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Determinants of residents' willingness to pay for landscape preservation: A case study in Central Da Lat City, Viet Nam

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KEYWORDS

Da Lat City,
Contingent Valuation Method,
Landscape preservation,
Willingness to pay.

ABSTRACT

Da Lat City, Viet Nam, a renowned tourism destination, faces significant challenges in preserving its landscape amid rapid population growth and tourism expansion. This study aims to identify the determinants of residents' willingness to pay (WTP) for landscape conservation efforts. Utilizing primary data from 120 residents, the contingent valuation method was employed for analysis. Findings reveal a robust public awareness and concern for landscape preservation. While residents generally view the infrastructure and tourism developments in Da Lat positively, there is a significant need to address concerns regarding the preservation of natural and diverse landscapes. Many respondents expressed worries about potential adverse outcomes, particularly the loss of Da Lat's unique air quality, which could impact identity, tourism appeal, climate, agriculture, and biodiversity. The study found an inverse relationship between price levels and WTP, with higher prices leading to lower acceptance rates and higher rejection rates. Key factors influencing residents' WTP include income, infrastructure development, and the importance of tourism. Policy implications include supporting traditional agricultural practices, integrating green infrastructure into urban planning, formulating regulations for open space preservation, conserving urban heritage, and recognizing the social benefits of agricultural landscapes. These insights are critical for developing effective strategies to preserve Da Lat's urban landscapes.

1. Introduction

Urban landscapes are crucial to enhancing the quality of life and well-being of city residents by providing aesthetic value and supporting environmental sustainability. Da Lat City, located in the Central Highlands of Vietnam, is renowned for its picturesque scenery, diverse ecosystems, and cool climate, making it a popular destination for both tourists and residents. However, rapid urbanization and tourism expansion pose significant challenges to the preservation of the city's natural landscapes.

Over the past decade, urban expansion has led to the conversion of agricultural lands and green spaces into built-up areas, diminishing Da

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Lat's natural charm. Notably, 55.61 km² of natural habitats have been lost due to urbanization from 2010 to 2022 (Nguyen et al., 2023). Additionally, the growth of tourism has altered iconic landmarks such as Xuan Huong Lake and the Valley of Love, potentially reducing their natural beauty and authenticity.

Preserving these landscapes is critical not only for maintaining the city's environmental sustainability but also for safeguarding its cultural and historical heritage. With a diverse ecosystem of forests, lakes, and flower gardens, Da Lat's landscape supports ecological balance and offers vital ecosystem services such as water filtration and climate regulation. Given these benefits, conservation efforts in Da Lat are essential to ensure the long-term well-being of residents and the sustainable development of the city.

Although there is a limited amount of direct research specifically examining the willingness to pay (WTP) to preserve urban landscapes, several studies in related contexts offer valuable insights. Hu et al. (2014) reveal that socio-economic status significantly impacts WTP for green infrastructure in China, highlighting the critical influence of income and other economic factors on financial contributions to landscape preservation. This finding is echoed by Chaudhry (2013), who demonstrates that residents of Chandigarh, India, are willing to make annual financial contributions to improve and establish urban green spaces, indicating a public commitment to urban landscape enhancement. Similarly, a positive correlation between income levels and WTP for park preservation in southern Brazil was reported (Brandli et al., 2015). This correlation is further supported by Song et al. (2015), who identify a comparable relationship between income and WTP for urban green space conservation in Jinan, China. These studies collectively suggest that higher-income individuals are more inclined to financially support urban landscape conservation. Expanding on these insights, Idris et al. (2022) emphasize the role of visitors' perceptions and awareness of green spaces in shaping their WTP in Padang, Indonesia. This finding underscores the potential of public education and awareness campaigns to bolster financial support for urban landscape preservation. Rodella et al. (2019); Rodella et al. (2020) provide a comprehensive perspective by integrating quantitative approaches, public opinion, and economic estimation to assess WTP for coastal scenery preservation in Italy. Their work underscores the multifaceted value of landscapes and the importance of considering both economic and public opinion metrics in conservation strategies. Contrasting with these trends, Tibesigwa et al. (2020) present a nuanced view from Dar es Salaam, Tanzania, where wealthier residents place less importance on urban parks compared to their poorer counterparts. This challenges the empirical evidence from developed countries and highlights the necessity for effective management, regular maintenance, and institutional support to protect urban green spaces from encroachment and misuse. Zhang et al. (2023) focus on the Yangtze River Middle Reaches Megalopolis in China, finding that residents' WTP to maintain and preserve ecosystem services is driven more by environmental factors than demographic factors, particularly proximity to farmland, water, and forests. This emphasizes the critical role of environmental context in shaping public support for landscape preservation. In a similar vein, Aziz et al. (2023) explore peri-urban landscapes in Pakistan, revealing robust community support for enhancing greenery, with residents willing to contribute through volunteer donations. This underscores the potential for community-driven conservation initiatives in urban settings. Zegeye et al. (2023) utilize the contingent valuation method (CVM) to assess the economic value of urban forest parks in Hawassa City, Ethiopia. Their findings demonstrate that bid cost and various socioeconomic and demographic factors significantly affect WTP, providing a robust framework for estimating the economic value of urban green spaces.

