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Sustainability Behavior Of Generation Z In Indonesia: A Mixed-Methods Study Of Energy Price Shocks And The Value–Action Gap

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Abstract

The 2022 global energy crisis triggered a 112.9% surge in household energy prices in 116 countries and influenced the consumption behavior of Generation Z in Indonesia. Despite their high environmental awareness, there is a gap between awareness and concrete action (value-action gap) when faced with economic pressures. This study analyzes Generation Z's sustainability behavioral responses to price increases using a sequential, exploratory, mixed methods approach. Data were collected through in-depth interviews with two experts and a survey of 158 respondents aged 17–28 using a Likert scale and vignette scenarios to minimize social desirability bias. The results show that Generation Z's sustainability behavior is dominated by low-cost actions, while actions requiring significant economic sacrifice are still rarely undertaken. This study produced a Cost-Sensitive Behavior Framework with four main drivers: Energy Security, Conditional Adaptation, Structural Constraints, and Contextual Decisions. This framework explains that behavioral changes tend to be reactive and temporary due to financial and facility constraints. These findings emphasize the urgency of policies that focus on reducing economic barriers and providing structural infrastructure to encourage a permanent transition to more sustainable behavior.

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Keywords: Sustainability behavior, Generation Z, value–action gap, energy crisis, mixed methods.

INTRODUCTION

The global energy crisis triggered by the Russia–Ukraine conflict in 2022 has substantially increased energy prices and accelerated inflation across many countries, placing considerable pressure on household consumption. Rising energy prices have not only increased transportation and electricity costs but have also contributed to higher prices for food and other essential commodities. Using a global input–output model covering 116 countries, (Guan et al., 2025) estimated that household energy expenditure increased by 62.6–112.9%, leading to a 2.7–4.8% increase in total household spending worldwide. In Indonesia, the adjustment of subsidized fuel prices in September 2022 further intensified inflationary pressures and reduced household purchasing power. While economic theory suggests that higher prices encourage more efficient resource use, it remains unclear whether economic pressure also encourages more sustainable consumption or instead weakens individuals' commitment to environmentally responsible behavior.

From a behavioral economics perspective, consumer decisions are influenced not only by prices but also by psychological and social considerations. According to the Theory of Planned Behavior(Ajzen, 1991), behavior is determined by attitudes, subjective norms, and perceived behavioral control. Although higher energy prices may encourage consumers to reduce consumption, sustainable behavior often requires additional financial costs, greater effort, or reduced convenience. Consequently, individuals may face trade-offs between economic affordability and environmental responsibility. Previous studies have shown that price incentives alone rarely produce persistent sustainable behavior unless they are supported by intrinsic environmental motivation and favorable social norms (Dillenseger & Mouminoux, 2026; Fabio et al., 2025; Niu et al., 2023; Pellerano et al., 2017).

These trade-offs are particularly relevant for Generation Z, a generation widely recognized for its strong environmental awareness. Shaheen Hosany & Serdiuk (2025)reported that nearly 70% of Generation Z expressed serious concern about climate change, while Wijaya & Kokchang (2023) and Suminar et al. (2024) found that environmental knowledge, family influence, and social norms positively affect pro-environmental behavior among Indonesian youth. Nevertheless, numerous studies also demonstrate that positive environmental attitudes do not always translate into actual behavior, a phenomenon commonly described as the value action gap (Borges-Tiago

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et al., 2024; Dhir et al., 2021; Portus et al., 2024). Consumers frequently prioritize affordability, convenience, and habitual consumption over environmental considerations when making purchasing decisions(Vironika & Maulida, 2025). This inconsistency suggests that environmental values alone are insufficient to explain sustainable behavior, particularly under conditions of economic pressure.

Despite the growing literature on sustainable consumption, several important research gaps remain. First, previous studies have predominantly relied on self-reported attitudes and behavioral intentions, making them susceptible to social desirability bias and limiting their ability to capture actual decision-making(Dolnicar et al., 2026; Ried et al., 2022; Tan et al., 2021). Second, most studies have examined sustainable behavior under relatively stable economic conditions, while limited attention has been given to how individuals respond to rising living costs resulting from energy price shocks(Boostani et al., 2026; Zhang et al., 2023a). Third, empirical evidence from developing countries remains relatively scarce, despite substantial differences in purchasing power, consumption patterns, and institutional contexts that may influence sustainable behavior. These limitations highlight the need for a more contextual understanding of how economic pressure shapes environmentally responsible decisions among Generation Z.

To address these gaps, this study proposes the concept of Cost-Sensitive Sustainable Behavior (CSSB), which argues that sustainable behavior is influenced not only by environmental values but also by individuals' perceptions of economic cost, psychological cost, and convenience cost. Rather than replacing the value–action gap perspective, CSSB extends it by explaining why individuals with strong environmental concern may still fail to maintain sustainable behavior when facing increasing financial pressure and practical constraints. This perspective provides a more comprehensive explanation of sustainable behavior during periods of economic uncertainty.

