

## Proposing a ‘constrained environmental stewardship’ (CES) framework: Understanding green consumer behaviour among individuals in low-income rural households in Zambia, under conditions of climate uncertainty

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<https://doi.org/10.51867/ajernet.7.1.113>

### ABSTRACT

This study looks at green consumer behaviour among low-income rural households in Kabwe, Zambia, during the 2023 drought caused by El Niño. The research used the Constrained Environmental Stewardship (CES) framework. This framework shifts the discussion of sustainability beyond models like the Extended Theory of Planned Behaviour and the Base-of-Pyramid framework. CES views rural environmental behaviour not as irresponsibility but as resilience and moral duty under tough circumstances. It places household practices within the context of poverty and climate uncertainty. A qualitative, phenomenological design with a mixed-methods approach was used to capture participants' real experiences. The target group comprised rural households spending less than US\$5.50 per day, representing Zambia's rural poor. Using purposive sampling, 27 participants from the Muwowo, Kang'omba, and Kamakuti regions of Kabwe were chosen, reflecting different genders, ages, and livelihood categories. Data collection included various methods. In-depth interviews with 19 participants explored their consumption stories, traditional practices, and cultural norms. Focus group discussions with 8 community members showed shared values, social influences, and ways to build resilience together. Non-participant observations provided insights into daily habits. Household surveys confirmed the findings with quantitative data, enhancing reliability and validity. Data analysis followed Van Manen's hermeneutic-phenomenological method. It focused on thematic reflection, detailed descriptions, interpretive depth, and the essence of real experiences. This process revealed the meanings participants attached to their environmental practices during times of scarcity and ecological threats. The findings show contradictions in green consumer behaviour among the rural poor. Environmental awareness existed alongside practices such as charcoal use and tree cutting, driven not by carelessness but by survival needs. Households showed resilience and creativity through recycling, repurposing, and cost-saving ideas. However, poverty, poor infrastructure, and systemic exclusion limited their ability to act sustainably. The CES framework offers a culturally relevant way to understand rural environmental behaviour. It redefines this behaviour as adaptive and responsible under significant constraints. Recommendations focus on policies that make living costs more manageable, improve local education, and enhance infrastructure while recognising the importance of community resourcefulness in promoting sustainable practices. By placing green consumer behaviour within the context of poverty and climate uncertainty, the CES framework provides both new theoretical insights and practical policy guidance. It ensures that resilience is supported and not misunderstood as irresponsibility.

**Keywords:** Constrained Environmental Stewardship (CES), Climate Uncertainty, Green Consumer Behaviour, Poverty, Rural, Zambia

### I. INTRODUCTION

The global environment has changed significantly over the past few decades, putting natural systems and biodiversity at risk (Mustafa et al., 2022). Climate change has become a major source of concern for people (Zafar et al., 2020). In Sub-Saharan Africa, vulnerable populations bear the brunt of these effects. In Zambia, serious ecological damage has been witnessed over the past decades (Kirikkaleli et al., 2021; Thøgersen, 2021). Climate change has led to unpredictable rainfall, drought, food insecurity, and hunger, negatively affecting mainly those in low-income groups. About 80% of Zambia's population, particularly in rural areas, live in poverty (World Food Programme, 2024). The drought caused by El Niño, one of the worst since 1981, exposed nearly 3 million people to poverty and hunger, highlighting the fragility of rural livelihoods (World Food Programme, 2024).

A number of studies on green consumer behaviour and sustainability have been undertaken in the last few decades (Rawlins & Kalaba, 2021). Notwithstanding, most of these studies lean toward a Western, Eurocentric orientation, focusing on middle- and upper-income groups (de Bandt et al., 2021). Such studies often view environmental stewardship as a form of voluntary personal agency, emphasising individual responsibility (Ibid). These views do not universally apply, as they overlook the struggles of low-income rural populations, who face economic challenges and environmental risks (Zhao et al., 2016). For individuals in impoverished rural households, environmental

stewardship is about negotiation and balance, and usually, immediate survival needs dominate long-term sustainability motivations.