While existing research has explored willingness to pay for urban green space preservation in other cities such as Padang (Idris et al., 2022), Dar es Salaam (Tibesigwa et al., 2020), and even in the broader context of Indonesia (Idris et al., 2022) or Italy (Rodella et al., 2020), there is a dearth of studies specifically focusing on similar landscapes to Da Lat city. This gap hinders our understanding of the unique factors and dynamics that influence residents' willingness to pay to preserve the urban landscape in Da Lat. Therefore, further research is needed to fill this gap and provide insights into the preferences and perceptions of residents in Da

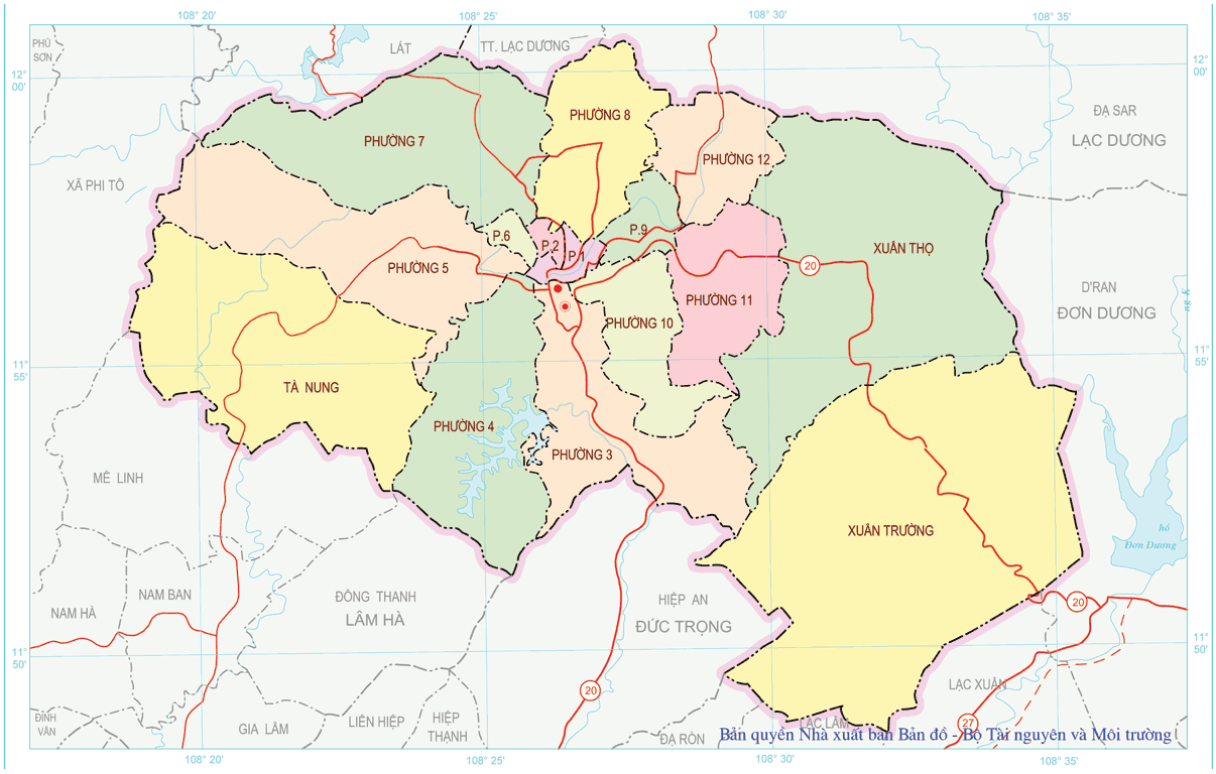

Figure 1. Da Lat City map

Lat city regarding urban landscape preservation, considering factors such as income, perception of green spaces, and knowledge of functions. Conducting such studies in Da Lat will not only contribute to the existing literature on willingness to pay for urban landscape preservation but also provide valuable information for policymakers and decision-makers in Da Lat city to develop effective strategies and initiatives for urban landscape preservation that align with the preferences and needs of the local community.

In this manuscript, we first deliver an introduction and a comprehensive literature review that explores the concept of willingness to pay (WTP) for urban landscape preservation. This section draws upon empirical findings from similar studies globally, establishing a theoretical framework for our analysis. Subsequently, we delineate the methodology adopted in our research, detailing the survey approach and data collection techniques utilized to gather data. Following this, we present a detailed analysis of the empirical results, scrutinizing the factors influencing individuals' WTP for urban landscape preservation in Da Lat. The manuscript culminates with a discussion of the practical implications of our findings, where we propose strategic recommendations for policymakers and urban planners to enhance efforts to preserve urban landscapes.

2. Methodology

2.1. Study area

Da Lat city is the provincial capital of Lam Dong province, located on the Lam Vien plateau, north of Lam Dong province, at an altitude of 1,500 meters above sea level, with an area of 394.64 km2, situated on the Lam Vien plateau, belonging to the Central Highlands region, Vietnam. To the north of Da Lat city is Lac Duong district, to the east and southeast is Don Duong district; while to the west and southwest; the city borders Lam Ha and Duc Trong districts. Da Lat City is approximately 300 km southwest of Ho Chi Minh City, with a favourable location and transportation system for expanding connections with economic centres in the South and the Central Coast.

2.2. Methods

The Contingent Valuation Method (CVM) was chosen for this study due to its effectiveness

in estimating the economic value of non-market goods, such as urban landscapes. This method has been widely used in environmental economics to assess individuals' willingness to pay (WTP) for public goods that do not have a direct market price. Studies by Hu et al. (2014) and Rodella et al. (2019), for example, have demonstrated the applicability of CVM in similar contexts, where it has been used to evaluate public preferences for landscape preservation and green infrastructure. Furthermore, Aziz et al. (2023) successfully applied this method to assess urban landscape preservation in rapidly developing areas, showing that CVM provides robust and reliable estimates of WTP.