Accordingly, this study aims to examine the sustainable behavior of Generation Z in Semarang City in response to increasing energy prices and the rising prices of single-use consumer products. A quantitative survey involving 158 respondents aged 17–28 years was conducted using a combination of Likert-scale behavioral measures and vignette-based dilemma scenarios to capture real-world trade-offs between environmental responsibility, economic cost, and convenience. By integrating behavioral frequency measures with contextual decision scenarios, this study is expected to reduce social desirability bias while providing a more realistic assessment of sustainable behavior. The study contributes theoretically by extending the value–action gap literature through the proposed Cost-Sensitive Sustainable Behavior framework, methodologically by introducing a more contextual measurement approach, and empirically by providing evidence

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from Indonesia as an emerging economy facing global energy price shocks.

LITERATURE REVIEW

Sustainable behavior refers to individual actions that minimize negative impacts on the environment through responsible consumption, efficient resource use, waste reduction, and environmentally conscious purchasing decisions (Çam et al., 2025; Gunawan et al., 2025; H. Han, 2021; Vollebregt et al., 2024; Zhang et al., 2023b). Among various demographic groups, Generation Z has received increasing academic attention because this generation grew up amidst widespread exposure to climate change, environmental campaigns, and digital information, making sustainability a key part of their social identity. Previous studies consistently show that environmental knowledge, social norms, and family influence positively shape Generation Z's pro-environmental attitudes and behavioral intentions (Shaheen Hosany & Serdiuk, 2025; Suminar et al., 2024; Wijaya & Kokchang, 2023). However, strong environmental concerns do not always translate into consistent sustainable behavior.

This inconsistency is widely recognized as the value-action gap, which refers to the difference between environmental values and actual behavio(Grunwald et al., 2025; Kim & Lee, 2023). Although individuals may express strong support for environmental protection, their daily decisions are often influenced by practical considerations such as affordability, convenience, habit, and product availability (Andrade & Vieites, 2025; Elmor et al., 2025a). Sustainable consumption often reflects a trade-off between environmental commitment and personal utility rather than environmental values per se. Recent studies have shown that this gap remains evident among Generation Z, despite their relatively high environmental awareness, suggesting that environmental concern alone is insufficient to explain actual sustainable behavior.

One explanation for the persistence of the value-action gap is the low-cost hypothesis, which posits that individuals are more likely to engage in environmentally responsible behavior when the associated costs are relatively low (Farjam et al., 2019). These costs go beyond financial outlays and include time, effort, and convenience. Experimental evidence further shows that increasing effort and time costs significantly reduce individuals' willingness to engage in pro-environmental behavior, even among respondents with positive environmental attitudes (Todorova et al., 2025). These findings suggest that sustainable behavior is highly sensitive to perceived personal sacrifices, particularly when individuals face economic uncertainty or rising living costs.

Consumer choices are determined not only by moral values but also by the evaluation of

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the consequences associated with each behavioral alternative. The Hunt–Vitell model explains that ethical behavior results from the interaction between normative evaluations and perceived outcomes, implying that individuals may prioritize practical benefits over moral considerations when the personal costs of ethical behavior are substantial (Zaikauskaitė et al., 2022). This perspective bridges the value-action gap by highlighting that sustainable decisions are fundamentally contextual and influenced by situational constraints rather than solely environmental values.

Existing literature suggests that sustainable behavior emerges from the interaction between environmental values, perceived costs, and contextual factors. However, previous studies have primarily emphasized environmental attitudes, behavioral intentions, or social norms, while paying relatively limited attention to how economic pressures influence the consistency of sustainable behavior(Çam et al., 2025; Chen et al., 2025; Elmor et al., 2025b; Essiz et al., 2023; L. B. Han et al., 2025; Tian & Liu, 2022). Based on the value-action gap and the low-cost hypothesis, this study proposes the concept of Cost-Sensitive Sustainable Behavior (CSSB), which posits that environmentally responsible behavior is shaped by three interrelated dimensions of tradeoffs: economic costs, psychological costs, and convenience costs. From this perspective, individuals may continue to espouse environmental values while simultaneously reducing sustainable practices when the perceived costs of maintaining those behaviors increase. Therefore, CSSB provides a more comprehensive framework for explaining sustainable behavior under conditions of rising energy prices and rising living costs.

RESEARCH METHOD

This study employed a mixed-methods approach with a sequential exploratory design, where qualitative exploration preceded quantitative data collection(Creswell & Creswell, 2018). This design was chosen because the proposed concept of Cost-Sensitive Sustainable Behavior (CSSB) has received limited empirical investigation, necessitating initial qualitative exploration to identify context-specific behavioral factors before developing a survey instrument. The qualitative findings were then used to develop contextual measurement items and vignette-based scenarios implemented in the quantitative survey.

The qualitative data consisted of in-depth interviews with two purposively selected experts representing the fields of energy policy, environmental economics, and consumer behavior(Tantra et al., 2020). The interviews explored perceptions of how energy price increases influence sustainable consumption decisions, factors driving sustainable and unsustainable

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behavior, and the effectiveness of existing policy responses. The interview data were analyzed using thematic analysis with Atlas.ti, following the six-step procedure proposed by (Braun & Clarke, 2014), including data introduction, initial coding, theme development, theme review, theme definition, and report generation. The resulting themes served as the basis for refining the questionnaire and constructing realistic behavioral scenarios(Susilowati, 2020).

