

Framing Sustainability and Living It: Consumer Experience and Institutional Messaging in the Dutch Deposit Return Scheme

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<p>KEYWORDS</p> <p><i>Deposit Return Scheme;</i> <i>Sustainability;</i> <i>Consumer behavior;</i> <i>Communication framing;</i> <i>Netnography</i></p>	<p>ABSTRACT</p> <p>Purpose This study explores individuals attitudes and behaviors towards the Deposit Return Scheme (DRS), particularly in the Netherlands, and how these experiences align or misalign with the way the scheme is promoted through institutional communication. While the DRS rely heavily on citizen engagement for their effectiveness, research on how consumers respond emotionally and behaviorally to such schemes, or how they relate to the narratives presented in official campaigns is still limited.</p> <p>Methodology This research combines two qualitative studies. Study 1 used netnography method, analyzing 2,599 consumer-generated comments on Reddit to explore lived experiences with the DRS. Study 2 conducts an explorative qualitative content analysis of 41 promotional videos published by an official communication channel (Statiegeld Nederland) to identify communication strategies, message framing, and behavioral cues. Both studies are interpreted through behavior change frameworks.</p> <p>Findings Findings reveal that while consumers generally support the goals of DRS, participation is shaped by logistical barriers and motivations that go beyond pro-environmental and financial. Consumers often described the scheme as effortful and messy, showing that these contextual factors are a main barrier to adhering to the scheme. Additionally, our data also shows that participation is driven by intrinsic, pro-social and ego related motivations, thus beyond financial rewards. In contrast, institutional communication often relies extrinsic incentives – combination of environmental and financial rewards, which may overlook other drivers or barriers of participation. This misalignment may undermine behavioral engagement over time.</p> <p>Implications The study highlights the importance of aligning policy communication with the lived experiences, emotional drivers, and psychological proximity of consumers. It contributes to theories of behavior change, self-determination, and psychological distance, and offers actionable guidance for improving DRS design and outreach..</p>
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1. INTRODUCTION

Deposit Return Schemes (DRS) have been implemented across Europe to incentivize recycling, reduce waste and littering, with countries such as Germany, Finland, and Denmark achieving return rates above 90% (Sensoneo, 2024). DRS are instruments that add a refundable deposit to the price of beverage containers. Consumers reclaim this deposit by returning



the empty containers to collection points, thus encouraging recycling and supporting circular economy goals. Despite adopting a similar policy since 2006, the Netherlands continues to face consumer resistance and operational challenges. Early 2024, return rates for small bottles and cans still remained below target, with millions of euros in unclaimed deposits (Moeys, 2024; Verpact., 2024) and there are constant debates over even more littering being generated since people search for bottles and cans in public trashcans (Schallmaier, 2023).

Understanding how consumers perceive and interact with DRS is essential for improving participation and maximizing environmental benefits. While policy evaluations often focus on infrastructure and return rates, less attention has been paid to how consumers experience such schemes in everyday life (Picuno et al., 2025). Recent studies suggest that consumers' perceptions, emotions, and interpretations of environmental initiatives play a critical role in DRS adoption (Hernandez et al., 2025; Malindzakova et al., 2022; Roca et al., 2020; Zhou et al., 2020).

This article focuses on the Dutch DRS for beverage cans and PET bottles to contribute to the understanding in sustainable behavior. The aim is to examine how consumers in the Netherlands perceive and engage with the DRS, and how this return scheme is framed in communications campaigns. By integrating these two perspectives, we aim to provide a more holistic view of the Dutch DRS context. We will examine not only what consumers are being told, but also how they interpret, resist, or reframe these messages in everyday life. In doing so, the study contributes to emerging research at the intersection of behavior change, consumer experience, and sustainability communication. It also responds to recent calls for more context-sensitive and communication-aware analyses of policy adoption, especially in domains where consumer behavior is critical to policy success

2. LITERATURE REVIEW

Understanding sustainable behavior change requires examining the intersection between consumer psychology, contextual barriers, and policy communication. A growing body of research shows that consumers can play a significant role in environmental outcomes, including waste reduction and circular economy participation (Hernandez et al., 2025; Steg, 2023). Among various behaviors, recycling, particularly through schemes like DRSs has received increasing attention in consumer research (Picuno et al., 2025). Nonetheless, despite high levels of concern about environmental issues, individuals often fail in translating their attitudes into consistent action. This "intention-behavior gap" is well documented and continues to challenge policy makers and marketers aiming at fostering sustainable consumer engagement (White et al., 2019).

