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Marketing sustentable e intervención social para incentivar el cuidado medioambiental en el municipio de Valle de Bravo

Sustainable marketing and social intervention to encourage environmental care in the county of Valle de Bravo

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Resumen

Este artículo tuvo como objetivo analizar un sistema socioecológico en México para diseñar una estrategia de marketing social que fomente la participación e induzca cambios de comportamiento hacia la protección del medio ambiente. El enfoque metodológico fue la investigación participativa. Los principales hallazgos confirman una fuerte indiferencia social. Hay pocas preocupaciones ambientales y poco interés en conocer o adoptar prácticas efectivas de gestión de residuos o ahorro de agua porque "la responsabilidad es del gobierno, no de los individuos". El marketing sostenible ofrece una nueva perspectiva de los cambios tan necesarios en el diseño de intervenciones sociales y políticas públicas que lleven a la sociedad civil y las empresas hacia un compromiso más fuerte con la acción climática.

Palabras clave: *marketing social, marketing sostenible, intervención social.*

Abstract

This paper aimed to analyze a socio-ecological system in Mexico to design a social marketing strategy that encourages participation and induces behavioral change toward environmental protection. The methodological approach was participatory research. The main findings confirm a strong social indifference. There are low environmental concerns and low interest in knowing or adopting effective waste management or water savings practices because "the responsibility is of the government, not of the individuals". Sustainable marketing offers a new perspective of the much-needed changes in the design of social interventions and public policies that lead civil society and businesses toward a stronger commitment to climate action.

Key words: *social marketing, sustainable marketing, social intervention*

Códigos JEL: M39, O18, Q56

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Introducción

Achieving a balance between social interests, the preservation of natural resources, and the optimal use of economic resources remains a matter of discussion and social research (Constanza, 2020; Thabit, Aldabbagh & Ibrahim, 2019). Likewise, the urgent interaction between the three main actors in a territory – civil society, public, and private sector to achieve a transition towards pro-environmental behaviors with a focus on the welfare of people has been evidenced (Álvarez, Arroyo & De La Rosa, 2023; Bien & Sassen, 2020; Constanza, 2020). The literature shows that social participation causes the level of interactions between the three classical dimensions of sustainability –social, economic, and environmental- (Purvis, Mao & Robinson, 2019); moreover, this suggests that social participation is core to solving socioenvironmental issues, and the collaboration between all actors in the system is fundamental to trigger environmental action (Jurjonas et al., 2023; Gholami et al., 2020; Leahey & Barringer, 2020).

According to Yadav, Gupta and Nair (2024), society should become increasingly socially and environmentally conscious of global environmental challenges, and sustainable marketing should be accepted as an approach to meet the present needs of consumers and businesses while also preserving or enhancing the ability of future generations to meet their needs (Peterson, 2021). Sustainable marketing represents an evolution of the social and green marketing concepts that blend the mainstream economic and technical perspectives with the emerging concepts of relationship marketing and the social, ethical, environmental, and intergenerational perspectives of the sustainable development agenda (Belz & Peattie, 2013 cited by Matharu, Jain & Bulsara, 2020).

The understanding and promotion of pro-environmental practices have been studied from three main perspectives: 1) Values, at the individual (e.g. Biospheric) and cultural level (e.g. Collectivism) that are the antecedents of attitudes and can be appealed by a green marketing strategy, 2) situational factors (e.g. recycling containers located at accessible sites) that facilitate and provide the physical infrastructure for the adoption of pro-environmental practices, and psychographic factors (e.g. environmental consciousness) that act as internal motivators enhancing the predisposition to respond to green actions and overcome the potential barriers of ecological practices (Lima et al., 2024). These theoretical approaches have been merged to design interventions and public policies aimed at triggering pro-environmental values while considering the moderating role of situational factors and personal traits and capabilities.

Even though policymakers and private companies are starting to acknowledge the need to promote sustainable consumption through impactful interventions focused on reducing, changing, and improving consumption, more research that considers the potential of voluntary individual actions and analyzes the impact of sustainable consumption on different stakeholders is required to convince them about economic growth accompanied by a transition to sustainable consumption. From the point of view of social practice theory, decision-makers and policymakers can “scale up” sustainable consumption behaviors by identifying practices that are already changing or acknowledged necessary to change, and then introducing instruments to strengthen them such as bridging and coordinating the efforts of several groups and sharing experiences and resources (Mont et al., 2022).

Pro-environmental behavior in tourism research has increased in scope and depth in the last five years because of the negative effect that tourism expansion has on the environment and the importance assigned to the image of a responsible destination for the growing segment of environmentally conscious travelers (Carvajal-Trujillo, 2024). Therefore, this research focused on outlining a social marketing strategy to prevent landscape degradation, loss of biodiversity, pollution, and overexploitation of water resources in a tourist area by promoting the social participation of inhabitants and foreign people directed by key community actors. Social participation is needed to achieve revitalized tourism in which natural areas, residents, and visitors co-exist and collaborate to keep the dam’s water free of pollutants, appreciation of forestry and waterfalls, consciousness when using water and dumping waste, and demand the building of new homes and the hotels fulfill environmental regulations (Truong & Hall, 2013).

Based on the methodological criteria of Yin (2013), Valle de Bravo (Mexico) represents a prototypical case for analysis because of its socio-environmental profile, highly polluting ambiance, and main productive

activity. *Valle de Bravo* has been acknowledged since 2005 as a "Magic town" by the Mexican Tourism Ministry because of its traditions, old-style buildings, and natural landscape (Gobierno del Estado de Mexico, 2018). This town is one of the most popular tourist destinations in the state of Mexico because of its proximity to Mexico City (about 100 mi). One of its main attractions is a dam with a beautiful town view, where water sports and sailing could be practiced. The lake is one of the seven dams integrating the Cutzamala hydroelectric system that provides water and energy to the town and nearby counties, including some in Mexico City (Deverdun, Osorio, & Iracheta, 2016).

Tourism is one of the town's main economic activities, more than 200 thousand tourists arrive per year representing a significant benefit (Gobierno del Estado de Mexico, 2019). Nevertheless, unsustainable land use by the people in this area –particularly, the non-regulated building of housing and tourism facilities-, and the overexploitation and pollution of the dam's water have led to extensive ecosystem degradation –large-scale soil erosion, a considerable reduction in the dam's water level, which threatens the water supply to the town and Mexico City- (Deverdun et al., 2016; Febles et al., 2023). The changes in rainfall patterns due to climate change and the increasing water demand in the metropolitan areas of Mexico City and Toluca – the capital of the state of Mexico- have notably contributed to soil erosion and the decrease of the dam's water level.

Human activities have affected the water forests that feed the dam and the health of the body of water itself (Deverdun et al., 2016). This is aggravated by the problem of eutrophication of the dam due to the careless dumping of garbage; the direct discharge of black water from houses, businesses, and hotels due to lack of drainage and infiltration of septic tanks; the inadequate treatment of sewage, and the dragging of large concentrations of fertilizers and chemical residues used in agriculture (Febles et al., 2023). Thus, the degradation of the landscapes of *Valle de Bravo* negatively affects society and the sustainability of tourism activity. Restoration through regulation of land use, water reuse and reduced consumption, and preservation of forest areas should result in environmental and social benefits, thus providing a great opportunity for the sustainable development of this "Magic town" (Plan de Desarrollo Municipal 2022-2024).

In this sense, the questions that motivated this research are the following: why do residents not act to protect their town and what can be an appropriate social marketing strategy that increases the endorsement of a "pro-ecological" worldview and behavior of residents and visitors? The socio-ecological system of *Valle de Bravo* is analyzed to identify how the main stakeholders of the system can commit to collaborating to support the region's sustainability. This manuscript is organized in five sections: introduction; the theoretical framework; the methodological section, which shows the complex problem of restoring the landscape of Valle de Bravo, the designing of a social marketing intervention aimed at adopting pro-environmental behaviors and the outlining of a social marketing intervention directed to the identified target segment; forthwith, the section of presentation and discussion of the results is exposed. The conclusions and the implications for research and the social marketers are shown in the last section.