The quantitative data involved a survey of 158 Generation Z respondents aged 17–28 living in Semarang City, Indonesia. Semarang was chosen because it is one of the largest urban areas in Central Java, characterized by diverse consumption patterns and a substantial Generation Z population, making it an appropriate context for examining sustainable behavior under economic pressure. Respondents were selected using purposive sampling combined with quota sampling to ensure representation across key demographic characteristics of Generation Z. The research instrument combined Likert-scale behavioral measures with vignette-based moral dilemma scenarios. While Likert items captured the frequency of respondents' daily sustainable practices, vignette scenarios were designed to simulate real-life situations involving trade-offs between environmental responsibility, economic costs, and personal convenience. This combination was intended to reduce the social desirability bias commonly associated with self-reported environmental behavior and to provide a more realistic assessment of decision-making under conditions of rising prices.

Prior to data collection, the questionnaire underwent expert review to establish content validity and ensure the relevance and clarity of all measurement items. Participation in the survey was voluntary and anonymous, and informed consent was obtained from all respondents before data collection began. Qualitative data were analyzed using thematic analysis, while quantitative data were analyzed descriptively using frequency distributions, percentages, mean scores, and cross-tabulations to identify behavioral patterns across various scenarios, providing a more comprehensive understanding of Generation Z's sustainable behavior in response to rising energy prices.

RESULT AND DISCUSSION

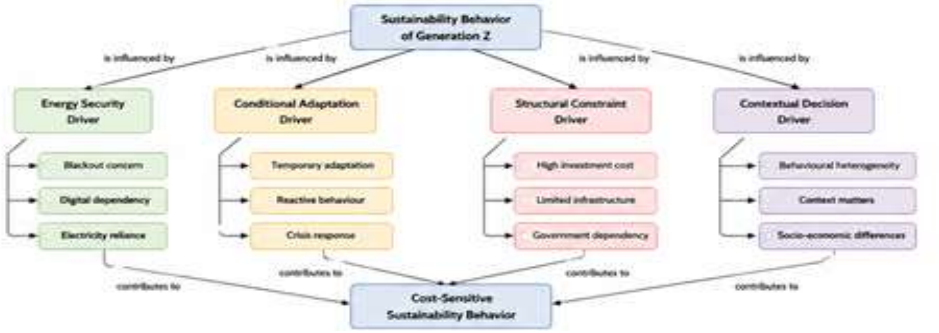
Emergence of Cost-Sensitive Sustainable Behavior: Insights from Expert Interviews

The qualitative analysis revealed that Generation Z's sustainable behavior is influenced not only by environmental awareness but also by a dynamic interaction between energy-related concerns, situational adaptation, structural conditions, and socio-economic context. Rather than emerging as independent themes, these factors form a sequential behavioral mechanism

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explaining why environmentally conscious individuals may not consistently practice sustainable behavior when confronted with rising living costs. The thematic analysis identified four interrelated behavioral drivers, namely Energy Security Driver, Conditional Adaptation Driver, Structural Constraint Driver, and Contextual Decision Driver, which together provide the conceptual basis for the proposed Cost-Sensitive Sustainable Behavior (CSSB) framework.



Source: Atlas.ti Output, 2026

Figure 1. Behavioral Drivers Leading to Cost-Sensitive Sustainable Behavior

Figure 1 illustrates the sequential relationship among the four behavioral drivers identified through the thematic analysis. The mechanism begins with concerns regarding energy security, which stimulate initial behavioral responses when individuals perceive potential disruptions to their daily activities. These responses are followed by conditional adaptation, indicating that behavioral adjustments are largely temporary and dependent on the persistence of external pressures. Whether these changes can be maintained is subsequently determined by structural constraints, including financial affordability, infrastructure availability, and institutional support. Sustainable decisions are filtered through each individual's social and economic context, which determines whether environmental values can be translated into consistent action. Collectively, these interconnected drivers explain the emergence of Cost-Sensitive Sustainable Behavior (CSSB), suggesting that sustainable behavior is continuously negotiated against perceived economic, psychological, and practical costs rather than being driven solely by environmental awareness.

The Energy Security Driver indicates s that Generation Z is more concerned about maintaining uninterrupted access to electricity than about rising energy prices. As illustrated in Figure 2, this driver consists of three interconnected themes blackout concern, electricity reliance, and digital dependencyhighlighting that electricity has become an essential resource supporting education, employment, communication, and daily digital activities. One expert explained that

"What worries Generation Z most is not higher electricity prices, but the possibility of

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losing access to electricity altogether."

