Taiwan J For Sci 40(4): 447-72, 2025
https://doi.org/10.7075/TJFS.202512_40(4).0002

Research paper

Linking Environmental Experience and Value Perception to Forest Management Support: A Case Study from Linhousilin Flatland Forest Park

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ABSTRACT

This study examined how environmental experiences and value perceptions influence recognition of forest management goals, using Linhousilin Flatland Forest Park in Pingtung as the research site. Applying the Strategic Experiential Modules (Sense, Feel, Think, Act, and Relate), 676 questionnaires were collected to analyze how visitors' experience types, value evaluations, and background attributes affect their management support. Findings indicate that visitors strongly acknowledge the forest's roles in environmental protection, recreation, and social cohesion, while remaining more reserved about its economic function. Visit frequency, age, and income significantly influenced environmental experience ratings. Rich and diverse natural experiences, along with positive environmental values, enhanced support for social, economic, and ecological management goals. Regression analysis identified natural sensory experiences, scenic and public environmental values, and recreational and social values as key predictors of management recognition. This study underscores the importance of user experience-based planning in strengthening the multifaceted value of public spaces and building support for sustainable governance.

Keywords: environmental experiences, Strategic Experiential Modules, flatland forest, Linhousilin
Hsu CP. 2025. Linking Environmental Experience and Value Perception to Forest Management Support: A Case Study from Linhousilin Flatland Forest Park. Taiwan J For Sci 40(4): 447-72.

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2025年7月送審，2025年10月通過。Received July 2025, Accepted October 2025.

INTRODUCTION

Linhousilin Flatland Forest Park in Pingtung, Taiwan's third flatland forest park, has recently become a popular green space, offering ecological interpretation, education, and recreation activities. More than 20 years have passed since the launch of the flatland afforestation policy, during which research has evolved from focusing on policy design and effectiveness (e.g., Lin 2003, Huang and Wang 2013) to addressing psychosocial factors such as public values, trust, and support (e.g., Chen and Yen 2014, Chuang and Yen 2017). However, with subsidies beginning to phase out in 2021, sustaining the park's ecological and social functions without financial support has become a significant challenge, particularly in regards to strengthening users' sense of public value and support for the park.

In this context, theories like sense of place and environmental experiences offer valuable insights. Forest values stem from users' experiences and connections with place. Relph (1976) emphasized that place attachment arises through accumulated experiences, while Williams and Stewart (1998) and Stedman (2003) highlighted the emotional, cultural, and historical bonds that inform natural resource governance. Ryan (2005) showed how varying environmental experiences shape divergent attitudes toward resource management. Stedman (2002) further argued that integrating local perceptions into policy is essential for building consensus for sustainable governance.

These perspectives suggest that understanding how people interact with and experience the environment helps clarify the social significance of forests and supports policy and management planning. This study is inspired by such perspectives and focuses on how user experiences and value perceptions influence support for forest park management goals and sustainable development.

As both a policy implementation site and representative public green space, Linhousilin provides an ideal setting to study user participation and place attachment. Accordingly, this study set out to:

1. Examine how environmental experiences and perceived values shape public recognition of the park's management goals.
2. Offer practical strategies and policy recommendations to support the sustainability and public value of flatland forests in the post-subsidy era.

MATERIALS AND METHODS

Study area and respondents

The study was conducted in the Linhousilin Flatland Forest Park in Pingtung, which covers an area of 1,005 hectares, including an 85-hectare core open area. The target respondents were visitors aged 18 and above. A pilot survey conducted between December 14 and 31, 2022, collected 64 responses. Based on the pilot feedback and results, the formal questionnaire was revised. Given the extensive park area, a convenience sampling approach was adopted for the main survey, conducted at highly frequented locations such as the irrigation canal area and the visitor center. The formal survey was conducted from January through December 2023, on 12 randomly selected sunny and rain-free days each month (7 weekdays and 5 weekends). A total of 792 questionnaires were collected over 131 survey days, with 676 valid responses retained after excluding incomplete or extreme responses, for a 85.4% validity rate.

Questionnaire design

The questionnaire comprised five sections: environmental experiences, perceived environmental values of flatland forests, recognition of management goals, tourism characteristics, and respondents' background information. Except for background and tourism characteristics, all sections used a 5-point Likert scale.

Environmental experiences

This study introduced Schmitt's (1999) Strategic Experiential Modules (SEMs) to assess users' environmental experiences in flatland forests. Schmitt proposed five experience dimensions based on consumer psychology and social behavior, highlighting that engagement should focus not only on the product but also on the sensory, emotional, and social experiences derived from interaction. The five SEM dimensions are:

1. Sensory experiences (Sense): Engagement through vision, hearing, touch, taste, and smell to generate pleasure and stimulate interest.
2. Affective experiences (Feel): External stimuli that evoke positive emotions such as joy, pride, or being moved.
3. Creative experiences (Think): Novel or thought-provoking content that stimulates cognition and creativity.
4. Physical experiences, behaviors, and lifestyles (Act): Participation in activities that influence behaviors and lifestyles.
5. Social-identity experiences (Relate): Connecting with others, local culture, or society to foster identity and belonging.

SEMs have been widely applied in tourism contexts, examining effects on satisfaction and revisit intention, such as in winery tourism (Lee and Chang 2012), zoo visitation (Musa et al. 2015), and tourism factories (Yeh et al. 2019). Other studies explored place attachment and identity (Feng and Lee 2013, Souza et al. 2019). While SEMs originated in marketing, they now inform research on recreation and place cognition, revealing psychological resonance and behavioral responses through activity participation.

This study views SEMs as suitable for understanding environmental experiences in nature-based settings. The questionnaire included 15 items (3 per SEM domain) covering sensory impressions, emotional responses, cognitive engagement, behavioral participation, and relational ties, forming the basis for analyzing visitors' recognition of forest management objectives.

Environmental values

Given the functional similarities of flatland forests to peri-urban green spaces or urban parks, this study referenced the environmental values frameworks proposed by Tyrväinen (1999), Wang (2002), and Tyrväinen et al. (2005). Environmental values were classified into eight categories: ecological, socio-cultural, economic, recreational, environmental education, scenic, environmental protection, and scientific research. Each category was measured with two questionnaire items, except for a single item representing scientific value, resulting in a total of 15 items.

Management goals

Based on forest policy planning and positioning (Forestry and Nature Conservation Agency 2002, 2008, 2014, Lo and Liao 2014), this study classified management goals into social, economic, and environmental dimensions. The questionnaire included 2 items for the social dimension and 3 each for the economic and environmental dimensions,

totaling 8 items.

Tourism characteristics and background attributes

Tourism attributes were captured via items on visit frequency and motivation. Respondents who had visited more than five times were also asked about their most frequently visited areas and activities. Background attributes included gender, age, marital status, occupation, education, monthly income, and place of residence.

Data analysis

All data analyses were conducted using IBM SPSS Statistics 29.0.0.0.

Sample structure and distribution differences

Descriptive statistics were first used to summarize respondent characteristics and overall data distribution. One-way repeated measures ANOVA was then conducted to examine mean differences across dimensions of environmental experiences, environmental values, and management objectives. Additionally, independent-sample *t*-tests and one-way ANOVA were used to assess differences among groups based on tourism characteristics and respondent backgrounds.