Theoretical Models of Behavior Change

Much of the early work on recycling and environmental behavior relied on the Theory of Planned Behavior (TPB), which links behavioral intention to attitudes, subjective norms, and perceived behavioral control. While TPB has been widely adopted, a critical review (Yuriev et al., 2020) highlights that most studies using TPB have focused on indirect predictors, especially attitudes, rather than directly focusing on behavior. Moreover, TPB has been criticized for overlooking the role of situational and infrastructural factors that often hinder action, even when intentions are strong.

In response, a growing number of scholars advocate for broader models that integrate both psychological and contextual drivers. In that vein, the COM-B model (Capability, Opportunity, Motivation and Behavior) provides a more comprehensive lens for understanding behavior change (Michie et al., 2011). It proposes that behavior occurs when individuals have the capability (both physical and psychological), the opportunity (both social and physical), and the motivation (both reflective and automatic) to perform a behavior. In contexts like DRS, which rely on convenient infrastructure, behavioral cues, and habitual routines, the COM-B model offers an interesting framework for understanding the adoption and participation rather than TPB alone.

Empirical Insights on Deposit Return Schemes

Deposit Return Schemes (DRS) are increasingly used as policy instruments to reduce litter and promote recycling. While many evaluations focus on scheme design and return statistics, fewer studies have examined consumer perceptions and the everyday experience of DRS. Emerging work from various European contexts provides some insights. In Greece, Konstantoglou et al. (2023) investigated consumer motivations and general acceptance of DRS. In Sweden, Kremel (2024) explored how values shape support for the deposit scheme. In Scotland, Oke et al. (2020) found that environmental concern and knowledge play a role in shaping consumer responses to DRS. Although these studies point to important psychological and cultural factors, most rely on self-reported surveys and overlook the lived realities and emotional responses that often drive behavior. Moreover, little is known about how the DRS is experienced by consumers in the Netherlands, where adoption remains suboptimal.

Communication Strategies and Behavioral Framing

In parallel to behavioral research, a growing body of work has emphasized the role of communication in enabling - or inhibiting - sustainable behaviors. Studies in behavioral public policy and sustainability marketing show that message framing can significantly influence consumer responses. For example, loss-framed messages (such as "Don't lose your



deposit”) could be more effective than gain-framed messages that emphasize rewards. Similarly, appeals to descriptive social norms (“Most people return their bottles”) and intrinsic motivations such as environmental protection are often more effective than purely extrinsic, financial incentives (reviewed by White et al., 2019).

DRS-related research confirms the importance of communication design. Studies have shown that clarity, trust, and tone influence consumer acceptance and understanding of the Scheme (Konstantoglou et al., 2023; Kremel, 2024; Malindzakova et al., 2022; Oke et al., 2020). Yet despite this growing recognition, most research remains conceptual or limited to pre-defined message testing. There is limited empirical analysis of the actual content of communication materials used in DRS campaigns. This gap needs to be addressed, as misalignment between institutional messaging and lived consumer experience may hinder DRS credibility or provoke unintended responses such as resistance or rejection (White et al., 2019).

This research aims to address this challenge by combining two complementary methods. First, a netnography based online discussions in Dutch Reddit communities provides a window into the everyday experiences, frustrations, and coping strategies consumers employ in relation to DRS. Second, a content analysis of official communications - particularly YouTube campaigns by Statiegeld Nederland - offers insight into the narratives, incentives, and framings promoted by the institutions behind the DRS.

3. METHODOLOGY

To explore how consumers experience and interpret the Dutch Deposit Return Scheme (DRS), and how this aligns with institutional communication, we conducted two complementary studies. Study 1 explored consumer attitudes, experiences and behavioral drivers through a netnographic analysis of Reddit threads, while Study 2 examined the institutional messaging via an exploratory qualitative content analysis of DRS promotional videos.

Study 1: Netnography to understand consumer discourse

This study used a netnography approach (Kozinets, 2020) to analyze consumer-generated discussions on Reddit. Data were collected from the public subreddits *r/thenetherlands* and *r/Netherlands*, using the keyword “statiegeld” (Dutch name for the DRS). We retrieved threads and comments spanning the previous 2.5 years, resulting in a dataset of 18 threads and 2,599 comments. These included a variety of formats (posts, reactions, and replies) capturing diverse emotional and descriptive consumer responses.