In addition, CVM's flexibility allows for the inclusion of detailed scenarios, which improves respondents' understanding of the preservation projects being evaluated (Brandli et al., 2015; Song et al., 2015). Given the unique landscape and environmental importance of Da Lat, using CVM enables a comprehensive understanding of residents' preferences for landscape preservation.

Moreover, CVM is particularly useful for capturing both use and non-use values associated with urban landscapes, which is critical for policy decisions aimed at conservation efforts. Previous research, such as Tibesigwa et al. (2020) and Zegeye et al. (2023), has highlighted the importance of these values in similar urban contexts.

CVM is favoured for several reasons. Firstly, it directly elicits WTP by asking respondents how much they would be willing to pay for specific environmental improvements or preservation efforts. This direct approach yields a clear measure of the economic value individuals assign to urban landscape preservation. Additionally, CVM allows for considerable flexibility in survey design, enabling the inclusion of detailed descriptions of the preservation scenarios. This helps respondents make informed decisions about their WTP, thereby enhancing the reliability of the collected data.

Moreover, CVM is particularly well-suited for estimating the value of urban landscapes, which do not have market prices. It captures both use and non-use values, providing a comprehensive measure of the total economic value of landscape preservation. Unlike methods relying on observed market behavior, such as hedonic pricing or the travel cost method, CVM can capture non-use values like existence, bequest, and option values. This capability is essential for urban landscape preservation, where individuals may value the existence of green spaces even if they do not use them regularly.

The scenario-based approach of CVM uses hypothetical situations to describe environmental changes and their outcomes, allowing respondents to consider their preferences in a controlled setting. This method can simulate various preservation scenarios and their potential impacts, providing valuable insights for policymakers. Furthermore, CVM's wide applicability to a broad range of environmental and public goods makes it a versatile tool for economic valuation, especially in contexts where market data is unavailable or inadequate.

The results from CVM studies offer direct and actionable information for policymakers. By understanding the public's WTP for urban landscape preservation, decision-makers can design effective funding mechanisms and conservation strategies that align with public preferences. Overall, CVM provides a robust framework for estimating the economic value of urban landscape preservation in Da Lat city. Its ability to capture comprehensive values, flexibility, and direct elicitation of WTP make it an optimal choice for this study. The insights will inform policymakers and urban planners in developing sustainable strategies to preserve and enhance Da Lat's unique urban landscape.

In this study, a hypothetical scenario was established to assess the WTP. Firstly, the current situation in Da Lat city was described, highlighting the increasing number of tourists and the corresponding development and improvement of infrastructure, including the presence of hotels, guesthouses, and homestays. However, this development also poses a potential threat to the natural environment and landscape of Da Lat City, as it can negatively impact air quality and the overall natural scenery. To address this issue, the local government proposed a project called Preservation of the landscape of Da Lat. The project aimed to allocate funds for various purposes, such as planting more trees along the streets and constructing flower beds to reduce vehicle emissions and enhance the landscape. Additionally, a portion of the funds would be used to protect the landscape in Da Lat City from further development. Furthermore, funds would also be allocated for research topics related to landscape conservation in Da Lat City,

analysing the significance of the landscape for air quality, the environment, and the economy. Due to financial constraints, the project faced a shortage of investment capital, necessitating the contribution of the local residents. This contribution would involve individuals paying a one-time fee for the project, and the specific amount and duration of payment would be discussed with the community leaders.

To determine an appropriate contribution amount based on the willingness to pay of the residents, a pilot survey was conducted with 10 respondents in Da Lat city. The results showed that the minimum WTP was 10,000 VND, while the maximum was 50,000 VND. Thus, a double-bound question format was chosen to estimate the acceptance rate of payment from the residents. The initial price offered was set at 30,000 VND, and if the residents accepted, a higher price would be proposed. If they declined, a lower price would be suggested. The specific price points used in the survey were 5,000 VND, 10,000 VND, 15,000 VND, 20,000 VND, 25,000 VND, and 30,000 VND. As a result, the respondents' answers would fall into one of four combinations: (Yes, Yes), (Yes, No), (No, Yes), or (No, No).

To analyse factors influencing people's probability of accepting WTP, a logit regression model was employed as follows:

$$Ln\frac{P(Y=1)}{P(Y=0)} = \beta_0 + \beta_1 P + \beta_2 GENDER + \beta_3 AGE + \beta_4 EDU + \beta_5 INC + \beta_6 RES + \beta_7 DEV + \beta_8 AWA + \beta_9 TOUR + \varepsilon \quad (1)$$

The explanatory variables are explained in Table 1.

The proposed contribution amounts for the assumed Preservation of the landscape of Da Lat project include six levels: 5,000 VND, 10,000 VND, 15,000 VND, 20,000 VND, 25,000 VND, and 30,000 VND. It is expected that as the proposed contribution amount increases, the probability of respondents being willing to pay will decrease.