Cluster analysis by visit frequency

Following Relph (1976), who emphasized accumulated experience as a basis for place attachment, this study performed cluster analysis based on visit frequency to identify practical management strategies based on user needs.

Respondents were grouped by visit frequency (≥ 5 vs. < 5 times). Cluster analysis was used to segment respondents based on environmental experience scores, followed by chi-square tests to examine relationships with background attributes. For attributes with significant differences, *t*-tests and ANOVA were conducted to compare experience dimensions. For frequent visitors, the number of commonly used areas and activities was also analyzed for group differences.

Factors influencing recognition of management goals

To explore how environmental experiences, values, visit frequency, and demographic factors influenced recognition of management goals, exploratory factor analysis (EFA) was conducted to extract latent dimensions, followed by reliability analysis for internal consistency. Finally, multiple regression analysis was used to test the predictive power of each independent variable.

RESULTS

Sample characteristics

According to Table 1, a slight majority of respondents were female (57.4%), with a higher proportion aged 60 and above (37.1%). Most participants were employed in the industrial, commercial, or service sectors (31.7%), and over half held a university or college degree (56.2%). Additionally, the majority of visitors came from other counties or cities (61.5%), and 41.1% reported visiting the park more than five times.

Differences in environmental experiences, environmental values, and management goals

Scores for each item are presented in Appendix A, with mean dimension scores shown in Table 2. Among the environmental experience dimensions, affective experiences received the highest mean score (4.49), followed by sensory experiences (4.44). For environmental values, the highest-rated

Table 1. Sociodemographic characteristics of respondents (*n* = 676)

Category	Subcategory	Count	Percentage
Gender	Male	287	42.5%
	Female	388	57.4%
	Other	1	0.1%
Age	18–29 years	46	6.8%
	30–39 years	98	14.5%
	40–49 years	125	18.5%
	50–59 years	156	23.1%
	60+ years	251	37.1%
Marital status	Unmarried	136	20.1%
	Married	540	79.9%
Occupation	Student	20	3.0%
	Military / Civil Servant / Educator	79	11.7%
	Agriculture / Forestry / Fishing / Animal Husbandry	12	1.8%
	Workers / Business / Service	214	31.7%
	Freelancer	48	7.1%
	Unemployed	4	0.6%
	Homemaker	100	14.8%
	Retirees	166	24.6%
	Other	33	4.9%
Education level	Primary school	11	1.6%
	Junior high school	22	3.3%
	Senior high school / Vocational school	179	26.5%
	University / College	380	56.2%
	Graduate school or above	82	12.1%
	Self-educated	2	0.3%
Monthly income (NT$)	< 20,000	127	18.9%
	20,000–40,000	205	30.5%
	40,000–60,000	205	30.5%
	60,000–80,000	80	11.9%
	80,000–100,000	36	5.3%
	>100,000	20	3.0%
Residence	Chaozhou, Pingtung	75	11.1%
	Other regions of Pingtung County	178	26.3%
	Other counties / cities	416	61.5%
	Other countries	7	1.0%
Visit frequency	First time	238	35.2%
	2^{nd}–4^{th} time	160	23.7%
	5+ times	278	41.1%

Table 2. Overall ANOVA on environmental experiences, environmental values, and management goals (Mean ± SD and *F* values) (*n* = 676)

Category	Score (Mean ± SD)	*F*
Environmental experiences		
Feel	4.49 ± 0.48[a]	203.0***
Sense	4.44 ± 0.48[b]	
Relate	4.42 ± 0.54[b]	
Think	4.27 ± 0.60[c]	
Act	4.00 ± 0.62[d]	
Environmental values		
Environmental protection value	4.64 ± 0.47[a]	257.1***
Recreational value	4.60 ± 0.48[a]	
Environmental education	4.57 ± 0.48[a]	
Ecological value	4.47 ± 0.55[b]	
Socio-cultural value	4.46 ± 0.54[b]	
Scenic value	4.45 ± 0.57[b]	
Scientific research value	4.44 ± 0.67[b]	
Economic production value	3.78 ± 0.85[c]	
Management goals		
Social goals	4.58 ± 0.52[a]	7.0***
Environmental goals	4.54 ± 0.51[b]	
Economic goals	4.53 ± 0.51[b]	

Note. Means with different superscript letters differ significantly (Bonferroni post-hoc). *** $p < .001$.

dimension was environmental protection value (4.64), followed by recreational value (4.60). Regarding management goals, social-oriented goals received the highest recognition (4.58), followed by environmental (4.54) and economic goals (4.53). One-way repeated measures ANOVA showed significant differences among the internal means within each of the three dimensions (Table 2).

Differences by respondent attributes

To avoid insufficient statistical power, attribute categories with fewer than 10 respondents were excluded before conducting independent sample *t*-tests and one-way ANOVA to examine differences in environmental experiences, environmental values, and management goals across various travel characteristics (visit frequency) and respondent demographics. The excluded samples were: "Other" gender (n = 1), "Unemployed" (n = 4), "Self-study" (n = 2), and "Other countries" (n = 7). Results and post-hoc comparisons using LSD are as follows:

1. Gender: Females (n = 388, M = 13.70, SD = 1.58) showed significantly higher agreement with economic management goals than males (n = 287, M = 13.43, SD = 1.40) ($t(589) = -2.34$, $p < .05$).
2. Age: Significant differences were observed

for thinking experiences, recreational value, and social management goals. Post-hoc LSD results showed that: Thinking experiences were lower among the 18–29 age group; recreational value was higher in the 30–39 group; and social management goal agreement was lower in the 18–29 group (Table 3).

3. Marital Status: Married respondents (n = 540, M = 13.33, SD = 1.57) reported significantly stronger relate experiences than unmarried respondents (n = 136, M = 13.01, SD = 1.81) ($t(674) = -2.02$, $p < .05$).
4. Occupation: Significant differences were found for ecological value, environmental education value, scientific research value, and overall environmental value. Post-hoc results (Table 4) revealed that civil servants/military/educators rated all these values higher than most other groups, while the agriculture/forestry/fishery sector rated environmental education value significantly lower than civil servants, business/service workers, housewives, and retirees.
5. Education Level: No significant differences were found.
6. Monthly Income: Significant differences emerged in thinking experiences, scenic value, scientific research value, overall environmental value, social, economic, environmental, and overall management goals. As shown in Table 5, low-income groups (under NT$20,000 and NT$20,000–40,000) rated most items significantly lower than middle and high-income groups. For example, thinking experience, scenic/scientific/overall values, and all management goals were markedly lower in lower-income groups.
7. Residence: No significant differences were found.
8. Visit Frequency: Significant differences appeared in sensory, affective, and relate experiences. According to Table 6, those who visited more than 5 times gave significantly higher ratings across all experience dimensions.