Our research obeyed the current ethical procedures and regulatory rules (including EU GDPR), following the guidance from previous netnography studies (such as Kozinets & Seraj-Aksit, 2024). Reddit is a public forum with voluntary discussion guidelines. Member comments are openly available, searchable and accessible through publicly accessible search engines. Informed consent and researcher disclosure were therefore not needed. Additionally, there was no direct researcher interaction, such as posting comments to the Reddit site, interviewing, or otherwise communicating with subreddit members who were posting public messages.

Data was analyzed using NVivo 12, applying Braun and Clarke’s (2006) thematic analysis method. We followed a semi-directed content analysis approach that allowed for the emergence of themes while being guided by the COM-B model (Michie et al., 2011) and other relevant theoretical perspectives. This hybrid inductive-deductive framework helped identify both pre-defined and emergent barriers and enablers of DRS participation.

Three independent coders reviewed the data. Inter-coder reliability was established through initial parallel coding and calibration sessions. Irrelevant or non-classifiable posts ($n = 202$) were excluded. This dataset is not statistically representative but offers naturalistic, unsolicited insights into how consumers perceive and respond to the DRS in their everyday lives.

Study 2: Content Analysis of Institutional Messaging

To complement the consumer perspective, we conducted an exploratory content analysis of official DRS communication materials produced by Statiegeld Nederland (DRS official channel). The aim was to analyze institutional messaging and categorize it according to behavioral frameworks such as COM-B (Michie et al., 2011).

We analyzed 41 videos published on the organization’s YouTube channel between April 2022 and January 2025. The corpus included a variety of formats, such as pop music videos, animations, explainers, and interviews in settings like hospitals, parks, and retail stores—demonstrating diverse message strategies. All videos were transcribed using a combination of YouTube’s auto-captioning and manual transcription, followed by careful editing. Transcripts were then imported into NVivo for coding and analysis.

The analysis combined a deductive approach based on the COM-B model (see Dixon & Johnston, 2021) with inductive coding in line with established qualitative content analysis procedures (Elo & Kyngäs, 2008). Similar approaches have been applied in several research domains (Hansen & Machin, 2013) yet never used in the context of deposit return scheme campaigns to our knowledge. Messages were coded based on whether they aimed to increase consumer capability (e.g.,



through informational instructions), opportunity (e.g., by highlighting machine locations or accessibility), or motivation (e.g., through emotional, financial, or normative appeals). The inductive coding process was conducted to capture emergent themes not predetermined by the COM-B model (for instance recurring patterns in tone, such as the use of humor, irony, or celebrity figures; emphasis on financial vs. symbolic rewards or stylistic elements like music, narrative framing, etc.). This mixed coding approach allowed us to balance theoretical focus with sensitivity to context-specific communication dynamics. As in Study 1, three trained coders conducted independent analyses, followed by collaborative calibration to ensure agreement on themes' identification and interpretation.

4. RESULTS

This section presents the results of the two studies, each offering complementary insights into the Dutch Deposit Return Scheme from both consumer and institutional communication perspectives.

Study 1 results – Netnography to understand attitudes and behaviors related to Dutch Deposit Return Scheme

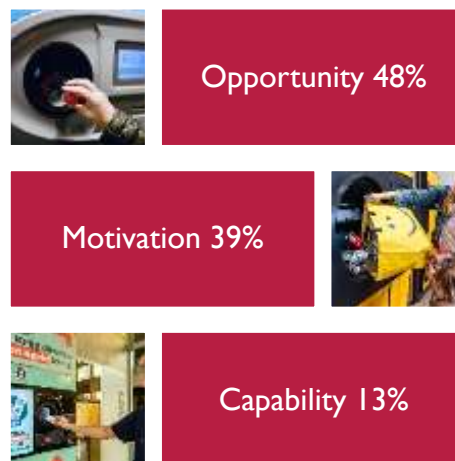
Many consumers expressed positive views about the environmental intention of the Deposit Return Scheme. A widely perceived benefit was the reduction in litter, particularly plastic bottles and cans in public spaces. Users noted that the scheme had visible and immediate effects.

“Since statiegeld applies to cans and bottles, I barely see any litter on the streets anymore. That’s a good thing!”

“The system is working! Just look at how clean the streets are compared to before.”

Despite this general support for the scheme’s goals, comments highlighted barriers and drivers to adherence. The data were thematically organized according to the COM-B model (Gainforth et al., 2016; Michie et al., 2011; Murray et al., 2011) to better understand these barriers and drivers. The analysis reveals that consumer engagement with the DRS was shaped primarily by contextual enablers and constraints (Opportunity, 48%), followed by a wide range of motivational influences (39%), while capability-related concerns appeared less frequently but were still meaningful (13%) (Figure 1).