This finding extends previous studies by suggesting that energy security, rather than energy affordability, has become the primary trigger of behavioral responses among digitally dependent young consumers (de Costa et al., 2025; Jităreanu et al., 2022)

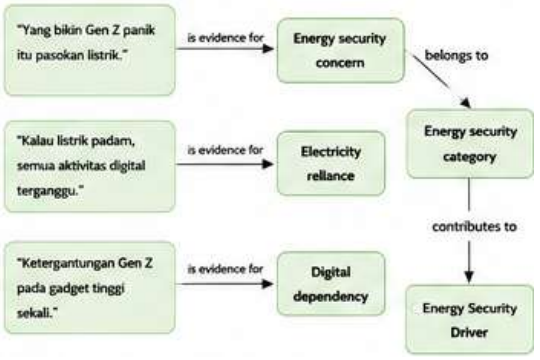


Figure 2. Thematic Network of the Energy Security Driver

Source: Atlas.ti Output, 2026

The Conditional Adaptation Driver reveal that sustainable behavior tends to be reactive and temporary rather than habitual. As shown in Figure 3, this driver comprises temporary adaptation, reactive behavior, and crisis response, indicating that behavioral changes emerge mainly during periods of crisis and weaken once external pressures diminish. This pattern is consistent with the value–action gap, suggesting that environmental concern alone is insufficient to sustain long-term behavioral change(Farjam et al., 2019; Wyss et al., 2022)

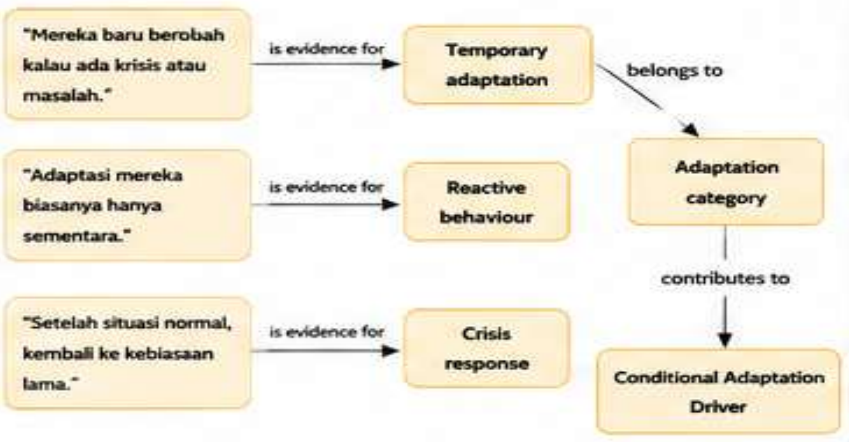


Figure 3. Thematic Network of the Conditional Adaptation Driver

Source: Atlas.ti Output, 2026

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The Structural Constraint Driver, presented in Figure 4, highlights that financial affordability, limited infrastructure, and dependence on institutional support remain major barriers to sustainable behavior. Experts emphasized that environmentally responsible choices often require investments beyond the financial capacity of young consumers, making sustainable practices difficult to maintain despite positive environmental attitudes. This finding supports previous studies identifying investment costs and infrastructure limitations as critical obstacles to sustainable behavior(Lv, 2023; Rana et al., 2025)

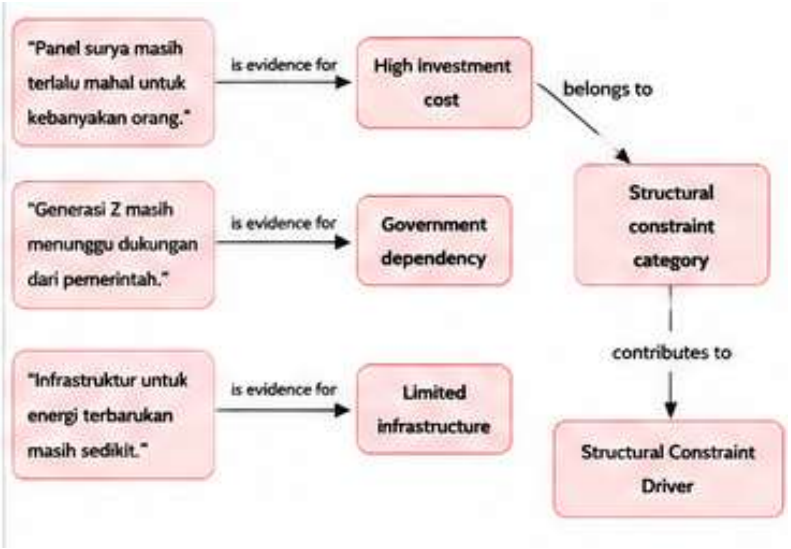


Figure 4. Thematic Network of the Structural Constraint Driver
Source: Atlas.ti Output, 2026

The Contextual Decision Driver demonstrates that sustainability decisions are strongly shaped by socio-economic circumstances. As illustrated in Figure 5, behavioral heterogeneity, contextual conditions, and socio-economic differences explain why Generation Z does not exhibit a uniform pattern of sustainable behavior. Instead, individuals continuously evaluate whether the economic, psychological, and convenience costs associated with environmentally responsible choices are acceptable within their personal circumstances. This finding is consistent with previous studies highlighting the importance of contextual factors in shaping sustainable behavior(Filip et al., 2025; Qazi et al., 2023).