Several factors can influence individuals' willingness to contribute. Age is a proposed factor, as older individuals tend to have more stable financial situations and may be more willing to contribute. Educational attainment is also important, as individuals with higher levels of education may have a better understanding of the benefits of landscape conservation and therefore may be more willing to pay for it. Income level is another factor, with higher-income individuals generally showing a greater willingness to contribute (Iqbal & Hossain, 2023). The length of time an individual has lived in Da Lat can also influence their willingness to pay, with longer-term residents often being more willing to contribute (Zegeye et al., 2023). The level of infrastructure development in the area can also impact individuals' willingness to contribute, with higher levels of development potentially leading to a decrease in landscape quality and, therefore, a greater willingness to pay to preserve it. Moreover, the importance of tourism in the area can also influence individuals' willingness to contribute, as they may recognize the benefits that landscape conservation can bring to the tourism industry and, consequently, to the

Table 1. Variables summary

Variables	Explanations	Units of measurement	Expected signs	References
P	Price level	Thousand VND/month	(-)	
GENDER	Gender	0 = Female, 1 = Male		
AGE	Age	Year	(+)	(Aziz et al., 2023; Iqbal & Hossain, 2023; Zegeye et al., 2023; Zhang et al., 2023)
EDU	Education level	Ordinal scale from 0 = Elementary to 6 = Postgraduate	(+)	
INC	Income	Million VND/month/household	(+)	
RES	Length of residency	Year	(+)	
DEV	Infrastructure development importance	5-points Likert scale (1 = Not developed at all in terms of infrastructure, 5 = Very developed in terms of infrastructure)	(+)	
AWA	Awareness about urban landscape	5-points Likert scale (1 = Not important at all, 5 = Very important)	(+)	(Zegeye et al., 2023)
TOUR	Importance of tourism	5-points Likert scale (1 = Not important at all, 5 = Very important)	(+)	(Iqbal & Hossain, 2023)

local community (Iqbal & Hossain, 2023).

These proposed contribution amounts and the factors influencing individuals' willingness to pay provide valuable insights into the potential success of the proposed project and can inform decision-making processes regarding the project's implementation and funding.

From the regression estimation, the marginal effects of statistically significant variables were calculated using the formula:

$$\frac{d(P_i)}{d(X_k)} = \beta_k * P_i(1 - P_i) \quad (2)$$

Wherein:

β_k is the estimated coefficients; P_i is the initial accepted probability.

Data collection

Preliminary data were collected through interviews with residents of Da Lat City, based on a pre-prepared structured questionnaire. This study utilized the sampling formula developed by Cochran (1963) to determine the sample size:

$$n = \frac{Z^2 p(p-1)}{e^2} \quad (3)$$

Where: n is the required sample size. Z is the value from the Z-distribution table based on the desired confidence level. In this study, a confidence level of 95% was chosen, so the corresponding value of Z is 1.96. p is the estimated proportion of an attribute that is present in the population. e is the desired margin of error.

In this particular study, a confidence level of 95% was selected, and a margin of error of 10% was considered, and p is assumed to be 0.5, the minimum required sample size is calculated to be 96 observations. To ensure a higher level of confidence in the findings, the researchers conducted a survey with a larger sample size of 120 observations. This was done to improve the statistical reliability and validity of the study.

3. Results and discussion

3.1. Characteristics of the sample

The age distribution of the respondents shows that a majority of individuals who participated in the survey were above the age of 40 (Table 2). This suggests that older residents may have a stronger interest in preserving the urban landscape, as they have likely witnessed changes in the city over time and value the importance of maintaining its unique characteristics.

Secondly, the gender distribution reveals that a higher proportion of male respondents participated in the survey compared to female respondents. While the reasons for this discrepancy are unclear, it is important to consider gender-related factors when analysing the willingness to pay for urban landscape preservation, as preferences and priorities may differ between genders.

Education level is another significant characteristic to consider. The data indicates

Table 2. Summary of the surveyed interviewees

Characteristics	Frequency (%)	Characteristics	Frequency (%)
Age		Income per Month	
Under 20	0 (0%)	Under 6 million VND	1 (0.83%)
20 to 30	12 (10%)	6 to 10 million VND	43 (35.83%)
31 to 40	39 (32.5%)	11 to 15 million VND	45 (37.5%)
Over 40	69 (57.5%)	16 to 20 million VND	23 (19.17%)
Gender		Over 20 million VND	8 (6.67%)
Male	82 (68.33%)	Household Size	
Female	38 (31.67%)	Under 4 people	24 (20%)
Years of Education		4 to 5 people	73 (60.83%)
Under 6 years	6 (5%)	Over 5 people	23 (19.17%)
6 to 9 years	23 (19.17%)	Years Residing in Da Lat	
10 to 12 years	48 (40%)	Under 10 years	19 (15.83%)
Over 12 years	43 (35.83%)	10 to 15 years	12 (10%)
		15 to 20 years	20 (16.67%)
		Over 20 years	69 (57.5%)

that a substantial proportion of respondents had completed between 10 and 12 years of education. This suggests that individuals with higher levels of education may possess a greater understanding of the importance of preserving urban landscapes and the benefits they provide to the community.

Furthermore, the income level of respondents plays a role in their willingness to pay for urban landscape preservation. The majority of respondents earned between 6 and 15 million VND per month. Higher income levels may indicate a greater disposable income and, consequently, a higher capacity to contribute financially towards the preservation efforts.

Family size is another factor that may influence respondents' willingness to pay. The majority of respondents had 4 to 5 members in their households. Larger families may prioritize other financial obligations, which could potentially impact their willingness to allocate funds towards urban landscape preservation.

Lastly, the number of years living in Da Lat City provides insight into respondents' familiarity and attachment to the city. The data shows that a significant proportion of respondents had lived in the city for more than 20 years. These long-term residents may have a stronger emotional connection to the city and a greater desire to preserve its urban landscape.

