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Ecological Modernization, Policy Legitimacy, and Environmental Behavior: Evidence from Turkey's Plastic Bag Charge

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Abstract

Market-based environmental policies are typically evaluated in terms of their deterrent effects on individual behavior, yet this perspective offers only a partial explanation of how such instruments operate in practice. This study argues that market-based regulation can also function as a legitimacy-generating governance mechanism that shapes environmental action through socio-emotional pathways. Focusing on Turkey's plastic bag charge introduced in 2019, the study examines whether price-based regulation operates solely through cost sensitivity or also through perceived policy legitimacy and emotional environmental engagement. Drawing on ecological modernization theory and regulatory governance literature, the study employs survey data from 515 participants in Turkey to test a mediation model linking perceived policy legitimacy, emotional environmental engagement, and environmental action. The findings show that perceived policy legitimacy significantly enhances emotional environmental engagement, which in turn predicts both individual and collective environmental action. These results indicate that policy effectiveness extends beyond economic deterrence and depends on the capacity of policies to generate emotional engagement among citizens. The study contributes by demonstrating the dual governance role of market-based instruments and by integrating affective mechanisms into environmental governance analysis.

Keywords: policy legitimacy; environmental governance; emotional engagement; environmental behavior; market-based instruments; plastic bag policy; sustainability

1. Introduction

Environmental problems associated with industrialization have intensified in recent decades, prompting governments to adopt a wide range of policy instruments aimed at regulating environmentally harmful behavior. Among these, market-based instruments—such as taxes, charges, and pricing mechanisms—have become central tools in environmental governance due to their perceived efficiency. However, these instruments are most commonly evaluated in terms of their economic deterrent effects, emphasizing cost sensitivity as the primary driver of behavioral change. While this perspective offers important insights, it provides only a partial account of how such policies operate in practice.

A growing body of research suggests that environmental policy effectiveness depends not only on economic incentives but also on policy acceptability, perceived fairness, and public support [1,2]. In this regard, environmental behavior is shaped not only by instrumental calculations but also by values, norms, and emotional processes [3,4]. These findings have led to increasing recognition that governance mechanisms underlying environmental policies extend beyond economic rationality and involve socio-emotional and normative dimensions.

Despite this shift in the literature, existing studies on market-based environmental instruments—particularly plastic bag policies—have largely focused on consumption patterns and price-based behavioral responses. As a result, the role of perceived policy legitimacy as a mechanism

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linking policy design to environmental action remains underexplored. In particular, limited attention has been paid to how legitimacy perceptions activate emotional environmental engagement and translate into both individual and collective forms of environmental behavior.

This study addresses this gap by conceptualizing market-based environmental regulation as a legitimacy-generating governance mechanism. Focusing on Turkey's nationwide plastic bag charge introduced in 2019, the study develops and empirically tests a mediation model linking perceived policy legitimacy, emotional environmental engagement, and environmental action. Drawing on survey data from 515 participants, the analysis examines how institutional perceptions are transformed into behavioral outcomes through socio-emotional pathways.

The findings demonstrate that perceived policy legitimacy significantly strengthens emotional environmental engagement, which in turn predicts both individual and collective environmental action. These results suggest that the effectiveness of market-based environmental policies cannot be explained solely by economic deterrence, but must also be understood in relation to their capacity to generate legitimacy, emotional engagement, and socially embedded forms of compliance.

1.1. Original Value/ Literature Review

In public administration scholarship, policy legitimacy has long been associated with voluntary compliance and durable governance capacity (Tyler, 1990; Levi, Sacks, & Tyler, 2009). Rather than relying solely on instrumental cost–benefit calculations, legitimacy enhances citizens' willingness to comply with regulations by fostering normative alignment between state authority and societal actors. In this respect, regulatory governance literature suggests that market-based instruments derive their effectiveness not only from economic incentives but also from their capacity to generate justified authority and public acceptance within institutional contexts.

Recent research demonstrates that policy acceptability, perceived fairness, and public support are central to environmental policy effectiveness (Carattini et al., 2021; Drews & van den Bergh, 2020). These studies indicate that market-based environmental instruments are more likely to succeed when they are perceived as legitimate and socially justified, highlighting the importance of integrating governance and justice perspectives into environmental policy design. Moreover, environmental behavior is shaped not only by economic rationality but also by values, norms, and affective processes (Steg, 2021; Brosch, 2021).

Within this broader framework, environmental sociology provides a critical lens for understanding how environmental problems are socially constructed and governed. Environmental issues such as pollution and climate change are not only ecological challenges but also deeply embedded in social relations, institutional structures, and cultural expectations. Accordingly, environmental behavior cannot be fully explained through economic rationality alone but must be understood in relation to social norms, values, and socio-emotional dynamics.

Despite this growing body of research, existing studies on plastic bag policies have largely focused on consumption patterns, economic incentives, and behavioral responses. While these studies provide valuable insights into policy effectiveness, they often overlook the governance mechanisms through which such policies operate. In particular, the role of perceived policy legitimacy in activating emotional engagement and translating into both individual and collective environmental action remains underexplored.