Theoretical framework

Kemper and Ballantine (2019) categorized the multiple sustainability perspectives of about 200 journal articles to outline three conceptualizations of sustainable marketing: Auxiliary Sustainability Marketing (ASM) which focuses on the production of sustainable products, Reformative Sustainability Marketing (RSM) which promotes sustainable lifestyles and behavioral changes (including the consumption of sustainable products), and Transformative Sustainability Marketing (TSM) which extends the auxiliary and reformative approaches through the need of the transformation of current institutions and norms, and critical reflection. This research fits into the RSM concept as its objective is to design an intervention that changes behavior, specifically waste and water management, as well as attitudes and beliefs towards a sustainable lifestyle.

Social marketing, defined by Andreasen (1994) as the adaptation of commercial marketing principles and techniques intended to influence the voluntary behavior of target audiences to improve their welfare,

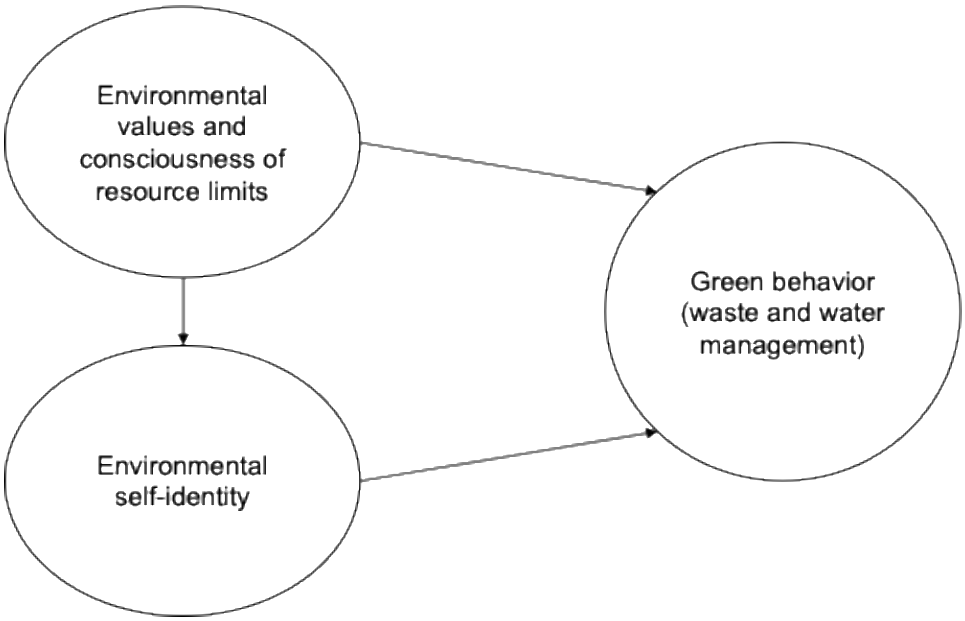
and that of the society and economic environment of which they are a part, is an akin concept to RSM. According to Takahashi (2009), social marketing has barely applied to modifying environmentally unfriendly behaviors compared to health interventions. A recent review of the evolution of social marketing and sustainability performed by Saud et al. (2024) confirms the most important social marketing and sustainability topics have been health care, nutrition, and corporate social responsibility. Relevant issues that require further study include, among others, the design of better green marketing strategies and social marketing focused on environmental protection and policies. Therefore, researchers and practitioners must disseminate the advantages of proposing systematic interventions based on social marketing principles. The literature distinguishes between the social marketing employed by social marketers (i.e. government agencies, civil associations, and non-government organizations) and by corporations. In this work, social marketing strategy is led by environmentally concerned citizens and civil associations while the government only provides marginal support.

The increased severity of environmental issues has fostered pro-environmental behavior research. The theoretical development path has advanced backed by psychology, sociology, and economics to explain, predict, and propose how to modify pro-environmental behavior. Integration of theories, such as the merge of the psychographic traits that antecede pro-environmental behavior (e.g. Theory of Planned Behavior) with theories that emphasize the influence of social situational factors on individual behavior (e.g. Social Interaction Theory) to comprehensively consider the relationship between nature, society, and individuals (Tian & Liu, 2022) characterizes the advancement path of pro-environmental research. The environmental psychology field is the basis for communicating more effectively with people on several issues: to frame the environmental crisis as a social problem that requires union and motivation to act; to indicate the specific actions individuals can take to care of the environment; to exploit people's sense of self-interest and attachment to their town; to develop initiatives that foster a sense of community solidarity and identity (Peattie et al., 2009).

This work takes the perspective that individuals who adopt pro-environmental behavior see themselves as people who care about the environment, they describe themselves as environmentally friendly, with green values, and willing to continue to behave in ways consistent with this "green" identity, and therefore are more prone to engage in other pro-environment behaviors. According to Becerra, Carrete, and Arroyo (2023), the environmental (green) self-identity (ESI) is determined by the Personal Values of Ecocentrism and Anthropocentrism as well as the consciousness that there is a limit in the natural resources that humans and all species have available. The conceptual model of figure 1 proposes Environmental values (EVs), consciousness (EC), and accountability (EA) assessed by the New Ecological Paradigm (NEP) and the ESI are the direct antecedents of the green behaviors that the social marketing strategy is intended to change. Consequently, the social marketing campaign aims to reinforce EVs and increase EC, EA, and ESI of target segments because these traits have been shown to significantly influence green behaviors (Lima et al., 2024).

Figure 1

Theoretical framework for the design of the socio-environmental marketing campaign



Source. By the authors

Afterward, social networks are used to share the experiences of the target segment and diffuse their practices among the most reluctant groups. This proposal is supported by the findings of Severo et al. (2019) who reported that exposure to integrated environmental information in social networks can contribute to the formation of consequential awareness, acknowledged as the understanding and recognition of the potential outcomes or repercussions of individual and collective actions on the society and the environment (Sajid et al., 2022), the exchange of ideas, and discussion of green practices among individual members of digital platforms. According to this research, Generation Y is less susceptible to environmental and social actions, however, the formation of communities and the provision of environmental education can stimulate the younger generations' interest in socio-environmental issues.

Moreover, Information Cascades Theory (ICT) and Social Learning Theory (SLT) suggest that information cascades are one of the underlying mechanisms for herd behavior (following others without considering own information) and learning by observing others (Bikhchandani et al., 2022). Thus, the expectation is that the diffusion of pro-environmental practices of consumers with a strong green identity and high environmental values will eventually be adopted by less susceptible inhabitants because they are identified as normative practices given the Valle de Bravo water crisis.