This study shows that green consumer behaviour among people in low-income rural households is complex. This complexity is characterised by daily trade-offs between survival and sustainability, gaps between eco-friendly attitudes and actions, and differences between awareness and practice. Against this background, individuals in low-income rural households are often seen as ‘environmentally irresponsible.’ Frameworks such as the Extended Theory of Planned Behaviour (Ajzen, 1991; Zhang et al., 2019) and the Base-of-Pyramid model (Prahalad & Hart, 2002) offer valuable insights into green consumer behaviour; however, they fail to capture the complexities in the context of poverty, economic disadvantage, absence of sustainable option etc., especially during the 2023–2024 period, characterised by climate induced shocks in Zambia.

To address the limitations of existing models, such as ETPB (Zhang et al., 2019) and BoP (Prahalad & Hart, 2002), the Constrained Environmental Stewardship (CES) framework is introduced. The CES framework frames the green consumer behaviour among individuals in the low-income rural demographic as ‘constrained stewardship’ rather than mischaracterised as ‘irresponsibility.’ Green consumer behaviour among the rural poor should not be seen as irresponsible. It reflects constrained stewardship, shaped by poverty, climate variability, and systemic barriers, in which resilience and moral obligation guide survival-oriented choices. The CES framework characterises rural poor’s daily consumption routines as acts of resilience and moral duty, driven by the need to survive in challenging environmental and economic conditions. It also better explains rural green behaviour beyond traditional models, viewing climate change as a threat, survival as a primary goal, and resourceful actions, such as recycling and repurposing, as signs of stewardship under pressure.

This study contributes to the ongoing debate on sustainability by reshaping the understanding of green consumer behaviour among low-income rural households in Zambia through the lens of the CES framework. Unlike existing models such as the Extended Theory of Planned Behaviour (Ajzen, 1991; Zhang et al., 2019) and the Base-of-Pyramid framework (Prahalad & Hart, 2002), which stress individual choice and responsibility, CES places environmental behaviour within the realities of poverty, climate uncertainty, and systemic exclusion. By highlighting the everyday experiences of rural households, where survival often comes before sustainability, the study shows that practices such as using charcoal and cutting down trees are not irresponsible but adaptive actions rooted in resilience, resourcefulness, and moral obligation (Mustafa et al., 2022; Zhao et al., 2016). The CES framework thus enhances both theory and policy by offering a relevant perspective that clarifies the complexities of rural green behaviour and guides interventions that bolster resilience, rather than misinterpreting constrained actions as irresponsibility.

### 1.1 Statement of the Problem

Despite growing awareness of environmental issues in rural communities in Zambia, individuals in low-income households often show limited pro-environmental behaviours due to significant structural constraints. Climate variability, particularly the recent 2023-2024 drought, exacerbated rural communities’ vulnerabilities and altered consumption patterns. These changes lead communities to adopt survival strategies like deforestation and charcoal use. These practices are often seen as irresponsible, but they reflect limited choices based on resilience and moral obligation (National Aeronautics and Space Administration [NASA], 2023; Mustafa et al., 2022). Existing behavioural models, such as the extended Theory of Planned Behaviour, highlight attitudes, norms, perceived control, and environmental thinking, but they do not adequately consider the socio-economic realities faced by the rural poor (Zhang et al., 2019; Zhao et al., 2016). Without understanding these realities, policies may misinterpret responsible actions and overlook sustainable practices based on resourcefulness and ethics. The acceptance of the proposed ‘Constrained Environmental Stewardship’ CES framework is critical in understanding how poverty, climate shocks, and systemic exclusion influence green behaviour.

### 1.2 Research Objectives

- i. To explore the lived experiences of people in low-income rural households in Zambia regarding green consumption behaviour in the face of climate challenges.
- ii. To develop the ‘Constrained Environmental Stewardship’ (CES) framework as a lens to understand the green consumer behaviour of vulnerable rural groups in Zambia under conditions of severe constraints.