Figure 1 - Fig 1. A breakdown of the coding content relating to each domain according to COM-B framework



Opportunity (48%)

Opportunity refers to the external conditions that make a behavior possible or prompt it. In this context, physical and social opportunity appeared as central to how consumers experienced and evaluated the DRS.

Physical Opportunity: Infrastructure, Accessibility, and Hygiene.

The most frequent complaints in the dataset revolved around inadequate or malfunctioning infrastructure. Consumers repeatedly reported return machines being out of order, full, unavailable, or restricted to specific product types or brands. These infrastructural issues acted as direct physical barriers to participating in the scheme, making the act of returning containers unpredictable and inefficient. Some consumers described spending time phoning or visiting multiple supermarkets to check machine availability, and others noted that stores could arbitrarily limit returns to in-store brands further eroding the trust in the scheme.

“Why are the statiegeld machines always broken?! Every time I go, they’re out of order.”

“Machine was full again. That’s the third time this month. Just gave up and binned the bottles.”



Another practical barrier was hygiene. Users described their aversion to sticky, leaky containers, the unsanitary condition of return stations, and the unpleasant experience of handling bulk returns particularly when machines were not cleaned regularly.

"I don't want sticky, wet cans in my bag. That's why I end up throwing them away."

"The machines are covered in sticky soda residue and smell horrible."

"Returning cans is like handling garbage. Who wants to carry around dirty, used cans all day?"

Time, Friction, and Perceived Fairness.

Long waiting times and queues created further friction and prevented engagement with the DRS for some individuals. Some expressed frustration about standing behind people returning large quantities of containers, adding unanticipated delays to grocery trips. Others resented what they saw as systemic unfairness, where consumers are burdened with logistical hassle while corporations are not required to invest proportionately in DRS implementation or machine maintenance.

"People show up with huge bags of bottles, and I have to wait in line forever just to return a couple of cans."

"Once again, we are punishing citizens and consumers because corporations will not take any real responsibility."

"Supermarkets do the bare minimum because they know they won't be forced to do more."

The comments suggest that even when participation occurs, it is not always voluntary or enthusiastic. Consumers often described "tolerating" the scheme, rather than embracing it.

Social Opportunity: Cultural Norms and Redistribution Practices.

Social norms emerged as an enabling force. In countries where DRS is already normalized, participation is described as effortless and socially expected. Cultural familiarity with the Scheme (e.g., references to German "Pfand" practices) increased perceived legitimacy and ease. Additionally, informal social practices - such as leaving bottles near public bins or for delivery drivers - reflected a redistribution logic that serves both convenience and social support, particularly for unhoused individuals or charities.

"In Germany, little bottles and cans have had 'pfand' on them for years... people don't aimlessly throw them away anymore."

Motivation (39%)

Motivation captures both reflective processes (e.g., conscious goals, evaluations, identity) and automatic processes (e.g., emotion, habit, impulse) that activate or inhibit behavior. The Reddit data revealed a rich array of motivational influences, from environmental concern to self-interest and emotional aversion.

Environmental Concern.

A large proportion of consumers explicitly mentioned sustainability and litter reduction as reasons for supporting the DRS. The scheme was seen as a practical tool that produced tangible, visible improvements to local environments. This outcome-based validation strengthened commitment among environmentally conscious users.

"It's created for an incentive... already proven to reduce the waste thrown away and ending up in the environment."

Interestingly, one of the indirect benefits of the DRS is its role in fostering recycling awareness. Some report that they have become more conscious of their consumption patterns since the introduction of the system. This extends beyond just returning deposit-eligible items; many consumers now pay closer attention to general waste sorting and sustainable packaging options.

Social Purpose.

Many comments referred to pro-social values motivating participation. Consumers described donating their returns or enabling access for others in need. These acts created a personal sense of purpose, contributing to community well-being and reinforcing a self-image as a responsible citizen.

"I give them to charity collections. I don't care about the money, but I like knowing it helps someone."

"I leave my bottles near bins so homeless people can collect them."

Financial Incentives and Ego-Driven Framing.

The financial benefits were pointed out as a key element in the DRS mechanism, but it benefits mainly specific groups, especially those returning large volumes or with limited income saw the scheme as a meaningful financial opportunity (i.e., for homeless people, low-income population or students):

"I once stood behind someone with a bag of cans and bottles, and he pulled like 45 euros outta that machine."