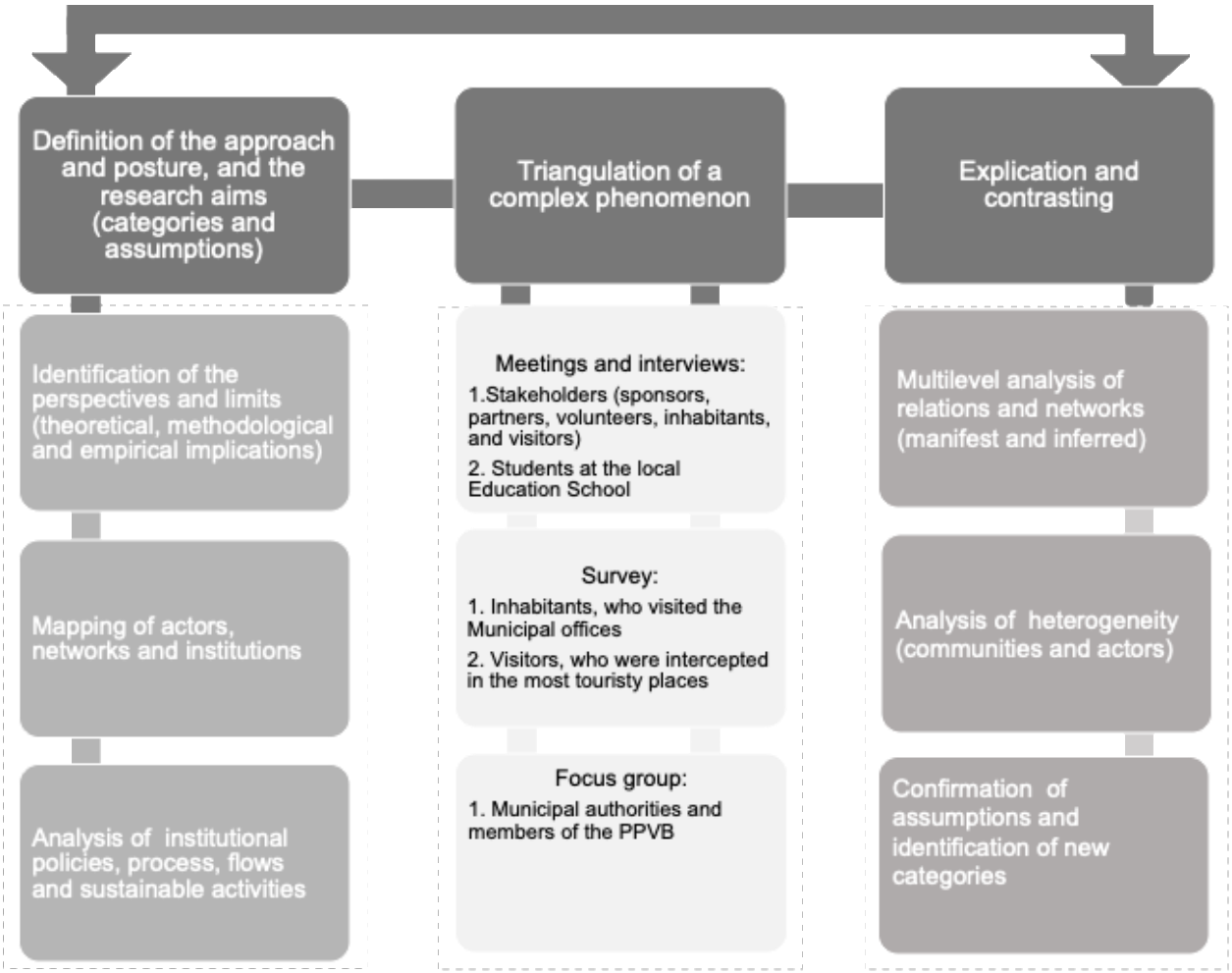
Methodological framework

The methodological approach was participatory research (Climate-U, 2021; Godden et al., 2020) because it is essential to understand the construction of knowledge about important artifacts in social dynamics (Burbano, Molina & Lizcano, 2021) and visualize socially viable strategies for stopping the environmental degradation. The integration of the vision of sustainability into daily life through the action-research methodological approaches is essential to translate sustainability principles into objectives, initiatives, strategies, and practices (Hays et al., 2020; Silva & Segatto, 2020). Moreover, the formation of sustainability-practice communities with relational capabilities allows the advancement of socio-environmental initiatives (Álvarez & Romero, 2022; Nousheen et al., 2020), and encourages respect for

different cultures, worldviews, and vernacular knowledge (Álvarez & Tagle, 2020). The general process of this action-research is shown in figure 2

Figure 2

Methodological process



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Valle de Bravo: the case

Valle de Bravo is in a valley surrounded by forests with waterfalls that years ago housed a large variety of plants and small animals. Pollution of this valley dam, waterfalls, and creeks is just one of the many problems the water basin undergoes (ObservatorioValle, 2023). For several years an alarming decrease in the levels of water intake from the dam has been recorded (Febles et al., 2023). Currently, it is at 32.5% of its capacity, whereas before 2020, it was between 70 and 80% of its capacity because of greater pluvial precipitation (CONAGUA, 2024). However, the surrounding forests exhibit high degradation due to an increased number of visitors, high urbanization, and the building of new hotels, and recreational facilities.

For instance, local fish species have disappeared and even the trout introduced into the dam to fight the water lily is threatened (SEMARNAT, 2021).

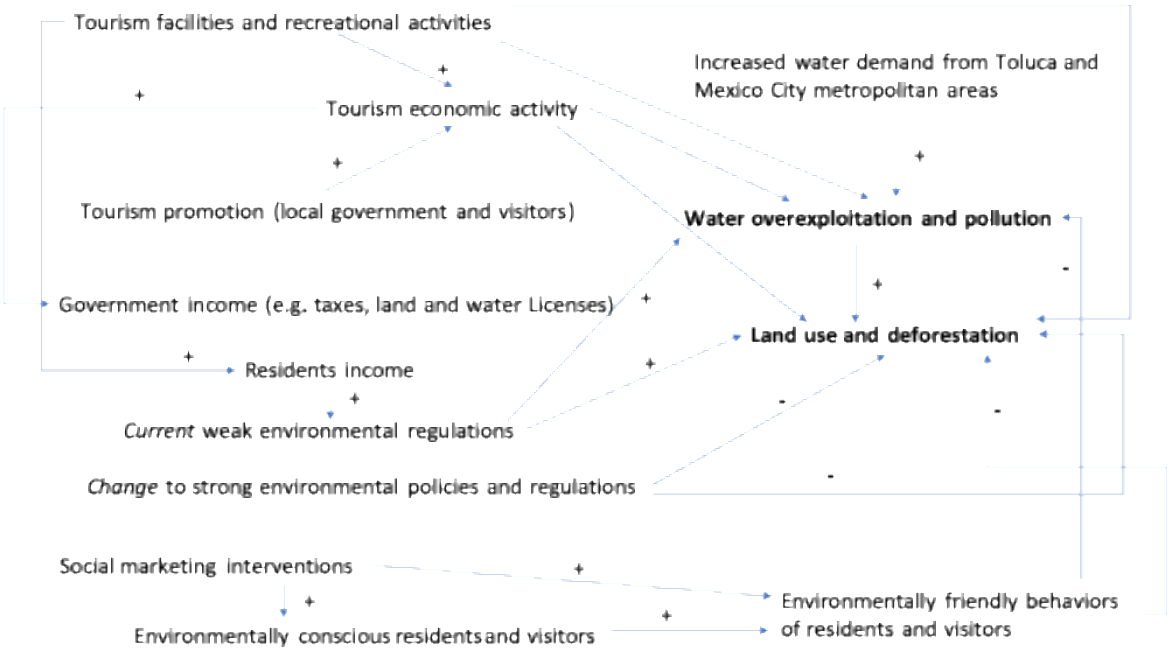
Overexploitation of the lake because of the growing water demand of the metropolitan areas of Toluca and Mexico City and the enhanced construction of tourism facilities and new homes even in supposedly protected areas in combination with harsh environmental conditions have drastically changed the landscape, affected biodiversity and ecosystems, and even resulted in the restriction of several sports activities (e.g. swimming). Moreover, the diversion of water affluents into residential/tourism areas to form private streams and lakes additionally contributes to the dam's water level (SEMARNAT, 2021). The analysis of the tourism life cycle of *Valle de Bravo* (Deverdun et al., 2016) shows that the area is approaching its load capacity limit which implies a severe deterioration of the physical space and natural value because of the intensification of urban development, the construction of various commercial areas, and the growth of the ratio of floating to fixed population.