3.2. Respondents' perception of the changing landscape in Da Lat City

A small percentage of respondents (0.84%) believed that the urban landscape in Da Lat City remained completely unchanged (Table 3). This suggests that some individuals perceive the city's environment as having remained consistent over time. Another group of respondents (3.33%) perceived the urban landscape as unchanged. This indicates that they have observed some stability in certain aspects of the city's environment, even though they may acknowledge other changes. On the other hand, a substantial majority of the respondents expressed that they perceived the urban landscape has changed (56.67%). This suggests that a significant number of individuals have noticed alterations or transformations in various aspects of the urban environment in Da Lat City. Furthermore, a notable proportion of respondents (20.83%) believed that the urban landscape had changed a lot. This implies that they have observed significant and noticeable changes in the city's environment, possibly indicating more drastic transformations. Contrarily, a smaller percentage of respondents (18.33%) perceived the urban landscape as normal. Overall, the findings from Table 3 highlight the diverse perceptions among respondents regarding the changes in the urban landscape in Da Lat City. While some perceive the landscape as relatively unchanged or normal, a significant number of individuals have noticed various degrees of change and transformation. These perceptions may be influenced by factors such as personal experiences, length of residency, and individual values towards urban development and preservation.

Moreover, a significant majority of the respondents, accounting for 67.5% or 81 out of 120 individuals, believe that Da Lat City has witnessed the most development since 2017. When asked about changes in the landscape compared to 5 to 10 years ago, 35 respondents (19.17% of the participants) reported perceiving noticeable differences. In terms of the strongest development in the past 10 years, only 3.33% of the respondents, equivalent to 4 individuals, agreed that Da Lat City has experienced significant growth during this period.

The perception of the changes in infrastructure

Table 3. Evaluation of the changing landscape in Da Lat City

Characteristics	Frequency	Percentage (%)
Completely unchanged	1	0.84
Unchanged	4	3.33
Normal	22	18.33
Changed	68	56.67
Changed a lot	25	20.83
Total	120	100

Table 4. Changes in various sectors in Da Lat City

Characteristics	Frequency	Characteristics	Frequency
Road conditions, housing		Number of industrial zones, factories	
Increased	114 (95%)	Increased	80 (66.67%)
Decreased	6 (5%)	Decreased	40 (33.33%)
Natural ecosystem		Garden land area	
Increased	28 (23.33%)	Increased	38 (31.67%)
Decreased	92 (76.67%)	Decreased	82 (68.33%)
Number of tourist areas		Amount of waste	
Increased	117 (97.5%)	Increased	115 (95.83%)
Decreased	3 (2.5%)	Decreased	5 (4.17%)

Table 5. Positive Characteristics and Negative Characteristics from Landscape Changes

Characteristics	Frequency
Positive	
Cold air helps residents cultivate better	13
Creates a comfortable feeling when the temperature is neutralized	15
More comfortable when going out in the early morning and late evening	19
Negative	
Loss of the characteristic features of Da Lat's air	75
Affects the tourism development of Da Lat City	28
Unusual weather changes hinder the growth of plants and trees	23
Affects the development of some flowers, plants accustomed to cold climate	18

in Da Lat city, Vietnam, is generally positive (Table 4). The conditions of roads, housing, tourist areas, industrial zones, and waste management have shown improvement. According to the survey conducted in Da Lat city, 95% of respondents believe that the condition of the roads has improved, 97.5% have noticed development in the housing sector, 66.67% have seen an increase in the number of tourist areas, and 95.83% have observed progress in waste management. The road network has expanded in terms of both width and length, with shorter roads being developed to facilitate faster travel.

However, alongside these improvements, there are concerns regarding the preservation of natural and diverse landscapes in Da Lat city. According to the study on landscape management and preservation, some residents feel that the current landscape has lost its natural character and variety (29%), and there is a desire for more diverse forms of entertainment (25%). Additionally, some individuals (22% of the sample) believe that the current landscape is worse compared to the past. These concerns highlight the importance of balancing infrastructure development with the preservation of natural landscapes in Da Lat city.

In summary, while the perception of the changes in infrastructure in Da Lat City is largely positive, with improvements in various aspects, there is a need to address the concerns related to the preservation of natural and diverse landscapes. This can help ensure the sustainable development of the city while maintaining its unique and appealing natural features.

Table 5 outlines various positive and negative implications resulting from changes in the landscape, reflecting the sentiments of surveyed individuals. On the positive side, 13 respondents highlighted that reduced coldness in the air contributes to improved agricultural conditions, enhancing crop cultivation. Additionally, 15 respondents acknowledged the creation of a more comfortable atmosphere due to neutralized temperatures, particularly beneficial

Table 6. WTP acceptance rate of respondents

Price Level (Thousand VND)	Accepted Payment	Acceptance Rate (%)	Declined Payment	Decline Rate (%)
5	18	90	2	10
10	15	75	5	25
15	13	65	7	35
20	12	60	8	40
25	12	60	8	40
30	8	40	12	60

Table 7. Logit regression estimation

Variable Name	Estimated Coefficient	Standard Error	z-Statistic
Constant	-22.276	8.018	-2.778
DEV	1.372*	0.701	1.958
AWA	-0.271	0.628	-0.432
TOUR	2.609***	0.910	2.866
EDU	0.022	0.199	0.111
RES	0.088**	0.038	2.349
INC	0.607***	0.202	3.011
AGE	0.066	0.059	1.125
GENDER	-0.136	0.566	-0.240
P	-0.168**	0.078	-2.157
McFadden R2	0.781		
Log-Likelihood	-16.999		
LR Statistic	121.389		
Prob (LR Statistic)	0.000		