Mentioned as not being the only and main driver for adherence. Many even dismissed the deposit as too small to be worthwhile and remained unconvinced by the financial payoff:

“Why go through all this hassle for just a few cents?”

“Raising the deposit to €0.50 per bottle would make people care more.”

Finally, some individuals reframed the financial reward as a form of gamified self-reward or personal savings goal. This “ego-driven” motivation, while less common, suggests a potential communication opportunity.

“I save up my statiegeld and use it as a way to fund small treats for myself.”

Automatic Motivation: habit, routine, and emotional discomfort.

Several individuals described how DRS behavior had become integrated into existing routines. The compliant consumers described practical workarounds to make the scheme manageable, especially by synchronizing returns with grocery shopping. For instance, weekly or monthly returns were often combined with grocery shopping or delivery, allowing the behavior to become automated and less susceptible to the existing contextual frictions over time.

“Every week, I bring my bags of cans and bottles while doing groceries. It takes just a few minutes.”

“I have a separate bin at home just for deposit items, and I take them to the store once a month.”

“I just give them to the delivery guy when I order groceries, it’s way easier.”

Others noted that disruptions to routine (e.g., travel or forgetting the return bag) reduced compliance, emphasizing the role of habit continuity.

“I hate carrying sticky bottles around. If I buy something on the go, it’s getting trashed.”

“I NEVER remember to take the statiegeld with me to the store, and the one time I do, I have to bring it all back home! WHY DOES THIS KEEP HAPPENING.”

Finally, a group of posts showed how DRS implementation impacted their purchasing habits:

“I’ve completely stopped buying canned drinks because I don’t want to deal with the return process.”

Alongside habits, emotional reactions also shaped motivation. Embarrassment, shame, or disgust (e.g., carrying sticky bags, being seen with many bottles) acted as deterrents, particularly in more socially exposed environments like supermarkets.

“Honestly, it’s embarrassing carrying all those cans through the supermarket.”

“Even when there are no blocked or full bins, it’s disgusting.”

Capability (13%)

Capability includes the psychological and physical capacity to perform a behavior, including having the necessary knowledge and skills. In this dataset, capability-related issues were less prominent but not insignificant.

Psychological Capability: Rule Confusion and Scheme Inconsistencies.

Although most consumers understood the basic logic of the DRS, comments expressed confusion around what qualifies for return, why some containers are rejected, and why rules vary across stores. These inconsistencies reduced confidence and created frustration.

“I don’t understand why when I want to return certain bottles/cans at Plus, the machine simply doesn’t accept them as deposit bottles/cans.”

“Do cans count too now? I tried at the supermarket but the machine rejected them. No idea what went wrong.”

“Why is there a difference between where you bought it and where you return it? It just makes no sense.”

Perceived Scheme Transparency.

Some users also questioned what happens to unclaimed deposits, expressing a lack of trust or clarity in the Scheme’s back-end operations. This kind of procedural complexity may undermine perceptions of legitimacy.

“So as you all know we have statiegeld... but I am wondering what happens to the money of bottles and cans that will never be returned?”

To complement these consumer-generated perspectives, Study 2 examines how the Dutch DRS is framed and communicated in official messaging campaigns.



Study 2 results: Official DRS Communication Exploratory Content Analysis

The content analysis of 41 videos from *Statiegeld Nederland* revealed a diverse set of communication strategies aimed at promoting participation in the Dutch Deposit Return Scheme (DRS). As can be seen in table 1, the materials varied in tone, format, and motivational focus, with some targeting general awareness and others aiming for more specific behavioral prompts. Four overarching themes emerged from the analysis: (1) Motivational Messaging and Financial Incentives, (2) Activation and Engagement in Events, (3) Scheme Expansion Communication, and (4) Instructional and How-To Content.