The tragedy of the commons is evident in the *Valle de Bravo*. Residents and government heavily depend on tourism, if the ecosystem is restored, more tourists can be attracted thus contributing to the local economy (Horne, 2017). Therefore, the main interests of the government are the economic viability of the region and to ensure the continuity of its reputation as a "Magic town". Residents are interested in ensuring their income from tourism but also their social and environmental welfare. Finally, local businesses are interested in guaranteeing their profit by offering services to visitors. Civil societies such as the *Patronato Pro Valle de Bravo* A.C. (PPVB) and research institutes such as the Institute of Marine Sciences and Limnology of Mexico National University monitor the levels of the dam (lake) and highlight the need for interventions to prevent further deterioration of the ecosystem (CONAGUA cited by ObservatorioValle, 2023).

These organizations can support a recuperation plan for the land and the dam. The Water Commission of the state of Mexico has also developed a project for the recuperation of the dam that indirectly contributes to land restoration and the recovery of the ecosystem (SEMARNAT, 2021). However, the restoration project of the Valle de Bravo basin requires training communities on sustainability practices through creative, interactive, and collaborative instruction such that competencies with a critical approach be developed (Hong, Lin & Lee, 2019), motivating social mobilization to advance sustainability trajectories (Hays et al., 2020), and enabling the horizontal and inclusive dialogues with the social actors involved (Álvarez & Romero, 2022). The socio-ecological system (SES) shown in figure 3 represents the social, economic, and external factors that interact in the territory and cause land degradation and water overexploitation (Nagel & Partelow, 2022). The SES framework enables visualizing the connections, dynamics, and feedback effects within the SES including the restoration policies and interventions supported by the community.

Figure 3

System map for the restoration project of the Valle de Bravo basin



Source. By the authors

The process of designing a social marketing intervention in *Valle de Bravo*

According to Andreasen (2006), the main activities of the process of designing a social marketing intervention, applied to the case of Valle de Bravo are the following:

1. Define the target audience.
2. Define the strategies to increase NEP's components and ESI and later perceptions of the efficacy of collective action by presenting hard data about waste and water reduction. According to marketing theories, these constructs influence attitudes and behavior (Tian & Liu, 2022).
3. Define indicators and the method to assess them.
    a. The key performance indicators (KPIs) are the number of residents that attended talks, and audience engagement (# radio ads per day, # persons that remembered listening to the ad, page views, time spent on the site, and social media shares).
    b. KPIs related to NEP, ESI, perceptions of the efficacy of collective action, and pro-environmental behaviors would be assessed through surveys.
4. Define content strategy.
    a. Key actors are identified and invited to act as "advocates" of the sustainable restoration of *Valle de Bravo*.
    b. Educational workshops are organized to promote the social marketing program first with volunteers and then with interested citizens.
    c. Municipal government and private companies are contacted to be involved and finance the project. Moreover, civil societies would ask for open dialogue to request the authority's support.
    d. Civil society would supervise and demand municipal authorities the enforce their commitments.

e. Implement social media communication. Besides, traditional mass media, posters, and radio messages are considered.
f. Analyze and adjust the results to improve them. Furthermore, the indicators of social media marketing efforts are regularly reviewed.

Based on the canvas methodology (Joyce & Paquin, 2016), the economic, social, and environmental canvases that describe the social marketing campaign are shown in Appendix 1.

Outline of the social marketing intervention to support the restoration of the Valle Bravo landscape

In this case, the social intervention's objective is the promotion of the following pro-environmental behaviors: waste reduction, separation, and responsible disposal, as well as water reduction and recycling. According to Tagle and Carrillo (2022) and Nguyen et al. (2022), solid waste management is a strategic process that begins with the separation from the origin of light/heavy waste. The formation of a culture of waste separation among citizens, the establishment of collaboration with urban reclaimers and alliances with the private sector are critical to reduce the environmental burden of the municipality. Regarding water consumption and recycling, providing better information on the economic and moral costs of excessive water consumption and improper waste disposal, the availability of water-efficient devices, and the public employment of recycling technologies to reduce dependence on fresh natural resources are relevant to contribute to a more closed and sustainable water cycle (García, Arbués & Balado, 2023).

Figure 4 summarizes the 4P's of the social marketing campaign, which is the first part of the long-term intervention aimed at reinforcing the EVs, EC, EA, and ESI of inhabitants and visitors of *Valle de Bravo*. The systematic review of the campaign results is crucial since the measurement of the generated changes allows for adjustment or continuation. After two months of the campaign, critical measures (NEP and ESI) would be compared against the pilot surveys to decide how to proceed. If a significant change in the measures is observed, then the campaign will be continued to reinforce behavior. If no changes are observed, then the campaign content will be revised after collecting qualitative data.

The "product" is represented by the landscape that makes *Valle de Bravo* a tourist place to enjoy and practice sports. Several "support" products need to be designed, among the most relevant:

1. A mass media local campaign that provides quantitative information on the waste generated in the county and the water used to create a tangible product around the adoption of pro-environmental behavior.
2. Brief training workshops (10 hrs.) given to Education School students. The workshops instruct students on how to manage waste and reduce water consumption and the communication and relationship skills to approach visitors.

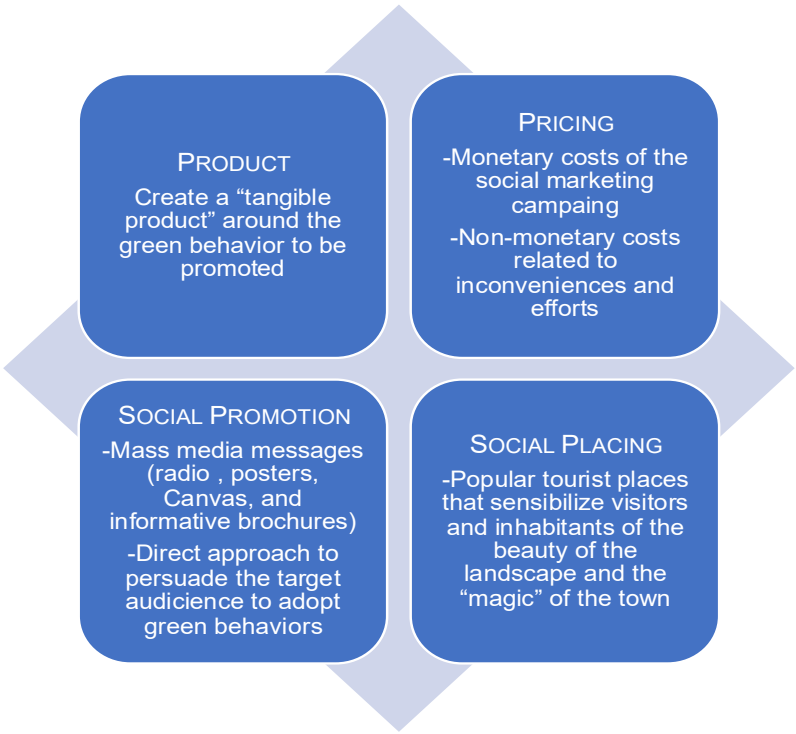
The "pricing" refers to the cost that the target audience is willing to bear in exchange for refraining from irresponsible waste disposal and water consumption. The social "price" is a combination of monetary costs (e.g. cost of the radio messages) and non-monetary costs (e.g. bringing your waste bags to dispose of them in proper sites). For this proposal, only the costs of the communication campaign can be computed. The others can be estimated once the social communication campaign is launched. The campaign is expected to be financed by PPVB and the municipal government.