## II. LITERATURE REVIEW

### 2.1 Theoretical Framework

#### 2.1.1 Extended Theory of Planned Behaviour (ETPB)

The Extended Theory of Planned Behaviour (ETPB), popularised by Zhang et al. (2019), builds on Ajzen’s (1991) foundational Theory of Planned Behaviour (TPB). The TPB was key to explaining human behaviour, especially

purchase intentions, based on three constructs: attitudes toward the behaviour, subjective norms (perceived social pressure), and perceived behavioural control, which reflects a person's sense of agency and ability to act (Yadav & Pathak, 2017). While this framework provided useful insights, its original formulation from nearly three decades ago makes it less relevant to today's challenges, especially those related to environmental sustainability. In light of this, the Extended Theory of Planned Behaviour (ETPB) was proposed by Zhang et al. (2019). The ETPB extends the original TPB model by adding cognitive factors and environmental concern, making it more applicable in situations where ecological awareness and sustainability are important. Recognising environmental cognition shows that, under climate uncertainty, awareness of ecological risks can lead to sustainable practices, even among the rural poor (Zhang et al., 2019; Zhao et al., 2016).

By integrating attitudes, subjective norms, perceived behavioural control, and environmental cognition, the ETPB offers a broader framework for understanding green consumer behaviour. However, the model does not fully reflect the realities of poverty and the systemic challenges faced by the rural poor. Individuals often face structural barriers, such as poverty, inadequate infrastructure, limited access to alternatives, and systemic exclusion, which shape their decision-making (Zhao et al., 2016). In Zambia, Rawlins and Kalaba (2021) and Mustafa et al. (2022) note that climate shocks, especially droughts, increase vulnerability and push households toward resource-dependent survival strategies, such as charcoal use and deforestation, which are often seen as irresponsible.

### 2.1.2 Base-of-Pyramid (BoP) Theory

The Base-of-Pyramid (BoP) theory, developed by Prahalad and Hart (2002), views the world's poorest populations as both vulnerable and resourceful. It highlights their creativity, resilience, and ability to innovate despite facing systemic poverty and exclusion. Researchers such as Salvia et al. (2019) emphasise that sustainable development should acknowledge the agency of BoP communities. It is important to engage the people at the base of the socio-economic pyramid in broader discussions on sustainability rather than seeing them only as victims of hardship. This viewpoint is especially relevant in rural Zambia, where rural households exhibit both vulnerability and resilience as they try to survive and care for the environment. Most poor rural households make do with limited resources. They practice reuse, composting, and frugal innovation, all while dealing with the challenges of poverty, climate shocks, and poor infrastructure (Mustafa et al., 2022; Rawlins & Kalaba, 2021).

The BoP framework also works well with the Extended Theory of Planned Behaviour (ETPB) (Zhang et al., 2019). It adds a market and development perspective to behavioural analysis. The ETPB focuses on attitudes, norms, perceived behavioural control, and cognition. In contrast, the BoP approach highlights how scarcity drives frugal innovations like recycling, repurposing, and improvisation. In situations such as rural Zambia, households often find creative ways to cope with scarcity and stretch their resources while meeting their immediate survival needs (Rawlins & Kalaba, 2021). However, despite its strengths, BoP has limitations. It often emphasises market potential while neglecting moral and ethical aspects of stewardship. It can underestimate structural barriers like poverty and climate shocks (Mustafa et al., 2022) and may romanticise resilience by presenting poverty as an opportunity (Farias & Farias, 2010). These issues reveal the need for a framework that moves beyond market logic and behavioural intent to address the real challenges people face in taking environmentally responsible actions.