Add table 1 here

Table 1 - Distribution of themes across the 41 analyzed videos

Theme	Number of Videos	Primary Focus
Motivational Messaging (Donnie Campaign)	13	Motivation, Financial incentives, humor, Habit building (bring it back)
Event Activation and Engagement	10	Capability, Social norms, Convenience
Scheme Expansion Communication	10	Opportunity, Infrastructure
Instructional and How-To Content	8	Capability, Education

Motivational Messaging and Financial Incentives

The most prominent theme was the emphasis on behavioral motivation, appearing in 13 of the 41 videos. These videos were part of a nationwide campaign launched in 2024 in collaboration with Dutch rapper Donnie. They formed a multimedia strategy rolled out across television, radio, social media, and YouTube. The campaign featured Donnie performing a custom song that emphasized the central message: “*Keep bringing it back, get your Statiemonnie!*”

The videos relied heavily on humor, light-heartedness, and cultural references to reinforce the message around the intended behavior (bring the packaging back) and the financial incentive (“*statiemonnie*”). While the overall tone remained informal and comedic, the message consistently reinforced the functional reward of financial reimbursement, referred to as *Statiemonnie*. While the campaign made recycling entertaining and visible, it relied almost mainly on extrinsic motivators.

Activation and Engagement through Events

Ten videos highlighted how DRS participation was embedded within national events and local activations, such as the Dutch Grand Prix (F1), King’s Day, Lowlands Festival, and the Rotterdam Marathon. These videos demonstrated the creative integration of DRS collection efforts in large-scale public settings, often through pop-up return stations, interactive installations, or branded collection containers.

The communication style in these videos leaned toward festive and humorous, with short clips showing consumers being engaged on-site through music, light-hearted interviews, and visual cues. While these videos did not always explicitly mention the return incentive, they normalized DRS participation in leisure and social contexts, effectively contributing to the “opportunity” and “social norm” elements of the COM-B framework.

It is worth noting that one video within this category mentioned donation to charity -promoting the idea of returning bottles in support of one’s local sports club.

Scheme Expansion Communication

This theme, found in 10 videos, is related to the technical and infrastructural development of the DRS Scheme. These clips showed the placement of new deposit return points, implementation of bulk-return machines, and innovations like trash bins with separate compartments for cans and bottles.

These videos were largely informative in tone, often featuring partners from supermarkets, hospitals, and fuel stations explaining how they were contributing to scheme accessibility. This content is related to “opportunity” component of the COM-B framework, by demonstrating the increasing ease with which consumers could return items. While these videos did not emphasize emotional or symbolic rewards, they helped reinforce the idea that scheme convenience is improving, potentially lowering practical barriers to participation.

Instructional and How-To Content



Finally, eight videos served an informational or educational function, aiming to increase consumers' capability to participate in the DRS Scheme. These videos explained how the Scheme works, addressed common consumer questions (e.g., "Why can't cans be dented?"), and provided visual guidance on the return process.

While the tone in most of these videos was neutral or explanatory, one video used a creative narrative twist: "Op Recycle Safari met Donnie" (On Recycle Safari with Donnie) followed the rapper through a dramatized journey tracing a bottle's lifecycle from return station to recycling facility. This approach blended humor, storytelling, and education, and exemplified a more integrated method of combining behavioral instruction with entertainment. Overall, these videos aligned most closely with the "capability" domain of COM-B, providing clarity on logistics and procedures.

These findings suggest that official DRS communication in the Netherlands has combined entertaining, money-focused and habit building messaging (especially through the Donnie campaign) with some messages highlighting capability and scheme accessibility. However, intrinsic motivators (such as social identity) are less frequently emphasized. This creates potential opportunities for communication matching consumer needs and institutional messaging, which are explored in the Discussion section.

5. DISCUSSION

The two studies presented in this article offer complementary perspectives on the Dutch Deposit Return Scheme, revealing both alignment and divergence between top-down communication strategies and bottom-up consumer experiences. Study 1 explored how consumers' attitudes and behavior related to the DRS, while Study 2 examined the institutional narratives crafted to shape that behavior. Together, the findings provide insight into the behavioral dynamics that underlie public engagement with DRS and reveal opportunities for improving its design and communication.

Study 1 highlighted the complexity of consumer responses to DRS participation, revealing that behavioral engagement is not solely determined by the presence of financial incentives or environmental concern. Instead, behavior is shaped by the intricate interplay of capability, opportunity, and motivation, in line with the COM-B model. While many participants endorsed the environmental goals of the scheme, actual participation often depended on perceived convenience and ease of access. Infrastructure issues, such as broken or full machines and limited return locations, consistently emerged as barriers that disrupted intended routines. These barriers not only introduced friction but also generated frustration and distrust, particularly when consumers felt the burden of recycling had been unfairly shifted onto them.

Motivational drivers included not only financial considerations, but also pro-social values and identity-based motivations. Consumers reported donating bottles, leaving them for others to collect, or integrating returns into daily practices as part of a broader sense of responsibility and community. Emotional dimensions were also present in the posts. Feelings of disgust, embarrassment, or shame associated with handling used containers or waiting in line in public spaces influenced behavior, even among those who supported the goals of the DRS. These affective experiences have often been overlooked in both behavioral models and institutional messaging, yet they clearly shape participation.

