



FINANCIAL VALUATION OF THE GREEN CONSUMPTION PREMIUM IN UTTARAKHAND MARKET: A REVIEW AND FRAMEWORK FOR EMPIRICAL WILLINGNESS-TO-PAY ANALYSIS, PRICING OPTIMIZATION AND REVENUE MAXIMIZATION FOR SUSTAINABLE PRODUCT CATEGORIES

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ABSTRACT

This review paper examines the economic meaning and market implications of the green consumption premium in the Uttarakhand market, with particular emphasis on consumers' willingness to pay (WTP) for sustainable products and the implications for pricing and revenue decisions. The paper distinguishes between environmental preference and economically observable willingness to pay, arguing that awareness of sustainability does not necessarily translate into a measurable price premium. The review integrates literature on green consumer behaviour, sustainable consumption, environmental valuation, willingness-to-pay methods, green marketing, and value-based pricing, while placing the discussion in the ecological and market context of Uttarakhand. The state is a particularly relevant setting because its Himalayan ecosystems, tourism economy, agricultural and horticultural activities, local products, and environmental policy initiatives create a strong connection between ecological quality and economic value. Recent work on Uttarakhand's Gross Environment Product (GEP) further strengthens the policy relevance of connecting environmental outcomes with economic decision-making. Evidence from international literature indicates that consumers can demonstrate positive WTP for sustainability, but the size of the premium varies substantially by product category, sustainability attribute, consumer characteristics, region, and valuation method. A meta-analysis of 80 studies, for example, estimated an average sustainability premium of 29.5% for sustainable food products, while also finding that hypothetical valuation methods tend to produce higher estimates than non-hypothetical approaches (Li & Kallas, 2021). This finding is important for Uttarakhand because a stated premium should not automatically be interpreted as an achievable market price. The review therefore proposes an integrated framework in which environmental attributes, perceived consumer value, trust, income, price sensitivity, product category, local identity, and sustainability information influence WTP, which in turn can be translated into pricing and revenue scenarios. The paper concludes that the appropriate objective is not simply to charge the highest possible green premium, but to identify a price-demand combination that maximizes sustainable product revenue while maintaining consumer acceptance and credible environmental value. The proposed framework provides a foundation for subsequent empirical research using structured consumer surveys, contingent valuation, choice experiments, and econometric or structural-equation techniques.

KEYWORDS: Green Consumption Premium, Willingness to Pay, Sustainable Products, Green Consumer Behaviour, Environmental Valuation, Pricing Optimization, Revenue Maximization, Uttarakhand

1. INTRODUCTION

The transition from conventional consumption toward environmentally

responsible consumption has created a new economic question for firms and policymakers: how much additional

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value do consumers attach to products that are demonstrably better for the environment? This additional amount is commonly discussed as a green consumption premium. In practical market terms, the green premium is not merely an environmental concept; it is the difference between the price consumers are willing to pay for a product with credible sustainability attributes and the price they would pay for an otherwise comparable conventional alternative. Its measurement therefore connects environmental preferences with consumer economics, pricing strategy, and business performance.

Uttarakhand provides a distinctive setting for examining this relationship. The state combines ecologically sensitive Himalayan landscapes with tourism, agriculture, horticulture, handicrafts, food products, wellness activities, hospitality, and expanding service markets. These sectors can generate products whose environmental or local attributes are part of their economic value. At the same time, consumers in Uttarakhand are not homogeneous. Urban residents, tourists, younger consumers, households with different income levels, and consumers in hill and plain districts may evaluate the same sustainable attribute differently. Consequently, a single assumed green premium is unlikely to represent the entire market.

The policy environment also makes the question economically significant. Uttarakhand has developed the Gross Environment Product (GEP) concept to track human efforts relating to ecological conditions such as air, water, soil, and forests. Recent research describes GEP as an ecological-performance measure rather than simply a monetary valuation of nature. The distinction is important: environmental accounting can indicate ecological performance, while consumer willingness-to-pay research can indicate whether particular environmental attributes are converted into private market value. Connecting these two perspectives can help explain how ecological responsibility may be reflected in product differentiation and consumer demand.

Existing research shows that consumers frequently express positive attitudes toward sustainable products, but attitude and actual purchasing behaviour are not identical. Price, product quality, convenience,

availability, trust in environmental claims, income, social norms, and perceived effectiveness can alter the final purchase decision. The literature also indicates that stated willingness to pay may be higher than behaviour observed in real purchasing environments. This creates a methodological challenge for any study seeking to calculate a financial green premium.