Cluster analysis: Visitor experience characteristics by visit frequency

1. Visitors with at least five visits:
   (1) Using TwoStep clustering, respondents were divided into two groups: A "high-score environmental experience group" (57.6%, n = 160, hereafter referred to as the high-score group) and a "low-score environmental experience group" (42.4%, n = 118, hereafter the low-score group). The number of clusters was determined based on Schwarz's

Table 3. Mean scores of Think, Recreational value, and Social goals by age group with ANOVA and LSD post-hoc results

Age group	*n*	Think (Mean ± SD)	Recreational value (Mean ± SD)	Social goals (Mean ± SD)
18–29 years	46	12.17 ± 2.20^{b}	9.13 ± 1.09^{b}	8.74 ± 1.26^{b}
30–39 years	98	12.68 ± 2.04^{ab}	9.48 ± 0.84^{a}	9.17 ± 0.99^{a}
40–49 years	125	12.72 ± 1.79^{ab}	9.22 ± 0.91^{b}	9.06 ± 1.17^{ab}
50–59 years	156	13.03 ± 1.73^{a}	9.19 ± 0.98^{b}	9.21 ± 0.99^{a}
60+ years	251	12.9 ± 1.66^{a}	9.12 ± 1.00^{b}	9.27 ± 0.96^{a}

Note. One-way ANOVA showed significant effects for Think (F = 2.40*) and Social goals (F = 3.08*). Recreational value also differed significantly among groups. * $p < .05$. Means with different superscript letters differ significantly (LSD post-hoc test).

Table 4. Mean scores of environmental values by occupation group with ANOVA and LSD post-hoc results

Occupation group	*n*	Ecological value (Mean ± SD)	Environmental education value (Mean ± SD)	Overall environmental values (Mean ± SD)	Scientific research value (Mean ± SD)
Student	20	9.2 ± 1.15^{ab}	8.85 ± 1.14^{b}	65.65 ± 7.25^{ab}	4.35 ± 0.99^{ab}
Military / Civil Servant / Educator	79	9.23 ± 0.95^{a}	9.42 ± 0.84^{a}	68.25 ± 5.22^{a}	4.65 ± 0.53^{a}
Agriculture / Forestry / Fishing / Animal Husbandry	12	9.25 ± 0.87^{a}	8.5 ± 1.31^{c}	66 ± 6.72^{ab}	4.33 ± 0.78^{ab}
Workers / business / service	214	8.93 ± 1.10^{b}	9.17 ± 0.98^{ab}	66.38 ± 6.43^{b}	4.38 ± 0.71^{b}
Freelancer	48	8.73 ± 1.23^{b}	8.92 ± 0.92^{b}	65.25 ± 5.73^{b}	4.29 ± 0.74^{b}
Homemaker	100	8.83 ± 1.16^{b}	9.18 ± 0.91^{ab}	66.26 ± 6.04^{b}	4.48 ± 0.59^{ab}
Retirees	166	8.95 ± 1.12^{a}	9.12 ± 0.95^{b}	66.49 ± 6.43^{b}	4.46 ± 0.64^{b}
Other	33	8.42 ± 0.97^{c}	8.85 ± 1.03^{bc}	63.97 ± 6.67^{c}	4.36 ± 0.70^{b}

Note. One-way ANOVA showed significant effects for Ecological value ($F = 2.51^{*}$), Environmental education ($F = 2.87^{**}$), and Overall environmental values ($F = 2.01^{*}$). * $p \leq .05$, ** $p < .01$. Means with different superscript letters differ significantly (LSD post-hoc test).

Table 5. Mean scores of environmental values and management goals by monthly income group with ANOVA and LSD post-hoc results

Income group (NT$)	*n*	Think (Mean ± SD)	Overall environmental values (Mean ± SD)	Scenic values (Mean ± SD)	Scientific research values (Mean ± SD)
< 20,000	127	12.61 ± 1.99^{b}	65.3 ± 6.59^{b}	8.72 ± 1.32^{b}	4.35 ± 0.73^{c}
20,000–40,000	205	12.57 ± 1.84^{b}	65.64 ± 6.31^{b}	8.78 ± 1.12^{b}	4.37 ± 0.69^{c}
40,000–60,000	205	13.03 ± 1.68^{a}	67.03 ± 6.02^{a}	9.04 ± 1.06^{a}	4.50 ± 0.65^{b}
60,000–80,000	80	12.90 ± 1.76^{ab}	67.22 ± 6.47^{a}	9.03 ± 1.09^{a}	4.45 ± 0.65^{bc}
80,000–100,000	36	13.42 ± 1.59^{a}	67.61 ± 5.73^{a}	9.14 ± 0.93^{a}	4.53 ± 0.51^{b}
> 100,000	20	13.10 ± 1.68^{a}	68.45 ± 5.27^{a}	9.20 ± 1.06^{a}	4.80 ± 0.41^{a}
Income group (NT$)	***n***	**Social goals (Mean ± SD)**	**Economic goals (Mean ± SD)**	**Environmental goals (Mean ± SD)**	**Overall management goals (Mean ± SD)**
< 20,000	127	9.09 ± 1.07^{b}	13.4 ± 1.64^{b}	13.46 ± 1.64^{b}	35.95 ± 3.9^{b}
20,000–40,000	205	9.04 ± 1.08^{b}	13.44 ± 1.59^{b}	13.46 ± 1.54^{b}	35.94 ± 3.8^{b}
40,000–60,000	205	9.25 ± 1.05^{ab}	13.82 ± 1.34^{a}	13.73 ± 1.48^{b}	36.80 ± 3.44^{a}
60,000–80,000	80	9.26 ± 0.95^{ab}	13.55 ± 1.57^{ab}	13.79 ± 1.49^{b}	36.60 ± 3.70^{a}
80,000–100,000	36	9.31 ± 0.86^{ab}	13.58 ± 1.50^{ab}	13.72 ± 1.30^{b}	36.61 ± 3.20^{a}
> 100,000	20	9.60 ± 0.68^{a}	14.10 ± .1.17^{a}	14.45 ± 0.89^{a}	38.15 ± 2.35^{a}

Note. One-way ANOVA showed significant effects for Think ($F = 2.63^{*}$) and Overall Env. values ($F = 2.80^{*}$). Other constructs also showed significant differences between groups. * $p < .05$, ** $p < .01$, *** $p \leq .001$. Means with different superscript letters differ significantly (LSD post-hoc test).

Table 6. Mean scores of Sense, Feel, and Relate by number of visits with ANOVA/Robust tests and LSD post-hoc comparisons

Number of visits group	*n*	Sense (Mean ± SD)	Relate (Mean ± SD)	Feel (Mean ± SD)
First time	238	13.22 ± 1.46[b]	13.08 ± 1.69[b]	13.34 ± 1.47[b]
2nd–4th time	160	13.17 ± 1.48[b]	13.13 ± 1.72[b]	13.3 ± 1.51[b]
5+ times	278	13.49 ± 1.41[a]	13.51 ± 1.48[a]	13.65 ± 1.32[a]

Note. One-way ANOVA showed significant effects for Sense ($F = 3.40^{*}$) and Relate ($F = 5.31^{**}$). Robust tests indicated significance for Feel (Welch $F = 4.60^{*}$). * $p < .05$, ** $p < .01$. Means with different superscript letters differ significantly (LSD post-hoc test).

BIC = 2,472.46 (ΔBIC =-579.29), with a model quality of 0.4, indicating "fair" quality. Validation via K-means clustering showed consistent trends in cluster centroids, supporting the stability of the grouping. Across all five environmental experience dimensions, the high-score group scored significantly higher than the low-score group, and ANOVA confirmed these differences as statistically significant.

(2) Independent sample *t*-tests indicated that the high-score group reported significantly more commonly used zones ($M = 3.13$, $SD = 1.35$) than the low-score group ($M = 2.80$, $SD = 1.35$) ($t(276) = 2.04$, $p < .05$). Similarly, the number of frequently engaged activities was also higher for the high-score group ($M = 3.78$, $SD = 1.97$) than the low-score group ($M = 3.29$, $SD = 1.70$) ($t(276) = 2.15$, $p < .05$).

