together highlight that scarcity does not suppress environmental concern uniformly; instead, it reframes how people weigh costs, benefits, and responsibilities depending on the nature of the scarcity they are experiencing.

The cognitive and emotional consequences of scarcity make these dynamics even more complex. Studies by Mani et al. (2013) and Chang et al. (2021) show that both poverty-related concerns and resource shortages deplete cognitive resources, leading to measurable declines in executive functioning, fluid intelligence, and impulse control. Even briefly contemplating financial struggles can occupy so much cognitive bandwidth that individuals have fewer mental resources left to process complex, future-oriented challenges (Mani et al., 2013). Under these conditions, people naturally gravitate toward short-term, emotionally vivid risks, while more abstract or long-term environmental threats fade into the background. The tendency to rely on intuitive and affect-driven judgments becomes stronger (Slovic et al., 2007), and the mental effort required to carefully balance immediate needs against distant environmental impacts often becomes too

great. Scarcity, in other words, doesn't just change what people care about—it changes how they think and how they make decisions in the first place.

In light of this, framing and psychological distance emerge as critical tools for influencing environmental behavior under scarcity. How environmental issues are presented—whether framed around immediate personal gains versus distant collective losses—shapes whether people feel able and motivated to act. According to Trope and Liberman's (2010) Construal Level Theory, psychologically distant threats are processed more abstractly, often reducing emotional engagement and making action less likely. Research by Raue et al. (2015) supports this idea, showing that when risks are framed as socially or temporally distant, individuals tend to engage in abstract reasoning, which can further suppress emotional urgency. Under scarcity, when cognitive capacity is already strained, distant risks become even harder to prioritize. Instead, immediate concerns—such as high energy bills or local air quality—capture attention more forcefully than global or long-term environmental issues.

Several studies underline just how important framing becomes in these contexts. Bolderdijk et al. (2012, 2013) found that individuals facing financial constraints respond much more strongly to cost-saving frames than to moral appeals. Similarly, Roux et al. (2015) showed that scarcity primes can activate competitive orientations, but that these orientations can be channeled toward prosocial outcomes when actions like generosity or sustainability serve personal or reputational gains. Goldsmith et al. (2020) add further evidence that emphasizing the social value of sustainable behaviors can increase their appeal under perceived scarcity, while Steg et al. (2014) and Bolderdijk et al. (2013) demonstrate that identity-relevant framing also becomes more powerful when resources are constrained. Together, these findings suggest that effective environmental messaging under scarcity needs to minimize psychological distance and emphasize immediate, tangible personal benefits—not distant moral obligations.

At the same time, the emotional side of decision-making deserves equal attention. The "risk-as-feelings" hypothesis (Loewenstein et al., 2001) reminds us that people's affective responses often outweigh cognitive evaluations, especially under uncertainty. Under scarcity, when executive function is already impaired (Mullainathan & Shafir, 2013; Shah et al., 2012), people may lean even more heavily on gut feelings. This can heighten sensitivity to immediate

threats while making distant environmental dangers seem less urgent or even invisible. Emotional salience, not rational calculus, often drives behavior under conditions of cognitive strain.

Despite these challenges, the literature points to important opportunities. Scarcity does not erase environmental concern—it just changes the pathways through which that concern can be activated. By aligning sustainable behaviors with immediate personal goals like cost savings, social visibility, or reputational gains, communicators can tap into motivations that remain accessible even when cognitive resources are stretched thin. Roux et al. (2015) provide clear evidence that individuals under scarcity can still act generously or sustainably when doing so aligns with competitive or reputational advantages. Similarly, framing green behaviors as part of one's social identity or local pride—rather than as abstract moral duties—can make sustainable choices feel both feasible and rewarding, even in resource-constrained contexts.

In the end, scarcity reminds us that environmental behavior is not just about values or information; it is about the psychological and emotional realities people live with every day. By understanding those realities—and by designing strategies that work with them rather than against them—we can open new possibilities for sustainability, even in the face of material limits.

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