## 2.2 Empirical Review

Empirical studies on environmental stewardship and green consumer behaviour show how poverty and climate uncertainty affect the lives of low-income rural households in Zambia. These households often face a dilemma. They understand the ecological effects of their actions but are limited by basic survival needs. For example, Rawlins and Kalaba (2021) found that repeated droughts and crop failures push families toward charcoal production and deforestation. While these households see the environmental harm, they adopt these practices as coping strategies against systemic exclusion and economic struggle. Likewise, Mustafa et al. (2022) show that climate shocks worsen vulnerabilities, forcing reliance on resources often seen as irresponsible but necessary for survival.

Evidence from the World Food Programme (2024) highlights the severity of these challenges. The El Niño-induced drought of 2023-2024 left 2.9 million people without enough food, changing consumption patterns in rural Zambia. NASA (2023) confirms that ongoing droughts in Sub-Saharan Africa have increased ecological sensitivity. Fischer (2019) documents how floods and droughts displace households, revealing weaknesses in their coping strategies. On a smaller scale, Farias and Farias (2010) note the poverty dilemma, in which immediate survival takes priority over long-term ecological responsibility. Salvia et al. (2019) argue that reducing poverty is key to sustainability discussions. Data from 1991-2023 shows that over 80% of Zambia's rural households live below the US\$5.50 daily spending limit. This limits their ability to adopt sustainable practices, even though they are aware of environmental issues.

Overall, these findings reveal the experiences of rural households. Awareness of environmental concerns exists alongside systemic barriers that restrict action. This evidence also highlights the limitations of behavioural models like the Extended Theory of Planned Behaviour (Ajzen, 1991; Zhang et al., 2019; Zhao et al., 2016), which often ignore

structural constraints. In response, the ‘Constrained Environmental Stewardship’ (CES) framework is proposed. CES reinterprets rural environmental behaviour not as irresponsibility but as resilience and moral responsibility within severe constraints. It offers a way to understand green consumer behaviour among vulnerable rural groups in Zambia, connecting theoretical models with the realities of poverty, exclusion, and climate shocks.

### III. METHODOLOGY

#### 3.1 Research Design

This study used a qualitative phenomenological design to capture the depth and complexity of lived experiences. Phenomenology is particularly well-suited to exploring how individuals in low-income rural households understand their circumstances, cultural norms, and environmental attitudes within their socio-economic and ecological contexts. By focusing on participants' personal accounts, the design allowed the researcher to uncover detailed insights into how climate challenges and poverty influence green consumer behaviour. This approach ensured that participants' voices were central to the analysis, providing a rich understanding of their resilience, struggles, and ecological decision-making.

#### 3.2 Study Area

The research took place in three rural sites within rural Kabwe, Zambia: Muwowo, Kang'omba, and Kamakuti. These areas were chosen because they represent economically disadvantaged communities that are highly vulnerable to climate variability. Choosing these regions was strategic since they have faced recurrent droughts, resource scarcity, and environmental stress. This made them ideal for examining how households adjust their consumption practices under uncertain conditions. The rural setting also offered a culturally grounded context where traditional beliefs, community norms, and subsistence livelihoods intersect with environmental care.

#### 3.3 Target Population

The target population consisted of people living in low-income rural households in Kabwe, Zambia. These households were defined as those earning below the World Bank's \$3.65 per day threshold of 2024. Participants were further identified based on established criteria of economic disadvantage, including limited savings, low productivity, and lack of basic necessities (Zhang et al., 2019; de Bandt et al., 2021; Zhao et al., 2016). Importantly, all participants had faced climate uncertainty during the period 2023-2024. This ensured that the study captured perspectives shaped by recent environmental challenges. Focusing on economically disadvantaged households provided insight into the realities of those least able to adopt sustainable practices.

#### 3.4 Sampling and Sample Size

Purposive sampling was used to select participants who met the study's criteria and could provide meaningful insights. This method suited qualitative research as it prioritises depth of understanding over breadth of representation (Cooper & Schindler, 2011). The sample included individuals engaged in subsistence livelihoods, whose daily activities centred on supporting their families through small-scale resource use. A total of 19 (n=19) participants were interviewed using semi-structured interviews. The sample size was determined by the principle of saturation (Saunders et al., 2019), meaning data collection continued until no new themes emerged. While the relatively small sample limits generalisation, it allowed for a detailed exploration of participants' lived experiences, offering rich insights into the intersection of poverty, climate stress, and environmental behaviour.