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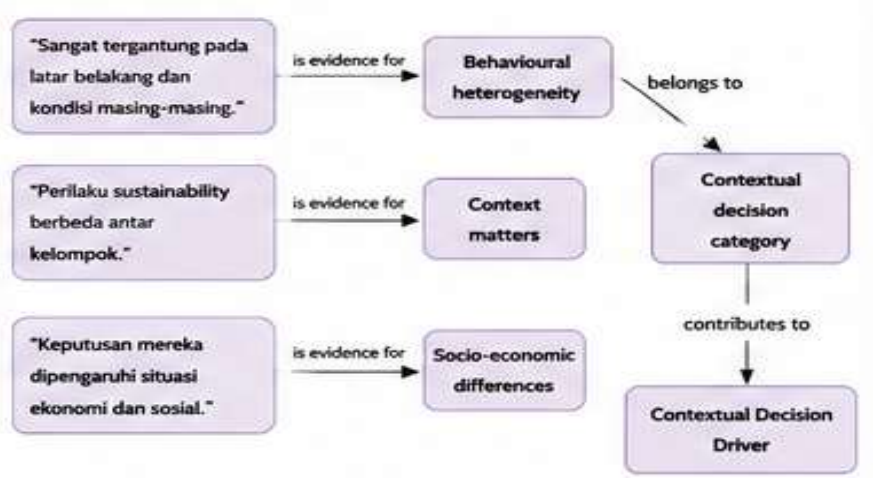


Figure 5. Thematic Network of the Contextual Decision Driver

Source: Atlas.ti Output, 2026

The four behavioral drivers describe a sequential mechanism through which sustainability decisions evolve from external triggers to individual evaluation. The findings indicate that environmentally responsible behavior is maintained only when perceived financial, psychological, and practical costs remain acceptable. This qualitative evidence therefore provides the conceptual foundation for the proposed Cost-Sensitive Sustainable Behavior (CSSB) framework and serves as the basis for interpreting the subsequent quantitative findings.

SUSTAINABILITY BEHAVIOR OF GENERATION Z

A total of 158 Generation Z respondents aged 17–28 participated in this study. As presented in Table 1, the majority of respondents were between 23–25 years old (34.8%), followed by those aged 20–22 years old (34.2%), 26–28 years old (19.0%), and 17–19 years old (12.0%). This age distribution represents Generation Z in their early productive years, a stage of life characterized by increasing autonomy in consumption decisions and lifestyle choices. This group provides an appropriate context for examining how young consumers respond to rising energy prices while balancing environmental concerns and economic considerations.

Table 1. Respondent Profile Based on Age

Characteristic	Frequency	Percentage (%)
17–19 years	19	12,03

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20–22 years	54	34,18
23–25 years	55	34,81
26–28 years	30	18,99
Total	**158**	**100**

To examine overall sustainable behavior patterns, respondents were asked to report the frequency of engagement in twelve sustainability-related practices. As shown in Table 2, behaviors requiring minimal financial sacrifice or lifestyle adjustments received the highest average scores. Energy-saving practices, such as turning off lights and appliances when not in use (Mean=3.67), choosing recyclable packaging (Mean=3.56), and participating in environmental groups (Mean = 3.54), were among the most frequently engaged in behaviors. In contrast, behaviors that involve greater financial sacrifice or self-control such as rejecting flash sales (Mean=2.26), avoiding unnecessary purchases (Mean=2.35), and purchasing environmentally friendly products despite their higher price (Mean = 2.53) received significantly lower scores.

Table 2. Descriptive Statistics of Generation Z's Sustainability Behavior

Behavior	Rating	**Mean**
1	Turn off lights, air conditioners, and chargers when not in use.	**3,67**
2	Choose products with recyclable packaging.	**3,56**
3	Join environmental groups or activities.	**3,54**
4	Share environmental content on social media.	**3,46**
5	Choose the "no plastic" option when ordering food.	**3,46**
6	Bring your own tumbler.	**3,29**
7	Use public transportation or walk.	**2,99**
8	Reduce excessive clothing purchases.	**2,77**
9	Practice sustainability consistently, not just on social media*.	**2,54**
10	Choose eco-friendly products, even if they are more expensive*.	**2,53**
11	Avoid unnecessary purchases*.	**2,35**
12	Avoid flash sales*.	**2,26**

These findings indicate that Generation Z is more likely to adopt sustainable practices

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when they involve limited economic or practical sacrifices. This pattern confirms qualitative findings, particularly the Energy Security Driver and Structural Constraint Driver, which indicate that behavioral decisions are heavily influenced by perceived costs and resource availability. Previous studies have also reported that environmental concerns among Generation Z often outweigh actual sustainable consumption when decisions involve higher prices, reduced convenience, or changes in consumption habits (Adah et al., 2025) ; (Oktarini et al., 2025).