(3) Cross-tabulation analysis was conducted to examine the relationship between cluster membership and respondent attributes. Only gender showed a significant chi-square result ($\chi^2(1, N = 278) = 5.85$, $p < .05$). Further *t*-tests revealed that female respondents ($n = 154$, $M = 13.65$, $SD = 1.40$) scored significantly higher than males ($n = 124$, $M = 13.30$, $SD = 1.41$) on sensory experiences ($t(276) = -2.07$, $p < .05$).

2. Visitors with 2–4 visits:

(1) TwoStep clustering divided respondents into a high-score group (41.9%, $n = 67$) and a low-score group (58.1%, $n = 93$), with Schwarz's BIC = 1,577.99 (ΔBIC = -230.31) and model quality of 0.4, indicating "fair" quality. Validation using K-means showed consistent centroid trends, confirming stability. Across all five experience dimensions, the high-score group scored significantly higher than the low-score group (confirmed by ANOVA).

(2) Cross-tabulation revealed no significant differences between cluster groups and demographic attributes.

3. First time visitors:

(1) TwoStep clustering categorized respondents into a high-score group (44.1%, $n = 105$) and a low-score group (55.9%, $n = 133$), based on Schwarz's BIC = 2,166.35 (ΔBIC = -464.84), with model quality 0.4 ("fair"). K-means validation supported cluster stability. ANOVA confirmed that the high-score group had significantly higher ratings across all five experience dimensions.

(2) Cross-tabulation revealed significant differences in monthly income ($\chi^2(5) = 17.30$, $p < .01$) and residence ($\chi^2(3) = 8.96$, $p < .05$). One-way ANOVA

showed significant differences in all five environmental experience dimensions across income levels. LSD post-hoc comparisons (Table 7) indicated that lower-income groups (below NT$20,000 and NT$20,000–40,000) consistently had lower scores, while higher-income groups (especially NT$100,000+) scored notably higher in thinking, action, and overall experience. Mid-income groups (NT$40,000–80,000) generally fell in between, suggesting a trend of increasing experience scores with rising income. Regarding place of residence, after excluding "Pingtung Chaozhou" (n = 5) and "Other countries" (n = 5), t-tests revealed that the "other Pingtung areas" group (n = 26) scored significantly lower than the "other counties/cities" group (n = 202) on multiple dimensions: Sensory experience (M = 12.65, SD = 1.47) vs. others (M = 13.29, SD = 1.46, $t(226)$ = -2.10, $p < .05$); affective experience (M = 12.62, SD = 1.27) vs. others (M = 13.45, SD = 1.44, $t(226)$ = -2.81, $p < .01$); thinking experience (M = 11.77, SD = 1.56) vs. others (M = 12.78, SD = 1.93, $t(226)$ = -2.56, $p < .05$); and overall experience (M = 61.42, SD = 5.67) vs. others (M = 64.82, SD = 6.78, $t(226)$ = -2.44, $p < .05$).

Table 7. Mean scores of environmental experiences by monthly income group among first-time visitors with ANOVA and LSD post-hoc results

Income group (NT$)	*n*	Sense (Mean ± SD)	Feel (Mean ± SD)	Think (Mean ± SD)
< 20,000	35	12.66 ± 1.57^{b}	12.74 ± 1.79^{b}	11.66 ± 1.94^{c}
20,000–40,000	74	13.07 ± 1.52^{b}	13.18 ± 1.48^{b}	12.36 ± 2.11^{bc}
40,000–60,000	74	13.54 ± 1.39^{a}	13.62 ± 1.34^{ab}	13.15 ± 1.82^{a}
60,000–80,000	32	13.22 ± 1.45^{ab}	13.44 ± 1.29^{ab}	12.84 ± 1.46^{ab}
80,000–100,000	11	13.82 ± 0.98^{a}	14.27 ± 0.79^{a}	13.36 ± 1.21^{ab}
> 100,000	12	13.33 ± 1.15^{ab}	13.17 ± 1.40^{ab}	13.25 ± 1.60^{ab}
Income group (NT$)	***n***	**Act (Mean ± SD)**	**Relate (Mean ± SD)**	**Overall environmental experiences (Mean ± SD)**
< 20,000	127	11.40 ± 1.36^{c}	12.51 ± 1.44^{b}	60.97 ± 6.28^{c}
20,000–40,000	205	11.99 ± 1.62^{b}	12.70 ± 1.98^{b}	63.30 ± 7.22^{bc}
40,000–60,000	205	12.23 ± 1.78^{a}	13.42 ± 1.57^{a}	65.96 ± 6.77^{ab}
60,000–80,000	80	12.53 ± 5.54^{a}	13.41 ± 1.48^{a}	65.44 ± 5.37^{ab}
80,000–100,000	36	12.91 ± 1.64^{a}	13.64 ± 1.29^{ab}	68.00 ± 4.60^{a}
> 100,000	20	12.50 ± 1.93^{ab}	13.50 ± 1.24^{ab}	65.75 ± 6.03^{ab}

Note. One-way ANOVA revealed significant effects for Sense (F = 2.36*), Think (F = 4.04**), Act (F = 2.45*), and Overall environmental experience (F = 4.09**). Robust tests indicated significance for Feel (Welch F = 2.47*) and Relate (Welch F = 3.08*). * $p < .05$, ** $p < .01$. Means with different superscript letters differ significantly (LSD post-hoc test).

Factors influencing recognition of management goals

Factor extraction for environmental experiences and environmental values

To avoid multicollinearity and model misfit arising from high correlations among original theoretical dimensions, EFA was conducted to reduce the dimensionality of environmental experience and environmental value items. Results are presented in Table 8 and Table 9. The Kaiser-Meyer-Olkin (KMO) measures were 0.929 and 0.928, respectively, and Bartlett's tests were significant ($p < .001$), indicating data suitability for factor analysis. The number of factors was determined based on the commonly adopted threshold of cumulative explained variance reaching

Table 8. Exploratory factor analysis of environmental experiences (n = 676)

Question	Factor		
	1	2	3
1. I think the flatland forest looks beautiful and has wide, open views.	.737		
2. I feel it has rich nature–you can see lots of flowers and trees, and hear many birds and insects.	.702		
6. The flatland forest is a nice, relaxing place to unwind.	.701		
4. Being in nature in the flatland forest makes me feel happy.	.660		
9. Large flatland forests are rare, which makes me wonder how they were created.	.473		
12. I take photos of the flatland forest and share them on social media (Facebook, Instagram, Twitter, etc.).		.710	
13. Visiting the flatland forest helps me understand why environmental sustainability is important.		.682	
14. Seeing news about the flatland forest reminds me of Linhousilin Flatland Forest Park.		.670	
11. I join tours or activities in the flatland forest to learn more about its features.		.660	
15. Visiting the flatland forest gives me stories to share with family and friends later.		.621	
10. I look up information about the flatland forest online or in newspapers.		.576	
3. I think the design of the visitor center in the flatland forest is really attractive.			.750
5. The facilities in the flatland forest meet my needs.			.659
7. The rich natural resources, landscape art, or wood carvings in the flatland forest make me curious about nature and local culture.			.594
8. The landscape of the flatland forest feels different from other places.			.533
Eigenvalue	6.640	1.390	0.955
Cronbach's α	0.814	0.821	0.806
Variance Explained %	22.32%	20.23%	17.35%

Note. Principal component analysis with varimax rotation (Kaiser normalization). Values are factor loadings. Factor 1 = "Natural sensory experiences", Factor 2 = "Participation experiences", Factor 3 = "Place identity experiences".