Study 2 analysis of 41 videos from Statiegeld Nederland revealed a communication landscape heavily dominated by humor, pop culture references, focused extrinsic incentives and also behavioral activation ("bring it back"). The "Donnie campaign", which accounted for nearly one-third of the content, exemplified this strategy. By using music, humor, and the repeated slogan "Get your Statiemonnie!", the campaign on the financial reward in a fun approach. However, these messages rarely addressed the frustrations, emotional labor, or fairness concerns expressed by consumers. Social norms, community or ego-based narratives were less present.

This gap in framing may create a motivational misalignment: messages must resonate with the consumer's motivational state; misaligned or irrelevant appeals may backfire or be ignored (White et al., 2019). While both studies confirm the salience of financial incentives, the ways in which these incentives are interpreted diverge substantially. In official campaigns, financial reward is framed as universally appealing and sufficient to trigger participation. In contrast, many Reddit users described the deposit as too small to justify effort, particularly when confronted with logistical challenges. Furthermore, consumers in Study 1 contextualized their behavior through lenses of fairness, identity, and social meaning; dimensions largely absent in the official communication. This suggests that the current official narratives may fall short in sustaining long-term engagement if they rely too heavily on extrinsic appeals without connecting to consumers' lived realities.

The findings from this study contribute to several theoretical frameworks in consumer research, behavioral science, and sustainability communication. First, this work extends the COM-B model (Michie et al., 2011) by illustrating that capability, opportunity, and motivation must align not only within the individual but also between consumers and the institutional schemes that aim to shape their behavior. Previous studies applying COM-B in public health and environmental interventions have typically focused on internal behavior change mechanisms (Cane et al., 2012; Dixon & Johnston, 2021). In contrast, our dual-perspective approach demonstrates how misalignments between institutional messaging and consumer realities—particularly around infrastructural friction and emotional resonance—can disrupt even well-intentioned behavior change frameworks.



Second, our findings contribute to self-determination theory (Deci & Ryan, 2000) by reinforcing the idea that while extrinsic motivators such as financial incentives can prompt short-term compliance, sustained behavioral engagement is more effectively supported by intrinsic drivers such as moral identity, autonomy, and social belonging. Many consumers in our study reframed participation in DRS not as a financial transaction but as a pro-social or identity-affirming act through practices like donating containers or integrating returns into personal routines. This complements research by White et al. (2019), which advocates for sustainability campaigns to focus less on monetary gains and more on meaningful engagement with values and identity.

Finally, the results add to research on psychological distance and construal-level theory (Trope & Liberman, 2010), particularly in the context of sustainability messaging. According to this theory, people are more likely to act on issues that feel psychologically close—concrete, immediate, local, and personally relevant. Conversely, when environmental problems or solutions are perceived as distant or abstract, motivation to engage declines. Previous work has shown that framing climate change as a local or personally impactful issue increases engagement (Jones et al., 2017; Spence et al., 2012). Our findings suggest that current DRS communication could do further to reduce psychological distance. Campaigns tend to focus functional incentives, which may fail to connect emotionally or socially with consumers' lived experiences. By contrast, the Reddit discourse showed that consumers respond to emotionally resonant, socially grounded, and ego-relevant framings - such as feeling good about donating bottles, frustration over local machine failures, or pride in habitual participation. This highlights the importance of reframing the reward not only in financial terms but also in ways that are affectively and socially meaningful. Aligning message design with consumers' psychological proximity to the issue may be key to fostering more lasting engagement.

Our findings also present interesting practical contributions (Table 2). For practitioners and policy makers, these findings suggest directions to create congruence with the contextual and social realities of DRS participation. Messaging could acknowledge the minor inconveniences involved and normalize them as part of everyday sustainable citizenship. Rather than positioning DRS as an added task, campaigns could frame participation as a positive social contribution that aligns with personal values and community norms. Highlighting donation pathways or the collective impact of recycling or even focusing of self-image may tap into intrinsic motivations that go beyond the promise of monetary gain. In addition, communication should eventually openly address known issues such as broken machines or unclear return policies, as transparency builds trust and credibility.