The central purpose of this review is therefore to organize the literature around four connected questions. First, what constitutes a green consumption premium and how can it be valued? Second, which factors influence consumers' willingness to pay for sustainable products? Third, how can WTP evidence be converted into practical pricing decisions? Fourth, what research design would be appropriate for estimating and optimizing a green premium specifically in Uttarakhand? By addressing these questions together, the review moves beyond a general discussion of green consumerism toward a financial valuation framework that can support empirical market research.

2. OBJECTIVES OF THE REVIEW

- To clarify the concept and economic interpretation of the green consumption premium in the context of sustainable products.
- To review the major theoretical and empirical determinants of consumers' willingness to pay for environmentally responsible products.
- To examine valuation approaches that can be used to estimate a sustainable-product price premium, including contingent valuation and choice-based methods.
- To identify the relevance of Uttarakhand's ecological, tourism, agricultural, local-product, and consumer-market characteristics to green consumption valuation.
- To develop a conceptual framework linking environmental attributes, consumer perceptions, willingness to pay, pricing decisions, and revenue outcomes.
- To propose an empirical research design for estimating category-specific green premiums and identifying a price point that balances willingness to pay with expected demand and revenue.

3. CONCEPTUAL FRAMEWORK: FROM ENVIRONMENTAL ATTRIBUTE TO FINANCIAL GREEN PREMIUM

A useful starting point is to distinguish environmental performance from consumer value. A product may have lower environmental impact, recyclable packaging, locally sourced inputs, lower carbon intensity, organic certification, reduced plastic use, or longer durability. These attributes create an environmental characteristic. Consumers then interpret the characteristic through perceived quality, usefulness, trust, identity, social meaning, and expected personal benefit. Only after this valuation process does the environmental attribute potentially become a willingness-to-pay premium.

The proposed framework can be represented as: Sustainable Attribute → Perceived Green Value → Consumer Trust and Product Value → Willingness to Pay → Purchase Probability → Price–Demand Relationship → Revenue Outcome. The framework is deliberately non-linear. A product may possess a strong environmental attribute but generate a small premium if consumers do not understand it, distrust the claim, consider the product inconvenient, or face a large price difference. Conversely, a locally produced sustainable product may generate a higher premium when environmental benefits are combined with quality, authenticity, health, durability, or regional identity.

Kabeer's (1999) broader resource–agency–achievement framework is not directly a pricing model, but the underlying principle that resources and perceived value must be translated into observable outcomes is useful here. In consumer research, a stated preference is a resource-like signal; the market outcome depends on whether that preference translates into a purchase at a specific price. Similarly, green marketing literature emphasizes that environmental claims must be credible and connected to meaningful consumer benefits. The financial valuation of a green premium therefore requires both preference measurement and demand analysis.

3.1 Green Consumption Premium

The green consumption premium can be defined operationally as the incremental monetary amount

associated with a credible sustainability attribute relative to a defined conventional benchmark. If the benchmark price is P_0 and the sustainable alternative has an acceptable price P_1 , the absolute green premium is $P_1 - P_0$. The percentage premium can be expressed as $((P_1 - P_0)/P_0) \times 100$. This definition is useful because it allows comparison across product categories with different base prices. However, the benchmark must be carefully specified because differences in quality, packaging, durability, certification, origin, or brand reputation can otherwise be incorrectly attributed to sustainability.

3.2 Willingness to Pay as the Core Valuation Concept

Willingness to pay represents the maximum amount a consumer is prepared to sacrifice to obtain a product or attribute, subject to the consumer's preferences, income, available alternatives, and information. In green consumption research, WTP may be measured for an entire sustainable product or for a specific attribute such as recyclable packaging, organic production, low-carbon manufacturing, local sourcing, or a verified environmental label. The distinction is important because consumers may value different sustainability attributes differently.

Li and Kallas (2021), in a meta-analysis of 80 studies on sustainable food products, reported an average WTP premium of 29.5%, while finding substantial heterogeneity across regions, genders, product categories, sustainability attributes, and methods. They also reported that hypothetical methods tended to produce higher WTP estimates than non-hypothetical approaches. This suggests that the financial valuation of a green premium should report both the valuation method and the possible gap between stated and behavioural willingness to pay.

4. REVIEW OF LITERATURE

4.1 Green Consumer Behaviour and Environmental Values

Green consumer behaviour concerns the extent to which environmental considerations affect product evaluation, purchase, use, disposal, and repeat consumption. Hosta and Zabkar (2021) emphasize the role of green consumer values in environmentally and socially responsible consumption. Such values can increase the attractiveness of sustainable

products, but values alone do not establish a market premium. Consumers may support sustainability in principle while selecting conventional products when the price difference is large or when sustainable alternatives are difficult to locate.