*Note: *Significant at the 1% level, ** Significant at the 5% level, *** Significant at the 10% level.*

during early mornings and late evenings. However, a significant majority, comprising 75 respondents, expressed concerns over negative consequences. They lamented the loss of Da Lat's unique air characteristics, fearing its impact on the city's identity and tourist appeal. Furthermore, 28 respondents voiced apprehensions about the adverse effects on tourism development, while 23 respondents cited disrupted plant growth attributed to irregular weather changes. Moreover, 18 respondents noted the detrimental impact on certain plants and flowers adapted to colder climates, raising concerns about biodiversity preservation. Overall, the table underscores the intricate interplay between landscape alterations and socio-environmental factors, urging the implementation of sustainable practices to mitigate adverse effects and safeguard the region's ecological integrity and cultural heritage.

3.3. Willingness to pay to preserve landscape in Da Lat City

Table 6 provides valuable insights into the relationship between price levels and respondents' willingness to pay in Da Lat City. The findings demonstrate a clear pattern: as the price levels increase, the acceptance rates decrease while the decline rates increase. For instance, at a price level of 5 thousand VND, the acceptance rate is 90%, with 18 out of 20 respondents agreeing to the payment. However, as the price level rises to 30 thousand VND, the acceptance rate drops to 40%, with only 8 respondents accepting the payment.

These results align with the theory of consumer choice and preference, which suggests that individuals make decisions based on maximizing their utility given budget constraints (Lancaster,

1966; Becker, 1976). Specifically, as prices increase, willingness to pay tends to decrease, a trend observed in similar studies of landscape preservation and public goods (Rodella et al., 2020; Tibesigwa et al., 2020). These results indicate that visitors in Da Lat City are more inclined to pay lower amounts for the preservation of the urban landscape. Understanding this relationship is crucial for decision-making processes related to the pricing strategy for preserving urban landscapes in the city. It is essential to strike a balance between setting a reasonable price that visitors are willing to pay and generating sufficient revenue for the preservation efforts.

Among the independent variables, several show statistically significant relationships with willingness to pay (Table 7). The variable DEV has a positive coefficient of 1.372, suggesting that individuals from more developed areas are more likely to be willing to pay. The variable TOUR, representing the respondent's perception of tourism's importance, has a significantly positive coefficient of 2.609, indicating that individuals engaged in tourism are more likely to express willingness to pay for urban landscape preservation. Similarly, the variable INC, representing the respondent's income level, has a significantly positive coefficient of 0.607, suggesting that higher income individuals are more likely to be willing to pay. On the other hand, other variables do not show significant relationships with willingness to pay, such as awareness, education, age, and gender. Overall, the model has a McFadden R2 value of 0.781, indicating that the included variables explain a substantial portion of the variation in willingness to pay. The log-likelihood value is -16.999, and the LR statistic is 121.389, both of which suggest that the model is statistically significant.

The predictive ability of the model is substantial. Out of a total of 42 individuals who did not accept payment, 39 were accurately predicted, accounting for 92.86% accuracy in predictions. Additionally, out of the total of 78 individuals who accepted payment, although there were only 3 cases of accurate predictions, the accuracy rate was 96.15%. The overall correct predictions of the model account for 95%, indicating that the model's predictions are very close to reality and reliable. Through testing the assumptions of the logistic regression model, it can be affirmed that the regression model constructed is indeed meaningful.

The marginal effects presented in Table 8 provide valuable insights into the relationship between various factors and individuals' willingness to pay (WTP) for the preservation of urban landscapes in Da Lat city, Vietnam.

Regarding infrastructure development importance (DEV), the findings suggest that as the level of importance placed on infrastructure development increases, individuals' willingness to pay for the preservation of urban landscapes also increases. This implies that residents who prioritize the development of infrastructure may have a greater appreciation for the value of preserving urban landscapes. Infrastructure development enhances accessibility and connectivity within a city, making it easier for residents and visitors to access and enjoy various landscapes. Well-maintained roads, pedestrian walkways, and public transportation systems not only facilitate movement but also encourage people to explore and appreciate the natural and built environments. As a result, individuals may develop a stronger attachment to the landscapes and be more willing to invest in their preservation (Dahal et al., 2018).

In terms of the importance of tourism in Da Lat (TOUR), the analysis indicates that as the importance of tourism increases, individuals become more willing to pay for the preservation of urban landscapes. This suggests that residents recognize the benefits that tourism brings to the city and the significance of preserving urban landscapes to attract tourists. Previous studies highlight the importance of tourism in the local economy and the recognition of its positive impacts by residents (Dahal et al., 2018; Idris et al., 2022). Residents value the natural beauty and recreational opportunities offered by the landscape, as well as its environmental and cultural significance. They understand that preserving the landscape contributes to the sustainability of tourism development and the protection of natural resources and cultural heritage sites (Cicia & Scarpa, 2002). Engaging residents in decision-making processes and considering their perspectives are crucial for effective landscape preservation strategies. By understanding the importance residents place on tourism and landscape preservation, policymakers can develop strategies that align with their values and ensure their support for sustainable tourism development.