Table 2 - Practical implications derived from the results

Strategic Area	Suggested Action
Policy and Infrastructure Improvements	Expand return locations beyond supermarkets (e.g., train stations, parks) to improve accessibility.
	Introduce digital solutions (e.g., return credits via a mobile app) to modernize and simplify the process.
Communication and Consumer Engagement	Shift messaging from 'extra effort' to 'social contribution' by emphasizing community impact or ego-centered benefits.
	Leverage gamification (e.g., tracking progress in an app) to motivate ongoing engagement.
	Improve transparency about how unclaimed deposits are used to build consumer trust and perceived fairness.
	Harnessing the power of habit via affordances – let individuals be inspired by other routines and reduce social friction (embarrassment, stigma)
On-site Accessibility and Support	Ensure return points are well-located, maintained, and staffed to assist consumers and reduce frustration.
Community Engagement and Education	Support local campaigns and workshops to increase DRS literacy and reach harder-to-engage audiences.



Beyond messaging, infrastructure and access remain critical. Posts consistently reported that machine availability, cleanliness, and placement significantly shaped behavior. Expanding return locations to include public spaces such as train stations, parks, or community centers may alleviate bottlenecks and signal broader societal support for DRS participation. Introducing digital solutions - such as mobile apps for tracking returns or directing unclaimed deposits to chosen cause - may further enhance engagement by providing personalized value and transparency (check solutions implemented in Norway by Tomra¹).

Retailers also play a key role. Ensuring that machines are well maintained, clearly marked, and user-friendly can reduce friction and improve satisfaction. Staff support and signage at return stations may help consumers who are uncertain about how to use the Scheme or whether their items are eligible. Community organizations and NGOs can complement these efforts through localized education campaigns, especially for hard-to-reach or skeptical audiences. These organizations may also be well positioned to promote the more intrinsic and social dimensions of participation that are often absent from formal messaging.

While our two studies offer relevant insights into the behavioral dynamics and communication framing of the Dutch Deposit Return Scheme, it is not without limitations. First, Study 1 relied on netnographic approach based on from Reddit discussions. While this method provides unsolicited and spontaneous insights into consumer attitudes, it reflects a self-selected group of users who are more digitally literate, opinionated, or motivated to share their views online (Kozinets, 2020). As such, the data may overrepresent more critical or frustrated voices and does not include the perspectives of less digitally active or harder-to-reach segments of the population, such as older adults, lower-income consumers or even users highly satisfied with the DRS. In addition, it does not track actual return behavior – the posts are declarative by nature.

Study 2 was limited to content published on the official Statiegeld Nederland YouTube channel. While this provided access to the main communication campaign videos, it does not account for how the campaign was adapted or perceived across other platforms, such as TV, radio, outdoor advertising, print, or social media channels like Instagram, TikTok, or Twitter. In addition, our analysis focused on the form and content of messages, rather than how they were received or interpreted by different audience segments. Future studies might explore message effectiveness using survey-based exposure studies, eye-tracking, or sentiment analysis on user reactions across platforms. Future research could use experimental or longitudinal designs to examine the relationship between message framing and observed return behaviors over time since we actually did not expose users to the messages.

Finally, while the dual-method approach allowed for a triangulated perspective, this study was conducted within a single national context during a limited time frame. As such, findings should not be generalized beyond the Dutch scheme without caution. Comparative research in countries with different DRS maturity levels, implementation timelines, or cultural norms could help illuminate broader dynamics of consumer engagement and communication effectiveness.

6. CONCLUSION

This research explored consumer engagement with the Dutch Deposit Return Scheme through two complementary studies. Study 1 captured the emotional, practical, and social complexities of everyday participation via consumer narratives on Reddit. Study 2 analyzed institutional communication narrative. The combined findings point to a motivational and experiential gap between how the DRS is framed and the individuals daily experiences and behaviors.

While financial incentives matter, they are not enough. Consumers engage with DRS through a broader lens that includes pro-social values, habit, fairness, and identity. Official messaging, while successful in gaining attention, may have overlooked these elements. Bridging this gap will require communication strategies that are more attuned to the lived realities of consumers, infrastructure that reduces effort and friction, and schemes that recognize and reward participation beyond economic terms.

Future research should investigate the long-term effects of different message framings, the diversity of consumer motivations across subgroups, and the role of cross-cultural norms in shaping recycling behavior. Understanding how people interpret, experience, and reframe sustainability policies like the DRS is essential to closing the gap between policy ambition and behavioral uptake.

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Declaration of Competing Interest

The author declares that she has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

¹ <https://www.tomra.com/reverse-vending/our-offering/tomra-digital-tools>



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