Social promotion is a persuasive communication used to remind and inspire members of the public to embrace pro-environmental behaviors. This element of social marketing is required to facilitate better communication and convey accurate information to the public. Then, social promotion encourages the target audience to perform the desired behavior. This includes direct messages to visitors, and radio advertising and distribution of informative brochures are used. After two months, a brief quota survey was applied to visitors and inhabitants to assess if the social communication campaign reached people and prompted some concerns about the future of *Valle de Bravo.* If the results are positive (a large audience and higher NEP),

the social communication campaign is repeated after a month to prevent saturation. The total duration is projected to be six months to observe behavior change.

Figure 4

Description of the 4Ps that comprise the social marketing campaign to restore the landscape of Valle de Bravo



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The social placing is where the target customer Is expected to acquire any tangible product associated with the promotion and performance of the desired behavior. A pleasant and accommodating environment results in a more positive impression and experience. The social place could be one of the most popular places in the town (e.g. main square, the pier, or the two main waterfalls). A potential problem is that visitors may feel disturbed by their entertainment activities. Therefore, a way to approach them is for students who live in the town to act as a "distribution channel". Students are instructed to establish an informal conversation about the beautiful surroundings and the reasons why the visitor decided to come to *Valle de Bravo*. Then, students discuss the current environmental problems of the town, particularly waste and water management, and offer the visitor additional information on how he/she can contribute to sustainability through positive changes in his/her behavior.

A financial analysis of the proposed social marketing strategy is not viable at the design stage because the program involves sponsors (municipal authorities), partners (PPVB and Education School), and grantors (regional Ecology Administration) whose (expected) sharing objectives are to preserve and improve the landscape of the county by preventing land further degradation because of improper waste management and water overuse and pollution.

Results and discussion

A key assumption is that inhabitants are interested in knowing about how to manage waste and reduce and recycle water. According to the Knowledge, Attitude, and Practice (KAP) people who know, have positive attitudes, and demonstrate how much they know and feel through their practices (Ahamad & Ariffin, 2018) will be the target segment. Therefore, following the first step of the methodology suggested by Andreason (2006), a survey to identify this segment was conducted.

A convenience sample of fifty inhabitants who visited the Municipal offices during the last week of October 2023 responded to the survey. The participants were systematically selected, ten per weekday, and one person was invited from each of the ten who visited the offices. If the person refused to participate, the next one was selected. The selection per day ended when ten complete responses were obtained. NEP, a well-known validated scale to assess environmental beliefs, understood as the assessment and positioning regarding environmental problems was applied. Then, respondents were asked if they were interested in extending their knowledge about waste management and water saving. Answers were disappointing because most inhabitants have low environmental beliefs and no interest in knowing nor adopting effective waste management and water savings practices.

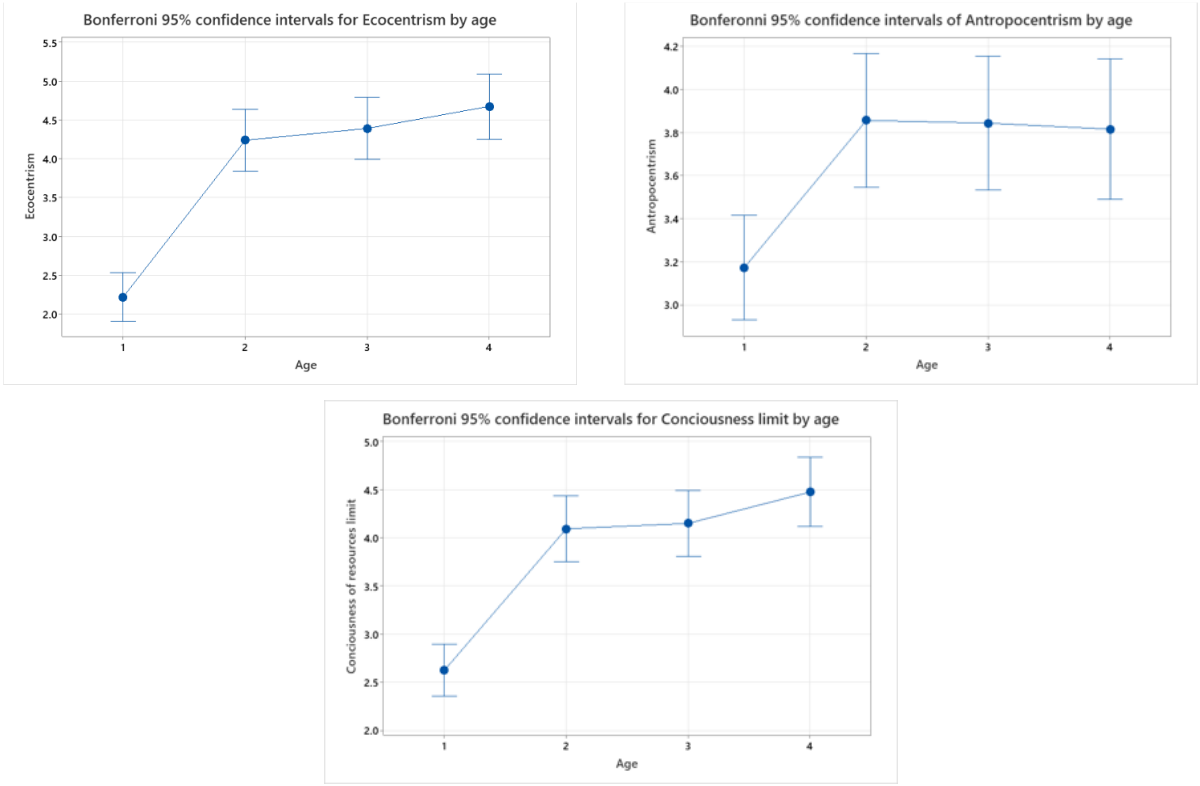
Survey data were analyzed (ANOVA one-way) and age groups were compared (Figure 5). Following Gomera, Villamandos, & Vaquero (2013), individual items of the NEP were aggregated into three meaningful dimensions or components. Only the youngest participants (19-24 years old) showed some recognition of environmental problems as well as interest in learning about pro-environmental practices (low values on the 5-point Likert scale represent higher environmental concerns). The sample is not representative of the population of Valle de Bravo, however, the exploratory data collected allowed the revision of the assumption that inhabitants are willing to extend their knowledge about waste and water management at the household level.

Even the more environmentally concerned individuals (19-24 years old) who would be the target segment and have received environmental education reported averages between 2 (agreement/worry) and 3 (neutral position). In contrast, the older groups (25-39, 40-59, >60) showed disagreement with the statements of the NEP scale. Regarding the interest in increasing their knowledge about pro-environmental (waste management and water reduction) practices, the young group showed significantly higher interest (ji-square test = 8.674, P = 0.034): 66.7% of the youngest participants declared interest versus at most 30% for other groups (only 18 for adults 40-59 years old). Finally, participants were asked why they did not want to learn about waste and water management practices. Most of the comments state that the issue is the responsibility of the government, not the individuals.

Another main assumption of this social marketing intervention is that students at the local Education School are interested in chatting with visitors about waste and water management. One of the authors of this work presented the project to each group of Senior students at the Education School. Then, three group interviews with the senior students (18-25 per group) who expressed interest in participating in the project were performed. The researcher and one of the school's administrators, who is recognized as an environmental activist, conducted the interviews and answered questions posed by the students about the project and the expected role of the students. Ten students were judgmentally selected to attend workshops and instruct visitors about the current programs to recover the soil, forest, and water reservoirs surrounding their town. In addition to personal motivation, credits for social service (a requirement to get their Education BS degree) were negotiated with the school's authorities.