Table 9. Exploratory factor analysis of environmental values (*n* = 676)

Question	Factor		
	1	2	3
15. The biodiversity of the flatland forest serves as a valuable site for scientific experiments and research.	.759		
12. The trees look different in each season, showing off the land's changing beauty.	.734		
14. The forest reduces soil erosion and helps prevent floods, making the environment stronger.	.711		
11. The flatland forest has a unique, continuous landscape you don't see elsewhere.	.695		
10. Nature experiences (like guided tours) help people learn and develop a caring attitude toward the environment.	.664		
13. The flatland forest helps absorb carbon dioxide and fight global warming.	.645		
8. It's an great place for leisure with lots of activity options.		.757	
3. The flatland forest offers activities where people can gather and build a sense of community.		.674	
4. Particpating in activities in the forest helps people appreciate environmental beauty and share environmental values.		.666	
7. Activities in the flatland forest help relieve stress and support well-being.		.620	
2. The flatland forest helps boost biodiversity and keeps natural resources rich.		.616	
1. The flatland forest gives plants and animals space to grow, feed, and hide.		.581	
9. The flatland forest rich plan'st and animal life make it a great place for learning about nature.		.551	
5. Trees in the flatland forest can be harvested and processed in a balanced way.			.847
6. High-value crops can be grown under the forest to support the local economy.			.829
Eigenvalue	6.816	1.315	0.920
Cronbach's α	0.861	0.862	0.695
Variance Explained %	26.22%	22.80%	11.33%

Note. Principal component analysis with varimax rotation (Kaiser normalization). Values are factor loadings. Factor 1 = "Scenic and public environmental values", Factor 2 = "Recreational and social values", Factor 3 = "Economic utilization values".

60%, which is widely accepted in social sciences (Hair et al. 2006). Three factors were extracted from each set of variables:

- Environmental experiences: Natural sensory experiences, participation experiences, place identity experiences.
- Environmental values: Scenic and public environmental values, recreational and social values, economic utilization values.

Each set explained over 60% of total variance. Although the eigenvalues for "Place Identity Experiences" and "Economic Utilization Values" were slightly below 1, these factors were retained due to their theoretical importance and contribution to total explanatory power. All item loadings

exceeded 0.40, and Cronbach's α coefficients indicated strong internal consistency. Thus, factor scores were generated as representative variables for use as independent variables in the subsequent regression analysis, enhancing both the model's explanatory power and stability.

Regression analysis

Using stepwise regression, we assessed the impact of the six factor scores, visit frequency, and background attributes on recognition of management goals. Three key predictors emerged consistently across all models (Table 10):

- Recreational and social values
- Scenic and public environmental values
- Natural sensory experiences

Model R^2 ranged from 40.4% to 57.1%, demonstrating that public support for forest management objectives is strongly shaped by individuals' subjective values and their direct environmental experiences.

DISCUSSION

Characteristics of environmental experiences, environmental values, and recognition of management goals

Table 10. Stepwise regression results

Dependent variable	Predictor	β	T	VIF	R^2	Adj. R^2
Social goals	recreational and social values	0.279***	5.615	2.779	0.411	0.404
	scenic and public environmental values	0.293***	6.050	2.650		
	natural sensory experiences	0.278***	5.667	2.716		
	age	0.132***	4.252	1.089		
	place identity experiences	-0.125**	-2.746	2.338		
	education level	0.063*	2.052	1.062		
	participation experiences	-0.086*	-2.030	2.015		
Economic goals	recreational and social values	0.317***	6.733	2.832	0.479	0.475
	scenic and public environmental values	0.271***	6.124	2.497		
	natural sensory experiences	0.138***	3.557	1.917		
	marital status	0.069*	2.448	1.013		
	gender	0.066*	2.344	1.006		
	economic utilization values	0.071*	2.320	1.197		
Environmental goals	recreational and social values	0.331***	7.427	2.719	0.511	0.508
	scenic and public environmental values	0.318***	7.466	2.485		
	natural sensory experiences	0.140***	3.756	1.909		
	marital status	0.063*	2.318	1.011		
Overall management goals	recreational and social values	0.350***	8.390	2.721	0.573	0.571
	scenic and public environmental values	0.317***	7.924	2.502		
	natural sensory experiences	0.170***	4.876	1.904		
	age	0.080**	3.129	1.014		

Note. Standardized coefficients (β) are reported. VIF indicates multicollinearity. R^2 and adjusted R^2 are shown.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Among the various environmental experiences, emotional experiences received the highest ratings from respondents, followed by sensory, relational, and reflective experiences, with behavioral experiences being rated the lowest. This indicates that visitors mainly gain relaxation and scenic enjoyment, followed by interpersonal and environmental connections, while changes in behavior and lifestyle are less important.

In terms of environmental values, environmental protection was rated the highest, followed by recreation, environmental education, ecology, sociocultural, scenic, and scientific research. Economic production was rated the lowest, indicating strong public endorsement of the forest's public functions–such as mitigating climate change, disaster prevention, and providing recreation and environmental education–while remaining relatively conservative regarding its economic output value.

A similar trend appeared in recognition of management goals: Social-oriented goals (e.g., carbon benefits) received the highest support, followed by environmental (e.g., ecological restoration) and economic goals (e.g., domestic timber utilization), though the differences were not substantial. This reflects the general public's prioritization of environmental and social functions over economic benefits, consistent with previous studies (Chen and Yen 2014, Chuang and Yen 2017).

It is noteworthy that items related to economic production value primarily involved direct uses such as logging and understory crops, which may conflict with public expectations for conservation or recreation, thus receiving lower ratings (mean = 3.78). In contrast, items related to economic goals were expressed in more positive and public-oriented terms, such as cultivating high-quality trees, integrating green tourism with rural development, and promoting environmental education–receiving strong support (mean = 4.53). This indicates that while the public holds a conservative attitude toward purely production-oriented functions, there is high recognition of economic roles that incorporate social, recreational, and environmental aspects. This aligns with the policy shift from single-purpose production to ecologically integrated economic use, making economic goals more compatible with sustainable development.

Background attributes of respondents

Among the study participants, the proportion of females (57.4%) slightly exceeded that of males (42.5%). This may be explained by gender socialization in leisure activities and differences in participation tendencies. Women are often the primary planners and decision-makers for family leisure activities (Du 2008, Horna 2018), and are thus more likely to respond to surveys related to recreation and tourism. Additionally, elderly women tend to have higher levels of participation in travel and leisure than men (Ho 2010), which also increases their representation in the sample. These results reflect women's prominent role in the use of public green spaces and leisure settings, making the study more representative in terms of gender.

Environmental experiences

Younger respondents had significantly lower scores in "reflective experiences" compared to those over 50, suggesting that older individuals tend to engage in deeper reflection triggered by knowledge or environmental change. This contrasts with experiential marketing studies, where young people are found to favor action and novelty

(Lee and Peng 2021, Chen et al. 2022). The difference may reflect older individuals' accumulated life experiences and increased environmental awareness, leading to stronger intellectual engagement. Married participants had higher "relational experience" scores, likely due to more interpersonal interactions and sense of belonging brought by family outings, whereas unmarried respondents, who often travel alone or with peers, may show weaker social identification. This implies that marital status and family roles may influence the depth of social experience in natural settings.