#### 3.5 Data Collection

Data collection followed a multi-method approach to improve validity and reliability through triangulation. In-depth interviews formed the core of the data collection, providing detailed accounts of participants' experiences with climate challenges, resource limitations, and cultural influences. These interviews captured personal stories that structured surveys would likely miss. To complement this, a focus group discussion was held with eight community members to promote collective reflection and identify shared social and cultural factors influencing ecological practices. The group setting encouraged dialogue, debate, and the surfacing of common themes. Additionally, non-participant observations were recorded systematically in the researcher's journal. These observations provided real-time insights into behaviours and practices that participants might not express in interviews, offering an objective view of self-reported information. Together, these methods created a comprehensive dataset that reflected both individual and collective experiences of green consumer behaviour under climate uncertainty.

### 3.6 Data Analysis

The data were analysed using an Interpretative Phenomenological Approach (IPA), guided by Van Manen's (1990) principles. This approach emphasises the interpretation of lived experiences, focusing on how participants make sense of their daily practices and environmental challenges. The researcher engaged in careful reading of transcripts, systematically coding and grouping themes such as affordance, resilience, cultural continuity, and awareness gaps. NVivo software was used to manage and organise the data, improving transparency and reliability. The iterative coding and thematic analysis helped ensure that the findings closely aligned with participants' authentic voices. By reflecting on personal assumptions and maintaining analytical rigour, the researcher interpreted participants' ecological behaviours within the broader socio-economic and cultural context. This analysis provided a nuanced understanding of how households balance survival needs with ecological responsibility.

### 3.7 Ethical Considerations

Given its qualitative and phenomenological nature, this study was value-bound (Saunders et al., 2019). This characteristic comes from the interpretivist framework adopted in this study. It recognises that the researcher's views, beliefs, and values influence the data collection, interpretation, and analysis process. The value-bound aspect of this study was especially relevant given the delicate, culturally rich subject matter, which involved exploring local sustainability practices, traditional environmental beliefs, and participants' attitudes towards eco-friendly behaviours. These topics are closely tied to participants' cultural identities and social norms, requiring a respectful, reflective approach that acknowledges the researcher's role and potential impact on the research.

Moreover, since the study used non-participant observation as its primary data collection method, ethical issues related to participant consent and autonomy were crucial. As Cozby and Bates (2012) point out, any research that observes people's behaviours and interactions requires clear, informed consent to ensure that participation is voluntary, especially when participants may not realise they are being observed. To maintain ethical standards, the researcher carefully obtained informed consent from all participants in observational activities. This included clearly explaining the research purpose, the nature of the observations, and guarantees of confidentiality. Participation was completely voluntary, and participants could withdraw at any time without facing consequences, thereby avoiding pressure or undue influence.

Additionally, the study focused on protecting participants' privacy and confidentiality throughout the research. Personal identifiers were removed during data transcription and reporting to safeguard participants' identities. Pseudonyms and combined data were used to prevent possible identification, in accordance with their right to privacy (Saunders et al., 2019). The researcher strictly followed ethical guidelines for qualitative research, ensuring that all data handling, storage, and reporting were objective and honest. This commitment to clear and fair reporting aimed to accurately represent participants' genuine voices and experiences, avoiding any misrepresentation (Ibid). Overall, the ethical framework of this study reinforced its integrity, emphasising respect, fairness, and sensitivity towards participants and their social and cultural contexts, in line with established research ethics standards.

## IV. FINDINGS & DISCUSSION

### 4.1 Findings

This section presents the main findings of the study on green consumer behaviour among low-income rural households in Kabwe, Zambia, during the period of climate uncertainty in 2023 and 2024. The findings are organised around six themes that emerged from the analysis of interviews, focus groups, observations, and document reviews. Each theme illustrates how factors such as poverty, climate shocks, weak socio-cultural networks, and limited awareness (independent variables) shape household environmental practices and consumption choices (dependent variable). Together, these findings provide the basis for the Constrained Environmental Stewardship (CES) framework, which views rural environmental behaviour as a form of resilience under tough circumstances.