Figure 5

Graphical representation of results



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A group of 10 students attended a short workshop (4 hrs.) with promoters of the local Ecology Administration. The group was considered a pilot test to verify visitors can be approached by young inhabitants and open a dialogue about the environmental problems experienced by the town since previous research concludes local community participation is a moral stakeholder in sustainable tourism development, a concept that acknowledges the need of visitor management control to maintain a tourism location's ecological balance while tourism is growing (Iqbal & Ahmed, 2022).

After the workshop, pairs of volunteers went to five of the most attractive places: the main square, the pier, the *Peña* lookout, the *Avandaro* area near the waterfall and the bridge, and the *Velo de Novia* waterfall. Each student was instructed to talk to and interview five visitors of different age ranges (the four defined and any additional one). After the formal presentation, the volunteer asked the respondents for their cooperation in answering a brief survey about their visit. Before the interview, several photographs showing the beauty of the landscape around the town were shown.

The first question was if these photographs correspond to the places visited (scale of three categories from 1 =not all, 2 = somewhat, 3 =totally match). Only 19% of the 50 visitors agreed that the photographs match the surroundings (most of the photographs were taken 5-10 years ago before the water basin decreased notably its capacity); 23% stated that the images somewhat agree with what they visited, and 78% declared images do not correspond at all with the current landscape. Based on these results, a KPI for the social marketing campaign was formulated as "at least 50% of visitors agree the landscape of *Valle de Bravo* matches their expectations in five years".

This introduction engaged some visitors who agreed to listen to and discuss the waste and water problems the town is facing. Then, they were asked if they believed they could contribute to the improvement of the landscape by practicing recycling, water saving, reduced consumption, and cutting waste. Only 21%

declared they would think they could make a change, 47% were undecided, and the remaining 32% stated their effort would be unworthy. Finally, the green self-identity of the participant was assessed by using measures adapted from previous research (Cook, Kerr & Moore, 2002; Sparks & Shepherd, 1992).

The visitor's survey was performed in November 2023. A convenience sample plan was used: visitors were intercepted in the most touristy places. Convenience sampling is suitable for exploratory research and when the population is homogeneous. Because age differences were observed among inhabitants, a quota sample was selected by interviewing 15 visitors from each age group (19-24, 25-39, 40-59, >60 years old) for a total of 60 participants. The ESI of surveyed visitors was low as shown in table 1, that is visitors do not perceive themselves as sensitive to environmental issues or interested in projecting or acting as eco-friendly persons. These findings call for a major revision of the social marketing strategy that would need to include other elements besides communication and interaction with visitors to inform them about the negative impact that inappropriate waste and water management has on the landscape.

Table 1

Basic statistics for the items of the ESI multi-scale

Item	Mean	SD	Q1	Median	Q3
I think of myself as a green consumer	3.480	0.909	3.000	4.000	4.000
I consider myself concerned about environmental issues	3.260	0.723	3.000	3.000	4.000
I am proud of following an environmentally friendly lifestyle	3.540	0.813	3.000	4.000	4.000
I like others think of myself as an environmentally concerned person	3.580	0.810	3.000	4.000	4.000

Source. By the authors

The ESI of different age groups of visitors was compared using multiple comparisons (HDS-Tukey's and Fisher's test). Differences between groups were smaller (significant at the more relaxed 10% significance level) except by the demonstration of environmental concern. Results are summarized in table 2.

Table 2

ANOVA and multiple comparisons among age groups based on the items of the ESI multi-scale

Item	F-test	P value	Grouping according to Tukey's test (95%)		
I think of myself as a green consumer	3.04	0.055	>60	Mean=4.00 A group	
			40-60	Mean=3.82 A group	B group
			25-39	Mean=3.64 A group	B group
			19-24	Mean=3.05	B group
I consider myself concerned about environmental issues	5.38	0.007	>60	Mean=3.60 A group	
			40-60	Mean=3.54 A group	
			25-39	Mean=3.45 A group	
			19-24	Mean=3.05	B group
I am proud of following an environmentally friendly lifestyle	2.43	0.078	>60	Mean=4.91 A group	
			40-60	Mean=3.73	B group
			25-39	Mean=3.60	B group
			19-24	Mean=3.17	B group
I like others think of myself as an environmentally concerned person	1.59	0.213	>60	Mean=3.81	
			40-60	Mean=3.72	All groups are equal
			25-39	Mean=3.70	
			19-24	Mean=3.78	

Source. By the authors

In general, results indicate a difference between the youngest versus oldest groups on three of the four items of the scale. This confirms the results of the previous survey conducted with inhabitants. It is interesting to note that none of the age groups care whether their social groups recognize them as

environmentally friendly consumers. Interestingly, this item was non-significantly correlated with any of the aggregated dimensions of the NEP or the other items of the ESI scale. Thus, showing others that one is an environmentally friendly person seems of no interest to participants. However, the visitors who believe they could make a change to restore the landscape of Valle de Bravo can be engaged by comments from environmental advocates, “celebrities”, and “influencers” as suggested for inhabitants.

Studies about the social media influencers (SMIs)—or ‘greenfluencers” are currently of interest to academics and social media marketers. The comments of SMIs could help create and reinforce a green self-identity and the diffusion of waste and management practices. Dekoninck and Schmuck (2025) compared the persuasive power of nonprofit organizations and individuals as social media influencers. The study concludes both sources affect pro-environmental behavior, but environmental nonprofit organizations are perceived as trustier, thus influencing more pro-environmental attitudes and behavior intentions. Therefore, the *Patronato Pro Valle de Bravo* A.C. can extend its actions by assuming the role of greenfluencer and teaming up with influencers and public environmental organizations to amplify messages about the need to adopt sustainable practices (Nazir & Wani, 2024).

The participation of nonprofit organizations and pro-environmental groups is critical because the meetings and interviews with stakeholders (sponsors, partners, volunteers, inhabitants, and visitors) show low levels of engagement with the project for both the community and the municipal government. The municipality acts more like a donor with only a marginal interest in supporting a project judged to be the responsibility of the Ecology Ministry and its local representatives. Inhabitants recognize landscape degradation is affected by water overexploitation and high urbanization, but they expect that the authorities take stronger measures to restore the *Valle de Bravo* ecosystem. Furthermore, the increasing number of visitors who do not visualize themselves as environmentally friendly persons plus the crisis of the dams of the *Cutzamala* system due to water overexploitation and lack of rain severely affects the ecosystem health. Tourist engagement is recognized as an alternative to reinforcing the social and environmental values of visitors in the socioecological community welfare and highlights that their tourist experience depends not only on service providers but also on how they interact with the community and the surrounding environment (Dekoninck & Schmuck, 2023). Regarding the water crisis, the governmental plans for water management are critical because local waste consumption and recycling barely contribute to preventing the overexploitation and restoration of the *Cutzamala* system (Miranda, 2024).

The analytic results of the survey Indicate the target population Is the younger group of Inhabitants and visitors, namely adults between 18 and 34 years old which corresponds to 25% of the overall population (DataMexico, 2020). The marketing campaign named “Welcome to the pleasant town of Valle de Bravo” aims to educate and engage the residents in promoting the reduction, sorting, recycling, and dumping of waste and adopt behaviors related to water use and recycling to improve the aesthetics of the town surroundings to residents and visitors. The social marketing intervention is intended to deliver value as follows:

1. Increased consequential awareness and understanding of waste and water management practices and their importance to inhabitants and tourists.
2. Improved community engagement and participation in waste and water reduction initiatives.
3. Enhanced communication and collaboration between the agencies responsible for waste and water management (public and private) and the community.
4. Effective promotion of solid waste recycling programs, proper waste disposal practices, water saving at home, and the implementation of water and reuse recycling projects financed and backed by local authorities and the community.
5. Greater visibility and reach, leading to a broader impact on environmental care and land restoration.