To further examine this pattern, sustainability behaviors were classified into low-cost and high-cost categories. Low-cost behaviors include actions that require little or no additional financial outlay, such as conserving electricity, carrying reusable bottles, choosing recyclable packaging, and reducing plastic use. High-cost behaviors include purchasing more expensive eco-friendly products, limiting impulse purchases, and declining promotional discounts.

Table 3. Comparison of Low-Cost and High-Cost Sustainability Behavior

Category	Mean
Low-Cost Behavior	3,49
High-Cost Behavior	2,71

The contrast between the two categories reveals the main findings of this study. Respondents reported significantly higher engagement in low-cost sustainable behaviors (Mean = 3.49) than in high-cost sustainable behaviors (Mean = 2.71). These findings provide quantitative support for the proposed Cost-Sensitive Sustainable Behavior (CSSB) framework, developed from expert interviews. Although Generation Z generally exhibits positive environmental attitudes, sustainable behavior declines as perceived financial, psychological, or convenience costs increase. The largest behavioral gap identified in this study is not between environmental awareness and behavior itself, but between low-cost sustainability practices and those that require greater personal sacrifice.

To identify which aspects of sustainability are most consistently practiced, behavioral indicators were further grouped into four dimensions: Energy-Saving Behavior, Waste Reduction Behavior, Environmental Participation, and Sustainable Consumption.

Table 1. Dimensions of Sustainability Behavior

Dimension	Mean
Energy Saving Behavior	3,66

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Waste Reduction Behavior	3,43
Environmental Participation	3,50
Sustainable Consumption	2,50

As presented in Table 4, Energy Saving Behavior achieved the highest average score (Mean = 3.66), followed by Environmental Participation (Mean = 3.50) and Waste Reduction Behavior (Mean = 3.43). In contrast, Sustainable Consumption recorded the lowest score (Mean = 2.50). This result indicates that respondents readily adopt environmentally responsible behaviors when they are simple, habitual, and inexpensive, whereas behaviors requiring higher expenditure or substantial changes in consumption patterns remain relatively uncommon.

These findings reinforce the Conditional Adaptation Driver and Contextual Decision Driver identified during the qualitative phase. Sustainable behavior appears to be maintained when environmental actions are compatible with respondents' financial capacity and everyday routines but weakens when environmental responsibility conflicts with economic priorities or personal convenience(Essiz et al., 2023; Jackson et al., 2005; Pinho & Gomes, 2023; Theocharis & Tsekouropoulos, 2025a). This pattern reflects the persistence of the value–action gap, in which positive environmental attitudes do not necessarily translate into consistent sustainable consumption (Theocharis & Tsekouropoulos, 2025b).

The quantitative findings validate the behavioral mechanism identified through the expert interviews. Sustainable behavior among Generation Z is characterized by relatively strong engagement in low-cost environmental actions but substantially weaker commitment to behaviors involving higher economic or practical sacrifices. These results provide empirical support for the proposed cost-sensitive sustainable behavior framework, suggesting that sustainable behavior is shaped not only by environmental values but also by individuals' evaluation of the financial, psychological, and convenience costs associated with environmentally responsible choices(Andrade & Vieites, 2025; Borges-Tiago et al., 2024; Grunwald et al., 2025; Latkin et al., 2017; Tan et al., 2021; Vironika & Maulida, 2025).

BEHAVIORAL TRADE-OFFS IN SUSTAINABLE DECISION-MAKING

Although the descriptive analysis indicates that Generation Z generally demonstrates positive sustainability behavior, descriptive indicators alone cannot determine whether these behaviors remain consistent when individuals encounter real-life dilemmas. Therefore, respondents were presented with a series of vignette-based scenarios designed to capture

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sustainability decisions under competing economic, psychological, social, and practical considerations. This vignette approach enables a more realistic assessment of behavioral consistency by simulating situations that resemble everyday decision-making.

Table 5. Descriptive Statistics of Behavioral Trade-off Scenarios

Code	Summary of Findings	Dominant Percentage
SC1	Still using the same old tumbler	
SC2	Contacting restaurants to stop providing plastic bags	34,8%
	Only expressing concern through social media	27,2%
SC3	Rejecting eco-friendly products that don't have certification	37,3%
SC4	Supporting actions but waiting for others to initiate	34,8%
SC5	Choosing ESG investments/donations	33,5%
	Choosing to set aside funds for gadgets	33,5%
SC6	Only signing petitions	36,7%
SC7	Not too affected by the fuel price hike because it's still covered by parents	28,5%
SC8	Feeling guilty after using plastic straws but not changing behavior	27,2%
SC9	Willing to initiate sustainability discussions	10,1%
	Choosing to be a listener	30,4%

Table 5 reveals considerable variation across the nine behavioral trade-off scenarios, suggesting that sustainable decisions are highly dependent on the context in which they are made. Respondents tended to maintain environmentally responsible choices when the required sacrifice was relatively small. For example, 34.8% of respondents were willing to ask restaurants not to provide plastic bags (SC2), while 37.3% rejected eco-friendly products that lacked credible environmental certification (SC3). However, sustainable decisions became less consistent when environmental responsibility conflicted with financial priorities or consumption preferences. In SC5, only 33.5% preferred allocating their holiday allowance to ESG investment, whereas the same

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proportion prioritized purchasing a new gadget. Likewise, although 36.7% were willing to sign an environmental petition (SC6), only 10.1% expressed willingness to initiate sustainability discussions (SC9), indicating that active engagement remained relatively limited. Overall, these findings suggest that sustainable behavior weakens as individuals face increasing personal costs or greater behavioral commitments. The nine scenarios were subsequently classified into broader categories of behavioral trade-offs based on the dominant type of conflict represented in each vignette.