This study addresses this gap by reconceptualizing market-based environmental regulation as a legitimacy-generating governance mechanism and by empirically demonstrating how perceived policy legitimacy influences environmental behavior through emotional environmental engagement in a local socio-institutional context. In doing so, the study contributes to environmental governance literature and advances the "just sustainabilities" perspective by integrating legitimacy, affect, and justice into explanations of policy effectiveness.

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1.2. Research Topic, Problem Statement, and Scope

The protection of natural resources has become increasingly important in the 21st century, with the growth of the human population and parallel increase in production. Today, the increase in environmental pollution has reached a critical threshold that poses a vital threat to humans and the natural environment in many areas. It cannot be argued that the assumption that the damage caused or likely to be caused to nature by industrialization, as predicted by the Dominant Human Paradigm, will be eliminated thanks to scientific and technological developments has been entirely successful. Thus, it is now accepted that today's environmental issues must be addressed socially, as well as technically, economically, and in terms of engineering.

While industrialization may appear as the apparent cause of environmental problems, social factors constitute an important component of the causes. The consequences of environmental pollution also affect those who cause it. In other words, humans are both the cause of the environmental problems arising from industrialization and the ones affected by the resulting environmental problems.

The Dominant Human Paradigm, built on the assumption that natural resources are "unlimited" and will "renew themselves" no matter how much they are exploited, has led humans to face significant ecological challenges.

The United Nations Conference on the Human Environment, held in Stockholm, Sweden, on June 5, 1971, is significant in that it marked the beginning of the global recognition and discussion of environmental issues. Environmentalism emerged as an alternative paradigm to the Dominant Human Paradigm of modern industrial society. In this sense, environmentalism can be evaluated broadly, including environmental action, environmental movements, environmental policies, and environmental attitudes. Environmentalism is considered both an action and an ideology. This definition indicates that environmentalism includes thoughts and attitudes regarding the environment.

Human-centered environmentalism acknowledges that the environment and environmentalism are vital for human pleasure and well-being. Nature-centered environmentalism, on the other hand, accepts that nature has the right to exist independently of human existence and well-being.

The conservation of natural resources refers to maximizing sustainable benefits and development and creating a cleaner environment. According to these three currents, the natural environment has only instrumental importance for human welfare. However, in reality, the natural environment has value for its own sake (Eckersley, 1992: 42; Naess, 1991).

Since the 1980s, the side effects of modern life have become increasingly evident in European countries heavily reliant on industrial production. Recognizing the potential dangers of modern life to human existence, European countries have embarked on a sustainable modernization effort to eliminate or minimize these side effects. In this context, European countries have implemented measures such as reducing harmful gas emissions into the atmosphere, using renewable methods for energy production and banning or restricting the use of plastic bags.

Plastic shopping bags are polymer-based products obtained from points of sale and used to carry the products we purchase. Plastic shopping bags were first introduced to the market in 1977. The distribution of plastic bags free of charge in supermarkets began in 1977 and is rapidly increasing. Approximately 5 trillion plastic bags are produced worldwide each year. In Turkey, each person uses an average of 312 plastic bags per year. This consumption exacerbates environmental pollution periodically. Only 1% of plastic bags utilized globally are recyclable, whereas 99% persist in the environment, contributing to contamination of air, water, and ecosystems.

Due to their light weight, plastic bags can quickly reach the natural environment even if they are thrown away, as they are carried by the wind. Plastic bags caught in tree branches or on power poles by the wind cause visual pollution. When plastic bags reach water sources, currents carry them to the oceans, causing permanent damage to marine life and fish.

Although plastic bags decompose into fragments within the soil, they persist in causing environmental damage. Plastic bags that fragment into micro-particles may appear intact, although

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they perpetually contaminate the environment every minute. Plastic bags chemically degrade under light, breaking down over time into smaller and more toxic petro-polymers. In this way, microscopic toxic particles from plastic bag waste enter the food chain, negatively affecting nature and the lives of living creatures (World Wildlife Fund Report 2005).

Despite the lack of international consensus or legal regulation on plastic bag use, companies with global retail chains have implemented measures to reduce plastic bag use. One of these methods became mandatory in Turkey on January 1, 2019.

Especially in the 1970s, Turkey began to experience major environmental disasters. Consequently, awareness-raising activities increased. Today, various environmental activities continue. The practice of charging for plastic bags serves this purpose. The aim of the practice is "Efficient management of resources and prevention of environmental pollution caused by plastic bags." This study aims to examine the effectiveness of this practice, identify obstacles, and propose solutions.