The target audience is households who have lived for more than ten years in Valle de Bravo and are emotionally and socially attached to the community, local businesses whose main income comes from tourism, and local governmental and civil organizations. The proposed campaign aims to increase the attitudes of individuals toward the interdependence between humans and the environment and perceptions

of the efficacy of social action but also considers the value generated/destroyed for the main stakeholders of the Valle de Bravo ecosystem as described in table 3.

Table 3

Description of stakeholders that are also the target audience of the project

Stakeholder	Value Captured	Value Destroyed	Value Opportunity
Visitors	A place for recreation and trip weekends; emotional connection to nature	Restriction of access to *Avandaro, La Peña*, and other surrounding attractions through private property rights and soil erosion; emotional pain of seeing landscape become degraded	Improved aesthetics of landscape; improved access to landscape
Residents	Income from services and commerce with tourists; cultural and emotional connection with the town	Increased traffic and insecurity, restrictions of access to several places; emotional pain of seeing the landscape become degraded	Recuperation of the aesthetics of the landscape and the town; improved social welfare
Municipal government	Income from the increasing number of residents and tourists; social responsibility with the community and the local businesses	Increased risk of diminishing income if the number of visitors reduces because of landscape deterioration. Loss in credibility of the community if unable to keep natural resources that are one of the core assets of the town	Credit for the recuperation of the aesthetics of the landscape and the town; extension of the ruling party in the municipal administration
Local ecology and environment governmental agency	Fulfillment of its role as an institution that promotes environmental care and restoration		
Water commission of the state of Mexico	Fulfillment of its role as an institution that promotes proper water management		Full implementation of the Project "*Proyecto integral de saneamiento de la presa Miguel Alemán*"

Source. By the authors

Following the steps of the methodology suggested by Andreasen (2006), individuals with strong environmental beliefs (members of PPVB) were identified and invited to act as role models to show and instruct students at the local Education School (BS degree) about waste and water management and their benefits. Additionally, educational talks were given by the personnel of the Administration of Ecology and Environment of *Valle de Bravo* to the students. For instance, the students were tutored about how to reduce (e.g. use their shopping bags) and sort waste (e.g. organic, recyclables, non-recyclable inorganic) such that they are direct promoters of this pro-environmental behavior by showing to the target audience that waste sorting and reduction can be performed easily (self-efficacy) and that the community' actions are necessary (normative expectations), effective, and may help to reinforce the sense of belonging to the "*Vallesana*" community. All Senior students were asked to participate in these activities during a full day with the expectation that in the long term, more of them would be recruited to talk with visitors about basic water and waste reduction practices. Because youngsters were identified as the target segment, Education students are judged as fundamental spreaders of ecological behaviors among their families and social groups.

No prototype of the campaign was "tested" because a long-term behavior change is expected. However, posts and messages were presented to two focus groups integrated by seven and eleven municipal authorities and members of the PPVB. These "experts" judged the messages and prints' attractiveness, clarity, and relevance. Messages were framed to emphasize emotions and connection with the environment, appealing to values and beliefs because previous studies have shown this content is more accepted and remembered and contributes to increasing environmental awareness and a sense of connecting with nature (Henderson & Wamsler, 2019).

The local government supports the social marketing campaign. The director of the local Institute of Ecology was interviewed, and he agreed to finance the printing and displaying of posters around the town and assign two employees to instruct the volunteers about recycling waste and water. The municipal authorities promised to cooperate by paying for radio messages. However, no specific date or conditions (e.g. amount) to finance the local radio campaign were stated. Moreover, the county secretariat highlighted the local Institute of Ecology should be the proper institution to ask for support for the marketing campaign. Therefore, this assumption is highly questionable.

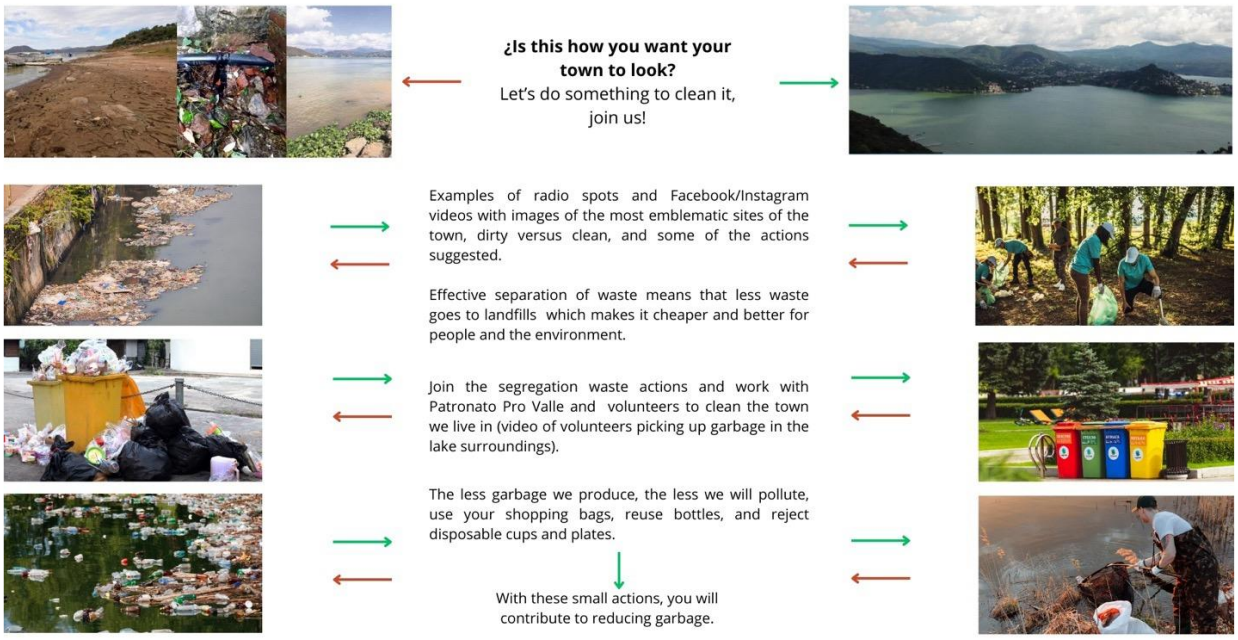
In the next phase, the municipal government and waste management private companies should facilitate waste sorting by providing litter bins within walking distance of main tourist attractions and high-traffic places to increase the external locus of control. Civil society would supervise and demand to municipal authorities the enforcement of environmental regulations to tourist facilities (hotels and restaurants mainly) and visitors to prevent the irresponsible disposal of solid waste and sewage to the lake and provide incentives (e.g. tax reductions) if environmentally friendly technologies are implemented (e.g. water recycling systems and water-saving appliances) or apply penalties (e.g. fines if waste is discarded in tourism places).

Social media platforms such as Facebook and Instagram are used to reach the target segment (18-30 years old). Other age segments may be unfamiliar with or reluctant to use social media, thus, traditional mass media, posters, and radio messages communicate the importance of improving waste management and reducing water consumption. Short spots three times per day and posters in the main places (main square, the church, the market, and town hall offices) would be allocated. Messages highlight the importance of the two selected pro-environmental behaviors, appeal to the emotions of residents, and provide clear instructions about how to execute a behavior. For example, what waste to dispose of in the bins localized in high-traffic sites? To begin with, five sets of three containers with assembly for waste separation would be donated by PPVB. This patronage organizes a raise for money to buy five additional sets of containers. Figure 6 shows the citizen-driven effort versus the government-delegated effort approach (current situation) to provide insights for marketers. The left side shows the current scenario, and the right side shows the potential outcome if the community efforts prove effective. Different actions to advance the intervention are communicated in the middle of the diagram.