The literature therefore points toward a distinction between environmental attitude, behavioural intention, and actual economic choice. This distinction is central to the proposed Uttarakhand study. Measuring only agreement with statements such as 'I care about the environment' would overestimate the financial value of sustainability. A stronger design must ask consumers to make choices involving real or realistic price differences between conventional and sustainable alternatives.

4.2 Willingness to Pay for Sustainable Products

Research across product categories generally identifies positive but heterogeneous willingness to pay for responsible consumption. Tully and Winer (2014), using a meta-analysis of more than 80 studies, reported an average percentage premium of 16.8% and found that approximately 60% of respondents were willing to pay a positive premium for socially responsible products. Their findings also show that the identity of the beneficiary matters: willingness to pay can differ when the benefit is directed toward people, animals, or the environment. This indicates that consumers do not value all sustainability claims equally.

Li and Kallas (2021) provide more direct evidence for sustainable food products and show that WTP differs according to sustainable attribute, product category, region, gender, and valuation method. Their findings are particularly relevant to Uttarakhand because food, agriculture, horticulture, local products, and tourism-related consumption represent plausible categories in which sustainability and regional identity can be jointly evaluated.

4.3 Certification, Trust and Green Claims

Trust is a critical bridge between a sustainability claim and willingness to pay. A consumer cannot easily observe carbon intensity, sourcing practices, biodiversity impact, waste reduction, or labour conditions directly at the point of purchase. Labels, certifications, traceability systems, transparent

information, and credible third-party verification can therefore reduce information asymmetry. Tully and Winer (2014) found that certification was associated with higher WTP in their meta-analysis, illustrating the economic importance of credible signals.

For Uttarakhand, the issue is particularly relevant for products marketed around local origin, Himalayan identity, organic or natural production, eco-friendly packaging, and responsible tourism. Regional branding can create differentiation, but the environmental claim must be specific enough to be understood and credible enough to justify a price difference. A premium based solely on vague 'green' language may be less sustainable than a premium linked to a measurable attribute.

4.4 Green Marketing and the Awareness–Purchase Gap

Green marketing attempts to communicate environmental value through product design, packaging, promotion, distribution, and brand positioning. The literature suggests that environmental communication can strengthen perceived value when it is relevant, understandable, and supported by evidence. However, awareness does not automatically become purchasing behaviour. Price sensitivity, convenience, product availability, perceived effectiveness, and scepticism about green claims can weaken the conversion from intention to purchase.

This awareness–purchase gap is especially important for empirical valuation. If a questionnaire asks only whether respondents would like to buy sustainable products, the resulting estimate cannot directly inform pricing. The research must instead estimate how purchase probability changes as the price premium increases. Such a demand curve is much more useful for pricing optimization.

4.5 Product Category and Heterogeneity of Green Premiums

A green premium should not be treated as a universal percentage. Consumers may be willing to pay more for sustainable food, personal-care products, tourism experiences, household products, clothing, packaging, or durable goods for different reasons. Product involvement, perceived health benefits,

durability, social visibility, environmental salience, and frequency of purchase can all alter WTP.

For example, sustainability may be closely associated with health and freshness in food, durability and reduced lifetime cost in household products, and ecological experience in tourism. Therefore, an Uttarakhand study should estimate premiums separately by product category and then compare the determinants of WTP across categories rather than forcing all products into one average premium.

4.6 Uttarakhand, GEP and the Local Economic Context

Uttarakhand's ecological setting provides an important contextual foundation for green consumption research. The state's GEP initiative has attempted to place greater attention on ecological indicators and human efforts relating to air, water, soil, and forests. Recent research by Joshi and colleagues describes the Uttarakhand GEP framework as an indicator of ecological efforts and reports improvement in several environmental components between 2020 and 2022, while also noting that the level of effort remains below what is required relative to economic pressures.

The economic relevance of this context is not that GEP itself establishes a consumer price premium. Rather, GEP and related environmental initiatives strengthen the institutional visibility of ecological value. The proposed research asks a different question: whether consumers in Uttarakhand convert some of that ecological value into private purchasing value when sustainable attributes are embedded in market products.

The state's tourism economy, local food and agricultural products, handicrafts, wellness products, hospitality services, and nature-based experiences create multiple opportunities for such research. At the same time, differences between urban centres, hill districts, tourism destinations, and plain areas imply that consumer preferences may vary geographically. Income, education, age, occupation, travel frequency, environmental knowledge, and exposure to sustainable products may therefore act as important explanatory variables.