#### 4.1.1 Climate Vulnerability as a Lived Reality

Climate uncertainty emerged as a major independent factor influencing household behaviour. Participants described droughts, water scarcity, and crop failures as daily challenges. For instance, P14 explained, "*The drought caused by climate change has made life extremely difficult. Wells are drying up, green pasture is gone, and last year's low rainfall affected our harvests.*" (15<sup>th</sup> October, 2024). These conditions directly shaped green consumer behaviour by forcing households to adopt survival strategies, such as abandoning gardens or using boreholes. Climate vulnerability framed consumption practices as reactive and limited.

Participants described droughts, crop failures, and water scarcity as daily challenges that forced them to focus on survival and consume accordingly. This aligns with Mustafa et al. (2022) and NASA (2023), who show that climate shocks worsen vulnerabilities and drive households to rely more on resources like charcoal and engage in deforestation.

However, unlike the Extended Theory of Planned Behaviour (Ajzen, 1991; Zhang et al., 2019), which focuses on attitudes and perceived control, the findings show that ecological awareness alone isn't enough when survival needs take precedence. The CES framework thus expands the literature by viewing these practices as adaptive responses rather than as irresponsible.

#### 4.1.2 Survival Override: Affordability Dictates Choices

Poverty was another independent variable. Households consistently prioritised affordability over sustainability. P5 noted, *"I lack financial resources; I just buy things to ensure survival. Environmental issues come later."* (27<sup>th</sup> September, 2024). This economic hardship influenced household choices, leading them to select charcoal and chemical fertilisers even though they understood their environmental impact. Survival needs thus took precedence over eco-friendly intentions, highlighting how poverty limits sustainable consumption.

The study found that affordability often shaped household choices. Participants focused on survival rather than sustainability. This aligns with Farias and Farias (2010), who discuss "poverty" as a sustainability dilemma in which immediate needs are more important than long-term ecological responsibility. It also aligns with Rawlins and Kalaba (2021), who noted that repeated droughts lead families to adopt unsustainable practices, even when they know it harms the environment. The CES framework builds on these insights by highlighting that choices made under poverty are not reckless but sensible within systemic limits.

#### 4.1.3 Knowledge–Action Contradiction

As an independent variable, awareness of environmental issues did not always lead to sustainable practices. While participants recognised deforestation as harmful, charcoal production remained an important source of income. This contradiction reflects the tension between awareness and behaviour. P16 admitted, *"I don't understand what climate change is"* (23<sup>rd</sup> October, 2024), highlighting gaps in understanding that hinder action. Observations of households planting and cutting trees simultaneously further demonstrate this paradox: knowledge exists, but survival needs often override sustainable behaviour.

Participants acknowledged environmental issues, but their actions often contradicted their understanding. For example, households both planted and cut down trees simultaneously. This contradiction aligns with findings by Zhao et al. (2016), who point to gaps between ecological knowledge and behaviour among disadvantaged groups. The Extended Theory of Planned Behaviour (Zhang et al., 2019) considers cognition, but it does not address the structural barriers seen in rural Zambia. The CES framework fills this gap by situating contradictions within the context of poverty and climate-related uncertainty.

#### 4.1.4 Waste Management Challenges and Ingenuity

Structural neglect and lack of infrastructure (independent variables) shaped waste practices. Households showed creativity in reusing plastics and composting, but harmful disposal methods like burning and dumping were still common. P3 explained, *"We reuse plastics and bottles because we know it's better, even if we don't have formal waste collection"* (23<sup>rd</sup> September, 2024). These findings illustrate that green consumer behaviour (dependent variable), showed resilience and resourcefulness but was hindered by systemic barriers.