The strategy of posting and engaging with the target segments on social media platforms and recruiting and training volunteers who talk directly to visitors (5 min) and share with them educational content about waste and water management pro-environmental practices and the social/emotional benefit of enjoying the town and be an active part of the “Welcome to the pleasant town of *Valle de Bravo*” is expected to encourage participants to share their own waste/water reduction efforts or success stories. The performance of social and mass media marketing efforts is reviewed. KPIs exemplified by metrics such as engagement rate, reach, and click-through rates were selected to evaluate the effectiveness of the content. If necessary, this content is adjusted.

Figure 6

Sustainable approach in the marketing strategy



Source. By the authors

Stakeholder engagement with the marketing campaign (social intervention) in four dimensions –social, natural, financial capital, and inspiration- is expected to be attained through environmental education and the recognition of the environmental problem as a social problem affecting the region's sustainability. The following objectives were defined for the social marketing campaign:

1. Increase the residents' environmental consequential awareness and perceived effectiveness by associating their pro-environmental actions with their welfare, promoting a better coexistence with visitors, enjoyment of the natural surroundings, and a more sustainable lifestyle.
2. Create expectations among tourism businesses regarding their significant impact on the social benefit of the community they depend on and maintain the natural beauty of town surroundings to attract tourism so they can ensure financial gains.
3. Collaborate with the municipal government to increase and keep green areas, recuperate creeks and waterfalls, and supervise visitors' practices and hospitality facilities. Acknowledgment of the positive effect of the investment in these actions on municipal benefits.

Goal framing theory, which asserts that pro-environmental behaviors may emerge from conflicting goals provides a promising approach for analyzing how the key stakeholders of the Valle de Bravo ecosystem (the government, the inhabitants, and the visitors) deal with goal conflicts (hedonic or feeling well about their ecological actions, gain from environmental practices, or act as they think they ought to do pursing a normative goal), take situational factors into account, and process the actions comprising a social pro-behavioral intervention (do Canto et al., 2023).

Conclusions

Current environmental problems such as climate change or biodiversity loss represent highly complex problems embedded in a social context including a wide range of actors with multiple and potentially opposed interests (e.g. inhabitants versus tourism business). Because of their complexity, environmental issues have been addressed from several perspectives, including marketing. Sustainability marketing is a

goal-driven practice that looks to influence consequential awareness, and moral obligation to engage with pro-environmental action across economic and sociocultural systems by taking necessary accountability for its impact on the environment to assure long-term welfare for present and future generations (CISL, 2023). The Reformative Sustainability Marketing conceptualization recognizes that individuals can contribute to protecting the environment by making sustainable decisions and engaging in environmentally friendly behaviors. Regulations promote sustainable behavior in citizens through a coercive (punishment for non-compliance) mode. In comparison, social marketing interventions provide a means to achieve a voluntary transformation of consumption to decrease the demand for natural resources, particularly water, a threatened resource in Mexico due to continuous droughts and overexploitation of water sources to cover the demand for megacities.

This research describes a systemic analysis of the factors that influence the adoption of pro-environmental behaviors of inhabitants and visitors of *Valle de Bravo* and then outlines a social marketing intervention based on two main strategies: a) use persuasive communication to target specific behaviors (water reduction and waste management) and target audiences (young inhabitants) based on an adequate theoretical framework (green self-identity, environmental consciousness, and values are antecedents of green behavior) to promote the benefits of collective action, and b) interaction with visitors to inform them about the negative impact that the inappropriate management of waste and water has on the landscape and persuade them to voluntary participate in the restoration effort. Two exploratory surveys, one of inhabitants and the other of visitors, indicate both groups have low endorsement of a “pro-ecological” worldview and poor green self-identity. Therefore, additional in-depth analysis of the factors that influence the adoption of pro-environmental behaviors (e.g., social norms, self-efficacy, goal frames, and locus of control) is recommended to increase the understanding of potential barriers, psychological (e.g. perceived low effectiveness) and physical (e.g. limited number of recycling deposits), and the ways to overcome them.

This work concluded that communities and nonprofit pro-environmental societies could trigger environmental practices and support the three axes of sustainability. However, the main challenge is the management of social indifference, the enhancement of environmental consequential awareness, and the potential efficiency of pro-environmental actions led by the community. Transdisciplinary education and research are crucial to understanding and promoting responsible consumption at all social levels to identify what psychological and social concepts are the key antecedents and positive moderators of pro-environmental behavior.

Future research is needed to refine the social marketing intervention outlined in this work, for instance, the use of the community-based social marketing framework, goal-framing theory, and the comparison of cases in which social marketing interventions have been effective (O’Brien & Sarkis, 2014; Rau et al., 2022). Second, more persuasive communication tools should be adopted because solely providing information may not be enough to encourage environmentally friendly behaviors among visitors. Persuasive technology, such as immersive technologies are proposed as novel opportunities to encourage pro-environmental behavior (Rodríguez, 2023). Third, sustainable marketing needs to be supported by public policies and multiple single environmental policies involving nudges and monetary incentives implemented simultaneously to promote pro-environmental behavior (Alt et al., 2024). Additionally, policymakers can play a major role in shaping the macro socioenvironmental context by restricting the actions of tourism businesses and forcing them to propose sustainability development plans to prevent additional environmental deterioration.

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Appendix 1

Economic Business Canvas

PARTNERS -Patronato Pro-Valle -Volunteers of the local Education school -Local residents	**ACTIVITIES** -Design of a social marketing campaign promoting waste reduction and proper disposal, and water reduction and recycling -Provide instruction to education students that would spread actions to residents who in turn would instruct visitors -Organize discussions with municipal authorities to request the enforcement of environmental regulations to tourism agencies	**VALUE PROPOSITION** In the short-term, work on the preservation of the environment and in the long-term improve aesthetics and provide cleaner surroundings and water access to residents and visitors.	**CUSTOMER RELATIONSHIPS** Email list of volunteers Information of the program on the website of Patronato-Pro-Valle
COST Design of materials Instruction time Distribution of pamphlets, communication messages, and field visits to talk to the visitors.		**CHANNELS** Email communication Personal interaction	**CUSTOMER SEGMENTS** Local business Volunteers Residents and visitors
		REVENUES Tourism attraction Savings on water bills	

Environmental Business Canvas

SUPPLIES AND OUTSOURCING -Design of ads -Local radio -Classrooms and materials	**PRODUCTION** -Teaching materials -Communication messages	**FUNCTIONAL VALUE** Social marketing intervention is estimated to last one year. 100 volunteers will be trained, and the targets are to reach 2000 residents and implement waste separation in the county.	**USE PHASE** -10-20% water reduction or recycling by target audience -50% clean surroundings
ENVIRONMENTAL BENEFITS -Clean surroundings -Close of water cycle at homes and business -Increase environmental awareness and positive attitudes toward taking care of the environment	**END OF LIFE** N/A		
	ENVIRONMENTAL IMPACT N/A	**DISTRIBUTION** -Personal sessions -In site visits to tourism business owners -Action research project with municipal authorities	

Social Business Canvas

LOCAL COMMUNITIES -Higher community environmental responsibility -Improved landscape aesthetics	**GOVERNANCE** -Collaboration committee -Participatory management	**SOCIAL VALUE** -Community cohesion -Recreational enhancement -Assurance that the town will still be a "Magic Town"	**SOCIETAL CULTURE** -Collective pro-environmental action -Ownership of the social program	**END USER** -Residents -Tourists -Local businesses
SOCIAL BENEFITS -Community engagement with the environmental problem facing the town -Educational programs keeping tourism activity	**EMPLOYEES** -Project manager -Volunteers -Local residents -Partners (government and civil societies)	**SCALE OF OUTREACH** Valle de Bravo County	**SOCIAL IMPACT** -Evoking consciousness -Changing undesirable behavior -Helping the environment people live in	**SOCIAL WELFARE** -Better living conditions -Cultural heritage