5. SYNTHESIS OF THE EXISTING LITERATURE

The reviewed literature leads to five broad conclusions. First, consumers can exhibit a positive willingness to pay for sustainable attributes, but the magnitude is heterogeneous. Second, stated WTP can exceed behaviourally realistic WTP, making method selection crucial. Third, trust, certification, information quality, and perceived effectiveness influence whether environmental attributes receive a monetary valuation. Fourth, product category and consumer characteristics materially affect the size of the premium. Fifth, the commercial objective should be to identify the price that maximizes expected revenue rather than simply maximizing the percentage premium.

- Environmental concern is a necessary but insufficient condition for a green premium.
- Sustainability attributes need to be converted into consumer-perceived value through quality, trust, information, or personal benefit.
- A green premium is product-specific and consumer-specific rather than a fixed market constant.
- Hypothetical WTP estimates should be interpreted cautiously because hypothetical bias can inflate stated premiums.
- Pricing decisions require demand information; WTP alone does not reveal the revenue-maximizing price.

6. RESEARCH GAP

Although the international literature on green consumption and WTP is extensive, several gaps remain relevant to Uttarakhand. First, much of the available evidence is international or national rather than designed around the distinctive consumer and ecological context of Uttarakhand. Second, studies often examine willingness to pay without integrating the result into an explicit pricing optimization or revenue-maximization model. Third, environmental awareness is frequently measured more extensively than actual price sensitivity. Fourth, product categories are often pooled, although consumers may value sustainable food, tourism, packaging, household products, and local products differently. Fifth, there is limited integration between Uttarakhand's ecological policy narrative and consumer-level financial valuation.

These gaps justify an empirical study that measures WTP at the product-category level, identifies its determinants, estimates demand at alternative price premiums, and evaluates the resulting revenue implications. Such an approach would move the research from 'Are consumers willing to pay more?' to the more decision-relevant question: 'How much more are consumers willing to pay, for which sustainable attributes and products, and at what price does the firm maximize expected revenue without undermining market acceptance?'

7. PROPOSED RESEARCH METHODOLOGY FOR THE EMPIRICAL STUDY

This review paper proposes a quantitative empirical framework for the next stage of the research. The study can use a structured consumer survey supported by a choice-based valuation design. A mixed sampling strategy may be used to capture consumers from major urban and semi-urban centres as well as selected hill and tourism markets. The sampling frame should be designed to avoid treating the entire Uttarakhand population as a single homogeneous consumer group.

7.1 Variables

- Dependent variable: willingness to pay or selected purchase choice for a sustainable product.
- Core explanatory variables: environmental concern, perceived green value, trust in sustainability claims, perceived product quality, price sensitivity, environmental knowledge, and purchase intention.
- Control variables: age, gender, education, income, occupation, location, household size, and frequency of relevant product purchase.
- Product variables: sustainability attribute, certification/label, local origin, packaging type, durability, and price premium.
- Outcome variables: purchase probability, acceptable premium, expected revenue, and revenue-maximizing price.

7.2 Valuation Techniques

Contingent valuation can ask respondents their maximum WTP for a defined sustainable alternative. A choice experiment can present repeated choices among product alternatives that vary in price and sustainability attributes. Choice experiments are

particularly useful for this research because they can estimate the marginal value of individual attributes rather than asking respondents to value an entire 'green' product at once. The resulting estimates can then be converted into monetary values for specific sustainability attributes.

Because hypothetical bias is a known concern, the questionnaire should include realistic product descriptions, actual market prices where possible, cheap-talk or certainty questions, and, where feasible, a small incentive-compatible or experimental component. The aim is not simply to obtain the largest stated premium but to produce a defensible estimate of economically meaningful consumer value.

7.3 Statistical Analysis

Descriptive statistics can first identify awareness, purchase frequency, and stated premium ranges. Reliability tests can be applied to multi-item scales measuring environmental concern, perceived green value, and trust. Exploratory or confirmatory factor analysis may be used where appropriate. Regression models can then identify the determinants of WTP, while logistic, ordered, multinomial, or mixed-logit models can be considered depending on the structure of the choice data. Structural equation modelling using software such as SmartPLS may also be used if the research model includes latent constructs and mediation pathways.

7.4 Pricing Optimization and Revenue Maximization

The key contribution of the proposed research is to connect WTP with revenue. Let P denote the selling price and $Q(P)$ the expected quantity demanded at that price. Expected revenue is $R(P) = P \times Q(P)$. If the sustainable product has a conventional benchmark price P_0 and a premium p , then $P = P_0(1+p)$. The objective is to identify the premium p that maximizes expected revenue subject to consumer acceptance and, where relevant, cost constraints.