Households showed creativity in reusing plastics and composting, but harmful disposal methods continued due to inadequate infrastructure. This finding supports Salvia et al. (2019), who highlight the resilience and resourcefulness of Base-of-Pyramid (BoP) communities. Prahalad and Hart's (2002) BoP theory focuses on frugal innovation, and the study confirms this through practices of recycling and repurposing. However, the CES framework takes the discussion further by recognizing that creativity is limited by systemic neglect, rather than being solely an opportunity for market innovation.

#### 4.1.5 Fragmented Socio-Cultural Networks

Weak social cohesion was another independent variable that affected environmental behaviour (the dependent variable). Decision-making was primarily individualistic, with little collective action. P6 stated, *"I rely on my own judgment; nobody can influence me."* (27<sup>th</sup> September, 2024). This fragmentation weakened community stewardship and reduced the potential for coordinated sustainable practices. Green consumer behaviour was thus shaped by fragile social connections, reinforcing the CES framework's focus on limited agency.

Weak social ties limit collective environmental action, with households depending on their own judgment. This contrasts with the ideas in frameworks like TPB and BoP, which often highlight social norms and group action. For instance, Theory of Planned Behaviour (Ajzen, 1991) and Extended Theory of Planned Behaviour (Zhang et al., 2019) stress the role of subjective norms, or social pressure and group influence, in shaping pro-environmental behaviour. Likewise, the Base-of-Pyramid framework (Prahalad & Hart, 2002) emphasizes the resilience and innovation of poor communities through group action and creative solutions.

However, research in Zambia and Sub-Saharan Africa shows that poverty and climate shocks weaken social ties. Rawlins and Kalaba (2021) found that repeated droughts push households towards individual survival strategies, which undermines collective environmental efforts. Fischer (2019) also reported how floods and droughts disrupt traditional networks, lowering the ability to cope together. Mustafa et al. (2022) further claim that climate shocks worsen vulnerabilities, leading to reliance on scattered, household-level strategies instead of collective management. These findings indicate that fragmented networks limit the ability to manage resources together, supporting the CES framework's focus on limited action. Unlike TPB and BoP, CES acknowledges that in the face of systemic poverty and climate uncertainty, households often act independently, driven by survival instincts and moral duty instead of group norms.

#### 4.1.6 Partial and Informal Environmental Awareness

Environmental knowledge (independent variable) was fragmented and mostly informal, coming from radio broadcasts or casual conversations. P7 stressed, *"People like us ... we need to be educated on the causes and consequences of climate change."* (27<sup>th</sup> September, 2024). Awareness alone was not enough to drive consistent, sustainable practices. Green consumer behaviour (dependent variable) was therefore incomplete, inconsistent, and heavily affected by gaps in education and information sharing.

Participants' knowledge was often partial and informal, coming mainly from radio broadcasts or casual conversations. This supports Fischer (2019), who documents weak coping strategies among households facing climate shocks. Similar findings by Zhao et al. (2016) show that disadvantaged groups often rely on fragmented awareness based on survival needs instead of structured education. Mustafa et al. (2022) further note that climate shocks limit access to formal environmental learning. Salvia et al. (2019) highlight that communities at the bottom of the economic pyramid often develop resilience through informal, necessity-driven knowledge. These insights emphasize the CES framework's role in recognizing that fragmented knowledge leads to inconsistent practices. This reinforces the need for focused education and infrastructure support.

Overall, the findings show that independent variables such as poverty, climate vulnerability, weak social networks, and limited awareness directly influence green consumer behaviour (the dependent variable). Households understand environmental concerns but act under severe constraints, prioritising survival over sustainability. This evidence emphasises the need for the Constrained Environmental Stewardship (CES) framework, which reframes rural environmental behaviour not as irresponsibility but as resilience and moral responsibility under systemic limitations. CES perceives the ecological actions of low-income rural populations as responses to systemic constraints and rational decision-making, rather than irresponsible environmental stewardship. This emerging CES framework posits that the rural poor's view of the world is based on three dimensions of their lived experience, representing a 'Force-field: (1) The environment as hostile (i.e. particularly under conditions of climate uncertainty and scarcity). (2) Their preference for a short-term survival over long-term sustainability, and (3) Resource stewardship (i.e. demonstrating ingenuity, resourcefulness and adaptive responses, etc., to manipulate the environment). Such a complex structure explains the predicament of the rural poor: the tension between the desire to do what is right and the desire to do what is wrong - especially in light of severe economic or financial limitations.