Table 6. Classification of Behavioral Trade-offs

Dimension Behavioral Trade-off	Moral Dilemma Scenarios	Key Conflicts
Consumption Temptation	SC1 – Tumbler promo;	Sustainability vs. consumption incentives
Convenience Trade-off	SC5 – THR allocation for ESG or gadgets	Sustainability vs. convenience and efficiency
Economic Trade-off	SC2 – Requesting restaurants not to provide plastic bags; SC7 – Response to rising fuel prices	Sustainability vs. direct economic benefits
Social Responsibility	SC3 – Environmentally friendly products are more expensive/not certified;	Sustainability vs. social participation
Behavioral Reflection	SC5 – ESG investments with lower returns	Personal values vs. actual behavior

Table 6 demonstrates that the observed dilemmas can be organized into five categories of behavioral trade-offs: consumption temptation, convenience trade-off, economic trade-off, social responsibility, and behavioral reflection. While each category reflects a different decision context, all involve balancing environmental responsibility against perceived personal costs. Consumption temptation captures conflicts between sustainability and immediate consumption desires, whereas convenience trade-offs reflect situations where environmentally responsible behavior requires additional effort. Economic trade-offs involve financial sacrifices, social responsibility concerns collective participation in sustainability initiatives, and behavioral reflection highlights the discrepancy between environmental values and actual behavior.

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Across these five categories, economic trade-offs emerged as the strongest barrier to consistent sustainable behavior, followed by convenience-related dilemmas and consumption temptation. By contrast, respondents showed relatively stronger support for behaviors involving environmental awareness or symbolic participation than for actions requiring financial commitment or lifestyle adjustments. This pattern closely supports the low-cost hypothesis, which argues that pro-environmental behavior becomes more likely when associated economic and practical costs remain relatively low (Farjam et al., 2019). Similar findings have also been reported among Generation Z consumers, where higher prices, convenience considerations, and consumption habits remain major obstacles to sustainable consumption despite positive environmental attitudes (Oktarini et al., 2025; Theocharis & Tsekouropoulos, 2025).

These quantitative findings closely mirror the qualitative results presented earlier. The prominence of economic trade-offs reinforces the Structural Constraint Driver, while the influence of convenience and social context confirms the Contextual Decision Driver identified through expert interviews. Likewise, the persistence of symbolic participation without corresponding behavioral commitment reflects the Conditional Adaptation Driver, suggesting that sustainability practices often remain reactive and situational rather than fully internalized. The convergence between qualitative and quantitative findings therefore strengthens the credibility of the proposed behavioral mechanism.

INTEGRATION OF MIXED-METHODS FINDINGS

The qualitative and quantitative findings were integrated using a joint display approach to identify areas of convergence and complementarity between expert perspectives and the survey results. Rather than treating both datasets separately, the integration aimed to explain how qualitative insights strengthened the interpretation of quantitative patterns and contributed to the development of the proposed Cost-Sensitive Sustainable Behavior (CSSB) framework

Table 7. Joint Display: Integration of Qualitative (Expert 1 & 2) and Quantitative (Gen Z Survey) Findings

Qualitative Theme	Supporting Quantitative Evidence	Integration	Meta-Inference
Gradual price transmission (Expert 1)	SC7: 28.5% were not affected by fuel price increases; only	Confirmed	Price signals have limited short-term influence on behavioral change.

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	27.8% considered alternative transport		
Price expectation (Expert 1)	No survey item measured future price expectations	Not assessed	Requires further investigation in future studies.
Social trend/FOMO (Expert 1)	SC9: 24.1% remained silent; 30.4% were passive supporters	Partial	Social conformity influences sustainability engagement.
Health co-benefits (Expert 1)	Walking/public transport (Mean = 2.99)	Partial	Health-related motivation contributes only moderately to sustainable mobility.
Energy security (Expert 2)	No blackout scenario included	Not assessed	The role of energy security requires further empirical testing.
Temporary adaptation (Expert 2)	88.0% acknowledged a value–action gap; Consumer Resistance showed the lowest score (Mean = 2.49)	Strongly confirmed	Sustainable behavior remains reactive rather than habitual.
Structural constraints (Expert 2)	SC7: 28.5% depended on parental financial support	Partial	Financial dependence limits the adoption of sustainable behavior.