Table 8. Marginal effects

Variables	β_i	Marginal effects
DEV	1.372	0.296
TOUR	2.609	0.563
RES	0.088	0.019
INC	0.607	0.131
P	-0.168	-0.036

Furthermore, the length of residency in Da Lat (RES) also plays a role in individuals' willingness to pay for the preservation of urban landscapes. According to Lorenzo et al. (2000), longer-term residents may develop a stronger emotional and social attachment to the local environment, which can increase their WTP for its preservation. So, it can be inferred that individuals who have resided in Da Lat for a longer period may have developed a stronger attachment to the city and its urban landscapes. This attachment may lead to a higher willingness to contribute financially to their preservation.

From the estimated regression, the marginal effects were calculated using formula (2). With a total of 120 survey responses collected, 78 respondents agreed to the proposed price level. Therefore, we can calculate the probability of accepting the willingness to pay (WTP) level Pi as 0.78, which translates to 78% acceptance among the surveyed individuals.

The positive marginal effect of INC variable was 0.131 indicates that as income increases, the probability of a positive WTP for urban landscape preservation also increases. Individuals with higher incomes may place greater value on the benefits of preserving landscapes, such as aesthetics, biodiversity, and ecosystem services (Brunstad et al., 1999). This suggests that individuals with higher incomes may be more willing to allocate resources towards the conservation of urban landscapes, potentially due to their greater financial capacity and recognition of the environmental and aesthetic benefits. These findings also align with those presented by Ekka and Pandit (2012), who suggest that individuals with higher levels of education tend to be more aware and concerned about issues related to conservation, restoration, and sustainable ecosystems. Their research indicates that the income of tourists positively influences their willingness to pay (WTP) for restoration initiatives, particularly in the context of mangrove forests, due to its impactful and motivational effects on their willingness to contribute financially.

Lastly, the variable price had a negative marginal effect of -0.036 indicates that as the price increases, the probability of a positive WTP for urban landscape preservation decreases. This implies that individuals may be less inclined to pay for the preservation of urban landscapes as the cost increases, potentially due to budget constraints or alternative priorities.

4. Conclusions and Policy Implications

From the results, the majority of residents in the area are concerned about landscape conservation, understanding the benefits, current tourism landscapes, and the values that landscapes bring to the locality and individuals, notably in tourism development. The current landscape in Da Lat is diversifying and becoming richer, with various entertainment options, but gradually losing its natural characteristics. Public awareness of landscape conservation is very high, with the majority of the sample believing that conservation is necessary and important. A significant part of the respondents expressed concerns over negative consequences. They underscored the loss of Da Lat's unique air characteristics, fearing its impact on the city's identity and tourist appeal. Furthermore, respondents voiced apprehensions about the adverse effects on tourism development, while others cited disrupted plant growth attributed to irregular weather changes. Moreover, some noted the detrimental impact on certain plants and flowers adapted to colder climates, raising concerns about biodiversity preservation.

The survey results reveal that the highest acceptance rate of contribution to preserve Da Lat City's landscape, at 90%, occurs at a price point of 5,000 VND, whereas the lowest acceptance rate, at 40%, is observed at a price of 30,000 VND. The majority of local residents express willingness to contribute financially, driven by the desire to enhance both current and future quality of life. They believe that collective contributions are essential for the successful completion of the proposed project. Conversely, a minority of residents reluctant to pay cite a lack of perceived responsibility. Furthermore, the study identifies several factors influencing residents' willingness to pay, including the level of infrastructure development, the significance of tourism, duration of residence, income level, and the proposed price.

The findings of this study underline the need for comprehensive landscape preservation policies in Da Lat City. While traditional agricultural practices play a vital role in maintaining the landscape, it is equally important to consider the impact of the tourism and hospitality sectors, which are critical to the local economy.

Tourism in Da Lat, driven by its natural beauty and cool climate, heavily relies on the preservation of its unique landscapes. Policies should encourage the integration of sustainable tourism practices, such as eco-tourism initiatives and green certifications for hotels and resorts, to ensure that tourism growth does not compromise the city's ecological integrity. Additionally, urban green spaces and cultural heritage sites can be preserved and promoted as part of tourism packages, further enhancing the city's appeal while contributing to conservation efforts.

The hospitality industry, including hotels, restaurants, and related services, can also be engaged in preservation efforts. For example, hoteliers can be incentivized to contribute to landscape conservation funds, especially in areas where they benefit directly from the proximity to natural attractions. These contributions could be used for maintaining parks, lakes, and other tourist destinations in Da Lat, thus ensuring that the local environment remains a draw for visitors.

Lastly, landscape preservation policies should also consider the industrial sector, particularly in terms of balancing development with environmental sustainability. Green infrastructure in industrial zones, as well as regulations on emissions and waste, will help mitigate the negative impacts of industrial growth on the local environment.

By broadening the scope of these policies to include tourism, hospitality, and industry, Da Lat can achieve a more balanced approach to landscape preservation that supports economic growth while safeguarding its natural resources.

The current study focuses primarily on surveying local residents of Da Lat City to assess their willingness to pay (WTP) for landscape preservation. While this approach provides valuable insights, it is acknowledged that relying solely on residents may not fully capture the broader dynamics affecting landscape preservation. To address this limitation, future research should incorporate in-depth interviews with a wider range of stakeholders, including tourists, business owners, and government officials. These interviews would provide a more nuanced understanding of the various perspectives on landscape conservation, particularly from those directly benefiting from tourism and urban development.