This approach avoids the assumption that the highest WTP percentage is automatically the best commercial price. A very high premium may increase revenue per unit but reduce the number of buyers substantially. A lower premium may generate a larger customer base and higher total revenue. The optimal price is

therefore determined by the interaction between price, demand, and consumer heterogeneity.

8. PROPOSED INTEGRATED FRAMEWORK

The proposed framework integrates the literature into a sequential market mechanism: Environmental/Sustainability Attribute → Environmental Knowledge and Awareness → Perceived Green Value → Trust/Credibility → Willingness to Pay → Purchase Probability → Price–Demand Relationship → Revenue Optimization. Consumer characteristics such as income, age, education, environmental concern, and prior sustainable purchasing behaviour moderate the strength of these relationships. Product category, local origin, certification, and the size of the price premium operate as product-level factors.

The framework also recognizes that sustainability can create two forms of consumer value. The first is direct value, such as health, quality, durability, convenience, or cost savings over the product life cycle. The second is environmental or social value, such as reduced waste, lower emissions, biodiversity protection, or support for local sustainable livelihoods. A product is more likely to command a robust premium when consumers perceive both forms of value and trust the information provided.

9. EXPECTED FINDINGS AND MANAGERIAL IMPLICATIONS

Based on the reviewed literature, the empirical study is expected to find positive but heterogeneous WTP for selected sustainable products and attributes. However, the exact premium should be estimated rather than assumed from international figures. It is also expected that environmental awareness alone will not fully explain WTP. Trust, perceived quality, income, price sensitivity, and product-specific benefits are likely to play important roles.

For firms, the practical implication is to avoid a one-size-fits-all green premium. Pricing should be differentiated by product category and consumer segment. Sustainable products with strong functional benefits may support a larger premium than products where the only visible difference is an environmental claim. Certification, traceability, transparent packaging information, and credible local sourcing may strengthen consumers' willingness to pay.

For policymakers, the research can help identify where environmental awareness campaigns, credible standards, eco-labelling, producer support, and market infrastructure can strengthen the demand for sustainable products. For Uttarakhand, such measures may also support local value chains by connecting ecological responsibility with higher-value products and services.

10. DISCUSSION

The central insight from the review is that the green consumption premium should be treated as an empirical market outcome rather than a fixed ethical surcharge. Consumers may value sustainability, but their willingness to convert that value into money depends on circumstances. This explains why studies can report apparently high willingness to pay while businesses still experience weak sales of sustainable alternatives. Stated preferences, actual choices, and revenue outcomes are related but distinct concepts.

The Uttarakhand context adds an additional dimension. Environmental quality is not an abstract concept in a Himalayan state where tourism, agriculture, water resources, forests, and local livelihoods are closely connected. Nevertheless, the existence of environmental value does not automatically establish private consumer value. The empirical challenge is to identify which ecological attributes consumers recognize, how much they value them, and whether those attributes influence purchase decisions sufficiently to support a commercially viable premium.

A financially meaningful green strategy should therefore combine product innovation, credible environmental information, cost management, and price optimization. Reducing plastic or shifting to biodegradable packaging may create environmental benefits, but if the resulting product becomes substantially more expensive without a corresponding increase in perceived value, demand may remain limited. Similarly, local sourcing may support sustainability and regional identity, but the premium must be tested against consumer budgets and competing products.

11. CONCLUSION

This review establishes the green consumption

premium as a bridge between environmental sustainability and consumer economics. The literature demonstrates that consumers can be willing to pay more for sustainable products, but the premium varies with product category, sustainability attribute, consumer characteristics, credibility of environmental information, and valuation method. Consequently, the financial value of sustainability cannot be represented by a universal percentage.

For Uttarakhand, the research opportunity is particularly important because the state combines ecological sensitivity with tourism, local production, agriculture, hospitality, and emerging sustainable markets. The state's GEP experience strengthens the broader policy environment for recognizing ecological performance, while consumer-level WTP analysis can address a complementary question: whether and how environmental value is reflected in market prices.

The proposed empirical framework recommends measuring WTP using realistic price-based choices, identifying category-specific determinants, and converting the results into a price–demand model. The final objective is not simply to identify the maximum premium a consumer claims to accept, but to identify the price that produces the strongest sustainable commercial outcome. Revenue maximization should therefore be understood as the interaction of price and quantity demanded, constrained by consumer trust, affordability, product quality, and the credibility of sustainability claims.

Future empirical work should test this framework using primary data from consumers across Uttarakhand and compare urban, hill, tourism, and plain-market segments. Such evidence can contribute to sustainable marketing strategy, product pricing, environmental policy, and the development of locally relevant green markets.

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