The joint display demonstrates a high degree of convergence between the two datasets. Both experts emphasized that sustainable behavior among Generation Z is influenced more by contextual conditions than by environmental values alone. This interpretation is supported by the survey findings, which show stronger engagement in low-cost sustainability behaviors than in actions requiring greater financial commitment or lifestyle adjustments. Likewise, the high prevalence of the value action gap confirms the experts' observation that behavioral change is often temporary and conditional rather than fully internalized.

The integration also highlights that financial affordability, convenience, and structural conditions consistently shape sustainability decisions. The qualitative findings identified these factors as key behavioral drivers, while the quantitative analysis demonstrated that sustainable

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choices declined when respondents faced higher economic, psychological, or practical costs. Together, these findings indicate that sustainable behavior is better understood as a context-dependent decision-making process rather than as a direct consequence of environmental awareness.

Some qualitative insights, particularly those related to future price expectations and electricity supply disruption, were not directly assessed in the survey instrument. Rather than contradicting the quantitative findings, these themes represent potential areas for future research to further refine the behavioral mechanism proposed in this study.

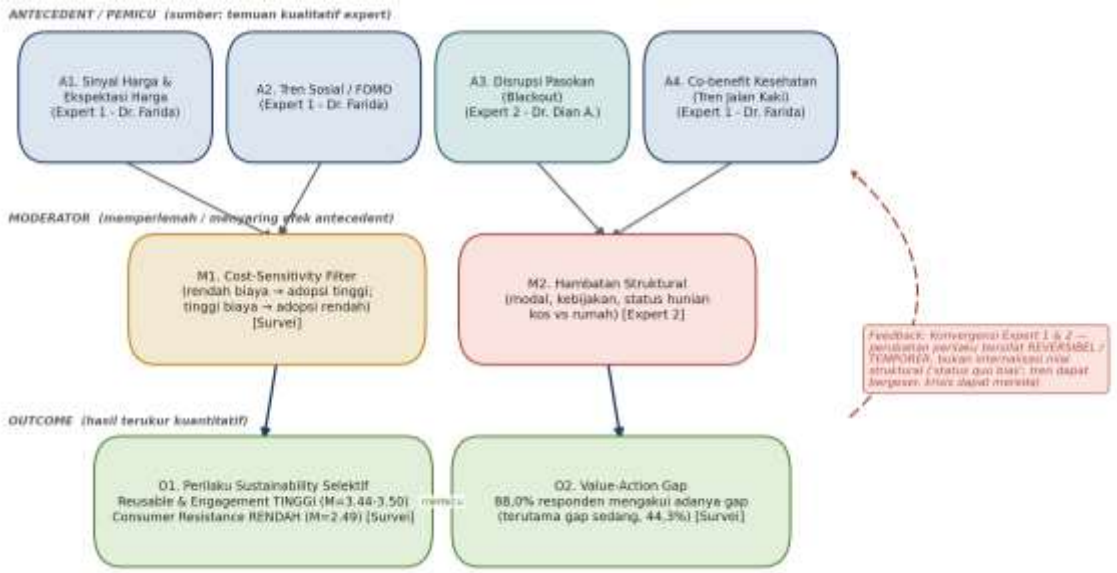


Figure 6. Cost-Sensitive Sustainable Behavior Framework

Figure 6 summarizes the integrated findings of this study. The framework illustrates that sustainability decisions emerge through the interaction between contextual drivers (energy security, conditional adaptation, structural constraints, and contextual decision-making) and individual evaluations of economic, psychological, and convenience costs. These evaluations subsequently determine whether environmental values are translated into consistent sustainable behavior or remain as intentions, resulting in the observed value–action gap. The framework therefore positions cost sensitivity as the central mechanism linking environmental awareness with actual sustainability behavior among Generation Z.

CONCLUSION

This study demonstrates that sustainable behavior among Generation Z is predominantly

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characterized by low-cost practices, such as energy saving, reducing plastic use, and participating in environmental activities, whereas behaviors requiring greater financial sacrifice, lifestyle changes, or self-restraint are adopted less consistently. The vignette-based scenarios further reveal that sustainable choices tend to weaken when they involve higher economic, convenience, or psychological costs, reflecting the persistence of the value–action gap between environmental awareness and actual behavior.

The qualitative findings complement these results by showing that sustainable behavior is shaped by concerns over energy security, temporary adaptation to external pressures, structural constraints, and socio-economic conditions. The integration of qualitative and quantitative findings confirms that sustainability decisions are not determined solely by environmental values but by individuals' evaluation of the costs associated with acting sustainably.

Based on these findings, this study proposes the Cost-Sensitive Sustainable Behavior (CSSB) framework, which explains that the consistency of sustainable behavior depends on the interaction between environmental commitment and perceived economic, psychological, and convenience costs. This framework extends the value–action gap perspective by highlighting cost sensitivity as a key mechanism underlying sustainability decision among Generation Z.

From a practical perspective, policies promoting sustainable behavior should move beyond raising environmental awareness alone. Greater attention should be given to reducing financial and structural barriers, improving access to sustainable alternatives, and creating supportive social environments that make sustainable choices easier, more affordable, and more attractive for young consumers.

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