REFERENCES

Aziz, A., Anwar, M. M., Majeed, M., Fatima, S., Mehdi, S. S., Mangrio, W. M.,...Elansary, H. O. (2023). Quantifying Landscape and Social Amenities as Ecosystem Services in Rapidly Changing Peri-Urban Landscape. *Land, 12*(2), 477. Retrieved from https://www.mdpi.com/2073-445X/12/2/477

Becker, G. S. (1976). *The Economic Approach to Human Behavior*: The University of Chicago Press.

Brandli, L. L., Prietto, P. D. M., & Neckel, A. (2015). Estimating the Willingness to Pay for Improvement of an Urban Park in Southern Brazil Using the Contingent Valuation Method. *Journal of Urban Planning and Development,* 141(4), 05014027. DOI: https://doi.org/10.1061/(ASCE)UP.1943-5444.0000254

Brunstad, R. J., Gaasland, I., & Vårdal, E. (1999). Agricultural Production and the Optimal Level of Landscape Preservation. *Land Economics,* 75(4), 538-546. DOI: https://doi.org/10.2307/3147064

Chaudhry, P. (2013). Valuing recreational benefits of urban forestry-A case study of Chandigarh city of India. *International Journal on Environmental Sciences,* 3, 1785-1789. DOI: https://doi.org/10.6088/ijes.2013030500045

Cicia, G., & Scarpa, R. (2002). *Willingness to Pay for Rural Landscape Preservation, A Case Study in Mediterranean Agriculture.* Paper presented at the Paper presented on the International Workshop on Pricing Environmental Services of Agriculture. University Gießen, Rauischholzhausen.

Cochran, W. G. (1963). *Sampling techniques* (2nd ed.). New

York: John Wiley & Sons.

Dahal, R. P., Grala, R. K., Gordon, J. S., Petrolia, D. R., & Munn, I. A. (2018). Estimating the willingness to pay to preserve waterfront open spaces using contingent valuation. *Land use policy, 78*, 614-626. DOI: https://doi.org/10.1016/j.landusepol.2018.07.027

Ekka, A., & Pandit, A. (2012). Willingness to pay for restoration of natural ecosystem: A study of Sundarban mangroves by contingent valuation approach. *Indian Journal of Agricultural Economics,* 67(3), 323-333.

Hu, H., Geertman, S., & Hooimeijer, P. (2014). The willingness to pay for green apartments: The case of Nanjing, China. *Urban Studies,* 51(16), 3459-3478. DOI: https://doi.org/10.1177/0042098013516686

Idris, I., Hoque, M. E., & Susanto, P. (2022). Willingness to pay for the preservation of urban green space in Indonesia. *Cogent Economics & Finance,* 10(1), 2008588. DOI: https://doi.org/10.1080/23322039.2021.2008588

Iqbal, M. H., & Hossain, M. E. (2023). Tourists' willingness to pay for restoration of Sundarbans Mangrove forest ecosystems: a contingent valuation modeling study. *Environment, Development and Sustainability,* 25(3), 2443-2464. DOI: https://doi.org/10.1007/s10668-022-02140-w

Lancaster, K. J. (1966). A New Approach to Consumer Theory. *Journal of Political Economy,* 74(2), 132-157. DOI: https://doi.org/10.1086/259131

Lorenzo, A., Blanche, C., Qi, Y., & Guidry, M. (2000). Assessing Residents' Willingness to Pay to Preserve the Community Urban Forest: A Small-City Case Study. *Journal of Arboriculture,* 26, 319-325. DOI: https://doi.org/10.48044/jauf.2000.039

Nguyen, H., Nguyen, T., & Nguyen, C. (2023). Monitoring and Modeling of Spatio-Temporal Urban Expansion and Land Use/Land-Cover Change in Mountain Landscape: A Case Study of Dalat City, Vietnam. *Environment and Natural Resources Journal,* 21, 428-442. DOI: https://doi.org/10.32526/ennrj/21/20230086

Rodella, I., Madau, F., Mazzanti, M., Corbau, C., Carboni, D., Utizi, K., & Simeoni, U. (2019). Willingness to pay for management and preservation of natural, semi-urban and urban beaches in Italy. *Ocean & Coastal Management,* 172, 93-104. DOI: https://doi.org/10.1016/j.ocecoaman.2019.01.022

Rodella, I., Madau, F. A., & Carboni, D. (2020). The Willingness to Pay for Beach Scenery and Its Preservation in Italy. *Sustainability,* 12(4), 1604. DOI: https://doi.org/10.3390/su12041604

Song, X., Lv, X., & Li, C. (2015). Willingness and motivation of residents to pay for conservation of urban green spaces in Jinan, China. *Acta Ecologica Sinica,* 35(4), 89-94. DOI: https://doi.org/10.1016/j.chnaes.2015.06.003

Tibesigwa, B., Ntuli, H., & Lokina, R. (2020). Valuing recreational ecosystem services in developing cities: The case of urban parks in Dar es Salaam, Tanzania. *Cities, 106*, 102853. doi:10.1016/j.cities.2020.102853

Zegeye, G., Erifo, S., Addis, G., & Gebre, G. G. (2023). Economic valuation of urban forest using contingent valuation method: The case of Hawassa city, Ethiopia. *Trees, Forests and People, 12*, 100398. DOI: https://doi.org/10.1016/j.tfp.2023.100398

Zhang, G., Zhang, Q., Yang, X., Fang, R., Wu, H., & Li, S. (2023). Living environment shaped residents' willingness to pay for ecosystem services in Yangtze River Middle Reaches Megalopolis, China. *Geography and Sustainability, 4*(3), 213-221. DOI: https://doi.org/10.1016/j.geosus.2023.03.007