High-income respondents scored significantly higher on "reflective experiences," indicating that people with higher economic status may pay more attention to environmental quality and leisure lifestyle. In contrast, low-income individuals may have more basic life concerns or limited access to information, resulting in lower perceptions of public forest values. Visitors with higher visit frequency had significantly higher scores in sensory, emotional, and relational experiences, supporting Relph's (1976) theory of sense of place–that emotional attachment to a place is developed through long-term experiential accumulation.

Environmental values

Respondents aged 30–39 gave the highest ratings for "recreational values," possibly due to their dual needs for family life and workplace relaxation, which enhance the importance of recreation and social interaction. Public servants scored significantly higher on ecological, environmental education, research, and overall environmental values than other occupations, suggesting that their educational background and public-service orientation may increase recognition of environmental public goods (Ryan 2005). Conversely, those in agriculture, forestry, fishery, and animal husbandry gave the lowest ratings for environmental education, possibly due to their stronger connection to resource use and different expectations of plantation forests. Educational background had no significant influence, likely because most respondents had college-level educations or higher, and thus a generally higher level of environmental literacy. High-income respondents gave higher ratings to scenic, research, and overall environmental values, likely reflecting broader travel experiences and access to information, which enhance appreciation for forest aesthetics and research significance.

Management goals

Gender differences only appeared in the economic dimension, where female respondents expressed significantly higher support than males. This differs from earlier studies suggesting women are more inclined toward environmental protection (Steel et al. 1994, McFarlane and Boxall 2000). In this study, women may have viewed economic functions as essential to sustainability and local development, thus rating them more favorably, while men may adopt a more cautious stance regarding the balance between utilization and conservation.

In terms of age, younger respondents showed lower recognition of social goals, possibly because they were mostly students or early-career individuals with less emotional connection to public spaces or social interaction. Income level showed the most significant differences–high-income groups expressed significantly higher support for all dimensions of management goals. In particular, respondents with monthly incomes above NT$100,000 showed the strongest recognition of environmental sustainability,

suggesting that higher socioeconomic status may be associated with stronger environmental values and a greater sense of social responsibility.

Environmental experience characteristics and management strategies across visit frequency groups

Cluster analysis revealed environmental experience differences across visitor frequency groups, informing tailored management strategies.

1. Visitors with at least five visits

The high-score group accounted for 57.6% and the low-score group 42.4%. The high-score group showed greater diversity in field use and activities, indicating richer experiences. Among them, women scored significantly higher in sensory experiences than men, consistent with previous research (Chen et al. 2022, Xu et al. 2022), which found women more sensitive to environmental ambiance and sensory stimulation.

Frequent high-score visitors can be considered core loyal customers. Management should enhance their engagement through volunteer programs or citizen science initiatives, transforming experienced users into operational collaborators. This could reduce labor burdens while enhancing their sense of identification. Ryan (2005) emphasized that frequent users with stronger place attachment are more likely to engage in environmental action.

Conversely, low-score frequent visitors require better information guidance and experience diversification, such as improved maps, themed route recommendations, or novel experiences to enhance satisfaction.

2. Visitors with 2–4 visits

This group represents occasional repeat visitors, with 41.9% in the high-score group and 58.1% in the low-score group. No significant demographic differences were found between groups, suggesting that personal interests or motivations may be the differentiating factors.

Of note, nearly 60% of repeat visitors belonged to the low-score group, indicating insufficient experience engagement. Managers should introduce seasonal or themed events to enhance variety and enjoyment, thereby preventing visitor attrition.

3. First time visitors

The high-score group accounted for 44.1%, primarily comprising high-income visitors from outside the region, while the low-score group (55.9%) consisted mostly of local, lower-income residents (excluding Chaozhou Township). It is presumed that external visitors with higher socioeconomic status were more motivated and engaged, while local low-income users may treat the forest as an ordinary park, with limited engagement.

Management should strengthen local residents' connection to the site and cultivate a positive image. For outside visitors, collaborations with travel agencies for themed or day-trip packages and social media promotion can increase the park's visibility and appeal.

Factors influencing recognition of management goals

Recognition of social goals

The regression model explained 40.4% of the variance and identified three significant positive predictors: Recreational and social values, scenic and public environmental values, and natural sensory experiences. These findings suggest that individuals who value recreational cohesion, scenic aesthetics, and ecological functions–and who have accumulated emotional and sensory

experiences–tend to support social-oriented goals.

Age and education level also had significant effects, indicating that older and more educated individuals are more likely to affirm the forest's public functions. However, both place identity experiences and environmental participation experiences showed small negative coefficients. This may suggest a potential misalignment between deep users and official social goals. As Ryan (2005) noted, highly attached users may resist management they perceive as misaligned with their values, even shifting their loyalty elsewhere. Stedman (2002) emphasized the importance of integrating local community perceptions into the policy process to achieve consensus-based governance. Therefore, managers should actively engage volunteers and long-term visitors to transform attachment into support.

Recognition of economic goals

The model explained 47.5% of the variance. The same three variables–recreational and social values, scenic and public environmental values, and natural sensory experiences–were again significant positive predictors. This indicates that those who value the forest's public functions are also likely to support its economic uses. Married respondents and women showed higher levels of support, perhaps due to greater concern for long-term stability and regional development. Notably, the variable economic utilization values also had a positive effect, suggesting that those who affirm the forest's economic output are consistent in their support for economic goals. This underscores the link between value perception and policy support.

Recognition of environmental goals

The regression model explained 50.8% of the variance–the highest among all goal types. The main predictors remained the same: Recreational and social values, scenic and public environmental values, and natural sensory experiences. This indicates that public support for environmental goals stems not only from knowledge or conservation ideologies but from emotional engagement and perceived value through experience. This aligns with Stedman (2003), who emphasized that personal experience is a foundation of environmental attachment and action.

Unlike the previous two goal types, place identity experiences and environmental participation experiences had no significant influence here. Demographic background variables also had limited effects, with only marital status showing significance–married individuals possibly emphasizing sustainability due to family roles. Age, gender, and visit frequency were not significant, suggesting that environmental sustainability has become a broadly accepted value, recognized across social groups.

Recognition of overall management goals

The regression model explained 57.1% of the variance, indicating a stable predictive model. Once again, the three main predictors–recreational and social values, scenic and public environmental values, and natural sensory experiences–had positive effects, confirming their stable impact across all types of management goals. Among the other variables, only age was significant. Older respondents, having interacted with nature over a long time, exhibited deeper place attachment and a stronger sense of responsibility, thus more fully supporting forest management goals. Ryan (2005)

found that such long-term nature interactions strengthen governance support. Williams and Stewart (1998) also emphasized that a sense of place emerges from extended experience and cultural context–explaining why older individuals are more inclined to support public management goals.

The lack of significance for other variables may be due to diluted effects or nonlinear relationships. For example, frequent visitation does not necessarily translate to greater support. Overall, this study highlights that enhancing public awareness of the forest's multiple values and providing deep natural experiences are key strategies for reinforcing support for forest management goals.