## V. CONCLUSION & RECOMMENDATIONS

### 5.1 Conclusion

This study has revealed the lived experiences of green consumer behaviour among low-income rural households in Kabwe, Zambia, amid climate uncertainty. Climate change is understood as a daily struggle, with droughts, water shortages, and crop failures shaping how households survive and limiting their ability to take environmental actions. Affordability consistently stands out as the key factor, creating a gap where immediate needs take priority over sustainability. While participants were aware of environmental issues, their actions often conflicted with this understanding. This reflects the contradictions arising from poverty and ecological shocks rather than irresponsibility. Waste management practices further highlight this tension. Households display creativity through reuse and composting, but systemic neglect leads to widespread burning and dumping. Social networks are weak, hampering collective action, and environmental awareness remains limited, relying on radio and informal conversations.

The findings in this study support the Constrained Environmental Stewardship (CES) framework as a useful framework for understanding rural green consumer behaviour. CES redefines stewardship as shaped by poverty, climate vulnerability, inadequate infrastructure, and broken social connections, rather than as a lack of poverty. Theoretically, CES builds on existing behaviour models by placing environmental actions within the tough realities of poverty and climate stress. It shows that perceived control over behaviour is more influential than attitudes and social norms. In practice, the framework highlights the need for policies that address affordability, improve infrastructure, and provide

localised, practical education. By fostering household creativity and integrating support into community structures, interventions can change limited practices into organised stewardship. This ensures that climate adaptation and green consumption policies reflect the real experiences of those most impacted.

## 5.2 Recommendations

The study shows the urgent need for policies and actions that treat climate vulnerability as a real-life issue, not just a technical concept. Policymakers should focus on affordability and access to ensure that sustainable options are financially feasible for low-income households. Investments in rural infrastructure, especially in water systems and waste management facilities, are crucial for reducing dependence on harmful practices such as burning and dumping. It's also important to provide organised and localised environmental education. Awareness campaigns should be tailored to rural contexts, shared through trusted channels such as radio, schools, and community facilitators, and connect to practical solutions families can use.

At the community level, building social connections is vital to overcome weak networks and the strong focus on individual decision-making. Supporting cooperatives, local leaders, and community-based organisations can encourage collective environmental projects and turn household creativity into organised practices. Future research should extend the Constrained Environmental Stewardship (CES) framework to other rural areas across Sub-Saharan Africa to assess its applicability. Comparisons and long-term studies would enhance our understanding of constrained environmental actions and how poverty and climate challenges evolve over time. In the end, boosting household resilience and integrating institutional support within community frameworks can transform limited practices into organised stewardship, ensuring that climate adaptation and green consumption policies reflect the real-life experiences of those most affected.

To tackle constrained environmental stewardship, policy must focus on affordability, infrastructure, and localised education. Sustainable options should be made available for low-income households through subsidies, incentives, or easy loans. Investments in rural infrastructure, particularly in water systems and waste management facilities, are essential to reduce reliance on harmful practices such as burning and dumping. Environmental education needs to be well-structured, relevant, and shared through trusted sources such as radio, schools, and community facilitators, so that awareness leads to action rather than remaining just a concept. Strengthening social ties through cooperatives and community-based organisations can promote collective efforts, turning household innovation into scalable stewardship. Ultimately, policies must reflect the real-life situations of vulnerable households, incorporate resilience into community frameworks, and ensure that climate adaptation strategies are both practical and inclusive.

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