Applicability of SEMs in this study

This study verified the applicability of the SEMs in the context of flatland forests. Each dimension demonstrated good reliability in testing, confirming the measurement validity of user experiences. Factor analysis simplified the five original dimensions into three second-order factors: Natural sensory experiences, environmental participation experiences, and place identity experiences. Although fewer than the original structure, this reflects the tendency for visitors to perceive experiences in a more integrated fashion. Hence, some dimensions were statistically merged.

The first dimension captures direct sensory and emotional responses; the second relates to active engagement and knowledge seeking; the third indicates the formation of place attachment and a sense of belonging during the experience. This simplification maintains the core logic of SEMs and enhances their analytical usefulness in linking experience to support for management goals.

Among the three, place identity experiences are particularly critical, representing emotional bonds beyond utilitarian use. This echoes place theory. As Williams and Stewart (1998) argue, emotional, cultural, and historical bonds between people and places are foundational to natural resource management. Hammitt et al. (2006) further divided place bonding into identity, dependence, emotional attachment, and social connection. The "place identity experiences" observed in this study serve as empirical support for that theory, suggesting that SEMs can be effectively integrated with place attachment theory to examine how experiences transform into long-term support for a site.

Overall, the SEMs demonstrate strong theoretical fit and empirical validity. They not only capture multiple aspects of experience in natural settings but also show that natural sensory experiences are highly predictive of behavioral intentions and support for management goals. Accordingly, management agencies can use this model to design interpretive and educational activities emphasizing sensory stimulation and emotional guidance, and deepen experiences through participatory programs–enhancing both recreational outcomes and support for forest governance.

Practical strategies and policy recommendations for sustainable management

In the context of post-policy developments, this study integrates empirical findings to propose multiple strategies and policy recommendations for the sustainable management of flatland forests, aiming to respond to the increasing demand for publicness and social functions. In addition to user experiences and value recognition, changes in current forest policies also have significant impacts on park management and merit inclusion in the discussion.

1. User experience–driven public value enhancement

Survey results show that visitors place the greatest value on ecological conservation, recreation, environmental education, and social cohesion, while they perceive less of the forest's economic production function. Thus, park management should balance the three major goals–economic, ecological, and social–and enhance public awareness of forest multifunctionality through interpretation and outreach. This aligns with recent policy trends shifting afforestation efforts from single-purpose output to multifunctional utilization. For example, the "Afforestation Incentive 2.0" policy emphasizes native species, diverse forest types, and carbon sequestration functions, providing policy support for parks to create high-quality experiential environments and public values.

2. Deepening social engagement and place-based governance

The park can integrate residents and NGOs through initiatives such as community-based forest schools and green space adoption programs, transforming citizens into collaborators. This supports trends in regional revitalization and co-creation governance. By further linking with the "National Green Network for Ecological Conservation," the park can solidify its role as a key ecological node in the plains and deepen the foundation of place-based governance.

3. Segment-based strategies

This study revealed differences in environmental experience, value recognition, and support for management goals across age, marital status, occupation, and income levels, highlighting the need for segment-based strategies. Younger visitors may be engaged through digital guides or volunteer programs that introduce biodiversity and climate change topics; family visitors may prefer parent-child activities. For knowledge-seeking groups, emphasizing scientific research outcomes is effective, while for those with lower environmental literacy, linking forests with health and economy through relatable life contexts and accessible education resources can reduce socioeconomic gaps. Overall, management should move beyond one-size-fits-all models and adopt inclusive and resilient governance by tailoring experiences and value narratives to different user groups.

4. Ecologically balanced economic use

Although economic functions received lower support, integrating economic use with ecological care remains essential for sustainable management. The park can promote under-forest economy or low-impact demonstration zones, such as beekeeping or essential oil production, to create localized value. These align with national policies promoting diversified forestry and carbon neutrality, enabling the park to serve as a model for ecological conservation, carbon sequestration, and local industry innovation.

Research limitations and future directions

This study investigated flatland forest users' environmental experiences, environmental values, and support for management goals through questionnaires and generated theoretically and practically meaningful findings. However, some limitations remain. First, the study was conducted solely at Linhousilin Forest Park, and the sample mainly comprised middle-aged, older adults, and individuals with higher education. While this reflects local visitor characteristics, it limits the generalizability of the findings to other flatland forests or demographic groups. Future research should extend to diverse regions and urban green spaces for cross-sectional comparisons to identify patterns of user experience and recognition across

contexts. Second, as a cross-sectional design, the study can only capture relationships at a single point in time and cannot establish causal linkages. Longitudinal studies tracking the same individuals over time are encouraged to better examine the dynamic interplay among experience, values, and recognition. Lastly, while the study focused on environmental experience and values, it did not include other psychosocial factors that may influence recognition–such as trust in managing agencies, previous environmental participation, or social capital. Including such variables in future models would improve predictive accuracy and deepen understanding of sustainable flatland forest management.

CONCLUSIONS

This study examined how environmental experiences and value recognition affect support for management goals, using Linhousilin Flatland Forest Park as a case study. Results showed strong public affirmation of the forest's public functions–such as environmental protection, recreation, and social cohesion–while recognition of economic production was more reserved. Sensory and emotional experiences ranked highest, whereas behavioral engagement was limited, suggesting room for greater participation.

Support for management goals was significantly influenced by "recreational and social values," "scenic and public environmental values," and "natural sensory experiences," underscoring the link between experiential quality, value perception, and policy support. Additionally, recognition varied by background: Older, higher-income, married, and frequent visitors expressed stronger support, while younger and lower-income individuals were less engaged–highlighting the need to consider socioeconomic and life-stage differences in policy design.

The study also affirmed the applicability of SEMs in natural environments. Factor analysis yielded three dimensions–"natural sensory experience," "environmental participation," and "place identity"–effectively capturing emotional attachment and public identification, with strong explanatory power for forest policy support.

In conclusion, enhancing the publicness and sustainability of flatland forests in the post-policy era requires experiential design strategies that deepen environmental value perception and social ties. Localized and participatory approaches can foster community support and long-term recognition. Future policies should consider user experience differences and integrate empirical and interdisciplinary insights to build sustainable, context-based governance models.

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研究報告

環境體驗與價值感知對森林經營支持態度之探討：以林後四林平地森林園區為例

徐中芃[1]

摘　要

背景

自2002年起推動之平地造林政策，促成林後四林平地森林園區的建置與發展，該園區兼具生態、景觀與休閒功能，亦成為屏東重要的綠色公共空間。隨著政策補助於2021年後逐步期滿，園區在資源減少下如何維持多元功能並凝聚社會支持，已成為迫切待解的課題。為回應此挑戰，本文引入「地方感」與「環境經驗」理論作為分析視角，強調森林意義來自人地互動中累積的個人經驗與地方連結，並認為理解民眾感知與行為對永續治理至關重要。基於此，本研究以林後四林為案例，透過問卷調查探討民眾環境經驗與價值認知，如何影響其對園區經營目標之認同，進而提供後政策時期平地森林永續經營之實務策略與政策建議。

材料與方法

本研究於2023年1月至12月期間進行問卷調查，對象為年滿18歲之園區遊客，並於園區主要據點採便利取樣方式蒐集資料，共回收676份有效問卷。問卷涵蓋五大構面：環境經驗、環境價值、經營目標認同、旅遊特性與背景屬性。環境經驗依據Schmitt (1999)提出之策略體驗模組，包括感官、情感、思考、行動與關聯等五個面向；環境價值則依據相關文獻歸納為八大功能面向；經營目標區分為社會、經濟與環境三類。資料分析採用敘述統計、變異數分析、集群分析、探索性因素分析、信度分析與多元迴歸等統計方法，以探討樣本結構、資料分布差異、不同屬性特徵以及影響經營目標認同之關鍵因子。

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2025年7月送審，2025年10月通過。Received July 2025, Accepted October 2025.

結果與討論

結果顯示，受訪者整體對平地森林持高度正向評價，尤以情感與感官體驗為最深刻，但行動體驗相對不足，顯示遊客雖能獲得視覺與情緒上的滿足，但參與性與行動層面尚有提升空間；在環境價值上，環境保護、休閒遊憩與教育功能最受認同，經濟功能評價相對保守。經營目標認同方面，以社會與環境面向最為顯著，表示多數遊客關注公共與生態效益高於經濟生產。

屬性分析顯示，不同性別、年齡、婚姻狀況與收入水準對體驗評價與政策認同具有顯著差異，高收入、年長與已婚者的體驗評價與政策認同普遍較高，年輕與低收入者則相對保守。針對造訪頻率之分群分析發現，造訪頻率愈高者，其環境經驗愈豐富，尤其高分群之常客不僅活動多樣，亦表現出更高的感官與情感連結；相對地，初訪或偶爾重遊的族群中，部分遊客對園區功能認識有限，體驗深度與多樣性不足。因此，管理者可依此區分客群，對常客賦予參與角色(如志工及導覽員等)，對低體驗群體強化活動設計與訊息導引，提升其參與及認同。

在探索性因素分析上，研究依據60%以上之累積解釋變異量標準，於環境經驗與環境價值兩構面分別萃取出三個因素。環境經驗：「自然感知經驗」、「環境參與經驗」及「場域認同經驗」構面；環境價值：「景觀與環境公益價值」、「休閒與社會價值」及「經濟利用價值」構面。以上兩者累積解釋總變異量皆為60%，所有構面皆具良好的信度與內部一致性，支持問卷設計的理論基礎。

多元迴歸結果顯示，民眾對經營目標認同的主要預測因子為「休閒與社會價值」、「景觀與環境公益價值」與「自然感知經驗」三構面。此三者穩定解釋社會(40.4%)、經濟(47.5%)與環境(50.8%)三目標的變異量，整體模型最高可解釋57.1%。此外，性別、年齡與婚姻等背景變項在不同目標面向亦具影響力。

本研究亦證實策略體驗模組在自然場域的應用效度，尤其在捕捉民眾地方情感與公共性認同方面展現良好效果。透過策略體驗五構面的量測與因素萃取，成功建構出涵蓋「自然感知」、「環境參與」與「場域認同」的三層次經驗架構，並有效預測其對森林政策認同的影響。

結論

本研究證實民眾對平地森林之經營目標認同主要來自其正向的環境經驗與價值認知。若能進一步強化遊客對森林多元功能的理解與體驗，將有助於提升其對政策的支持與永續治理的認同。管理建議包括：以體驗設計提升公共性與社會參與、落實分眾管理策略、發展兼顧生態的經濟利用，以及建立在地共治機制。未來研究應拓展至其他區域場域進行比較分析，採縱貫式研究設計，並納入更多社會心理變項，以深化對平地森林永續經營與公共價值實踐的理解與推動。

關鍵詞：環境經驗、策略體驗模組、平地森林、林後四林

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Appendix A. Mean scores (± SE) for environmental experiences, environmental values, and management goal in Linhousilin Flatland Forest Park

➢ **Environmental experiences**

Category	Question	Mean	SE
Sense	1. I think the flatland forest looks beautiful and has wide, open views.	4.61	0.02
	2. I feel it has rich nature–you can see lots of flowers and trees, and hear many birds and insects.	4.56	0.02
	3. I think the design of the visitor center in the flatland forest is really attractive.	4.16	0.03
Feel	4. Being in nature at the flatland forest makes me feel happy.	4.64	0.02
	5. The facilities in the flatland forest meet my needs.	4.17	0.03
	6. The flatland forest is a nice, relaxing place to unwind.	4.65	0.02
Think	7. The rich natural resources, landscape art, or wood carvings in the flatland forest make me curious about nature and local culture.	4.24	0.03
	8. The landscape of the flatland forest feels different from other places.	4.23	0.03
	9. Large flatland forests are rare, which makes me wonder how they were created.	4.35	0.03
Act	10. I look up information about the flatland forest online or in newspapers.	3.92	0.03
	11. I join tours or activities in the flatland forest to learn more about its features.	3.98	0.03
	12. I take photos of the flatland forest and share them on social media (Facebook, Instagram, Twitter, etc.).	4.09	0.03
Relate	13. Visiting the flatland forest helps me understand why environmental sustainability is important.	4.46	0.03
	14. Seeing news about the flatland forest reminds me of Linhousilin Flatland Forest Park.	4.38	0.03
	15. Visiting the flatland forest gives me stories to share with family or friends later.	4.42	0.02

➢ **Environmental values**

Category	Question	Mean	SE
Ecological values	1. The flatland forest gives plants and animals space to grow, feed, and hide.	4.42	0.02
	2. The flatland forest helps boost biodiversity and keeps natural resources rich.	4.51	0.02
Socio-cultural values	3. The flatland forest offers activities where people can gather and build a sense of community.	4.47	0.02
	4. Doing activities in the flatland forest helps people appreciate environmental beauty and share environmental values.	4.45	0.02
Economic production values	5. Trees in the flatland forest can be harvested and processed in a sustainable way.	3.68	0.04
	6. High-value crops can be grown under the forest to support the local economy.	3.89	0.04
Recreational values	7. Activities in the flatland forest help relieve stress and support well-being.	4.68	0.02
	8. The flatland forest is an important place for leisure with lots of activity options.	4.52	0.02

Environmental education values	9. The rich plant and animal life of the flatland forest make it a great place for learning about nature.	4.61	0.02
	10. Nature experiences (like guided tours) help people learn and develop a caring attitude toward the environment.	4.52	0.02
Scenic values	11. The flatland forest has a unique, continuous landscape you don't see everywhere.	4.42	0.03
	12. The trees look different in each season, showing off the land's changing beauty.	4.49	0.02
Environmental protection values	13. The flatland forest helps absorb carbon dioxide and fight global warming.	4.70	0.02
	14. The flatland forest reduces soil erosion and helps prevent floods, making the environment stronger.	4.57	0.02
Scientific research values	15. The biodiversity of the flatland forest serves as a valuable site for scientific experiments and research.	4.44	0.03

➢ **Management goal**

Category	Question	Mean	SE
Social goals	1. Increase green space to create better living environments.	4.6	0.02
	2. Support Taiwan's carbon goals in line with international energy policies.	4.57	0.02
Economic goals	3. Grow quality trees to boost domestic timber production.	4.38	0.03
	4. Create beautiful green rural areas, develop leisure industries, and connect with local farming and culture to promote green tourism.	4.59	0.02
	5. Combine recreation and the forest to create places for environmental education.	4.62	0.02
Environmental goals	6. Protect green resources and build a diverse ecosystem.	4.61	0.02
	7. Make good use of fallow or under-used farmland.	4.45	0.02
	8. Serve as an ecological park for restoring mountain and plain environments.	4.57	0.02