1.3. The Sovereign Human Paradigm/Classical Modernization

From a historical perspective, humans' relationship with nature can be categorized into four stages. During the hunter-gatherer period, humans lived in dependence on nature. In the agricultural period, regarded as the second stage, people cultivated products to meet their needs. In the industrial period, the third stage, humanity began to exploit and abuse the natural environment. The fourth stage is the period of ecological modernization, which emerged as a reaction to the harmful side effects of modern production methods.

Examining the emergence processes of industrial societies, along with their historical, social, political, and economic formations, is necessary to understand the relationships between society and its natural environment. Industrialization began to emerge in Western society approximately three hundred years ago. The introduction of the steam engine, electricity, hydroelectric power, and petroleum as energy sources also made significant contributions to industrialization.

In the modern era, industrialization has taken place within the framework of the "dominant human paradigm," which views humans as superior and implies the exploitation of nature (Dunlap and Catton, 1994). According to Catton and Dunlap, the basic characteristics of this paradigm are as follows:

Humans are fundamentally different from other beings.
Humans are assumed to be masters of their own destiny.
The world has unlimited resources.
Human history represents continuous progress (Cotton and Dunlap, 1980: 17–18).

1.4. Ecological Paradigm/Ecological Modernization Theory

Catton and Dunlap have developed a new ecological paradigm as an alternative to the "superior human paradigm" of industrial society, which they define as the human-centered dominant Western worldview. The modern ecological paradigm asserts that environmental issues in industrial civilization are linked to the prevailing human paradigm. Therefore, the New Ecological Paradigm aims to reveal the relationship between the dominant human paradigm and environmental problems.

Catton asserts that industrialization, influenced by the prevailing human paradigm, has "overshot" the natural environment rather than enhancing human welfare. He refers to this phenomenon as "overshoot." In response to the drawbacks of classical modernization, environmentalist doctrine proposed the ecological modernization model (Mol and Spaargaren, 1993). The fundamental principle of this model is that economic development should be seen as part of the natural environment and that nature should be protected as a whole (Naess, 1991: 242).

The New Ecological Paradigm is an alternative to the Dominant Human Paradigm, which views humans as superior. According to this paradigm, there is a reciprocal interaction between plant, animal, and human communities; social organizations; the natural environment; and technology

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(Hannigan, 1995; Dunlap and Catton, 1994). According to this perspective, social and natural factors are mutually determinative (Freudenburg et al., 1996).

Therefore, humans do not have superiority over other components of nature. Furthermore, humans have equal rights with other components of nature in matters such as eating, drinking, and shelter (Naess, 1991: 242). Hannigan summarizes this position as follows: "We are not mastering of the living world, but rather its equals" (Hannigan, 1995: 168).

The theory of ecological modernization suggests that an ecological lifestyle can be established by using natural resources sparingly and without harming the environment. This includes replacing polluting industries, reducing fossil fuel use, utilizing clean and recyclable energy, and fostering environmental awareness.

The New Ecological Paradigm proposes a relationship of equality with nature rather than superiority and control. It is one of the perspectives that best explains the relationship between society and the natural environment.

2. Materials and Methods

2.1. Research Design

This study adopts a quantitative research design to examine how perceived policy legitimacy shapes environmental behavior through socio-emotional mechanisms. The analysis focuses on Turkey's nationwide plastic bag charge introduced in January 2019 as a locally embedded environmental policy intervention. The study is conceptualized as an early and medium-term post-implementation assessment, enabling the analysis of how legitimacy perceptions influence behavioral responses during the initial phase of policy institutionalization.

2.2. Data Collection and Sample

Data were collected between March 2019 and September 2021 using an online survey based on voluntary participation principles. Respondents were informed about the purpose of the study, and anonymity and confidentiality were ensured. Informed consent was obtained from all participants prior to participation.

A total of 515 participants completed the questionnaire. All items were mandatory, resulting in a complete dataset with no missing data.

2.3. Measures

The survey instrument consisted of three main components:

Perceived policy legitimacy was measured using the Ecological Modernization and Policy Legitimacy Scale (EPBPEMA), comprising nine items evaluating policy effectiveness, environmental contribution, and societal value.

Environmental engagement and action were measured using the Environmental Awareness and Attitude Scale (EAAS), consisting of 18 items across three subdimensions: (i) individual environmental action, (ii) emotional environmental engagement, and (iii) collective environmental action.

All items were measured using five-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree).

Construct validity was confirmed through exploratory factor analysis (KMO = .903; Bartlett's test $p < .001$), and internal consistency was high (Cronbach's alpha = .937 for EPBPEMA; .876 for EAAS).

2.4. Analytical Strategy

Data were analyzed using SPSS 22. The analytical procedure consisted of four stages:

1. Descriptive statistics
2. Exploratory factor analysis and reliability testing

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3. Correlation analysis
4. Regression-based mediation analysis

Regression models were estimated to examine the effects of emotional environmental engagement on individual and collective environmental action. Diagnostic tests confirmed that the assumptions of linear regression were satisfied, including normality, independence of errors (Durbin–Watson statistics), and absence of multicollinearity.

To test the mediating role of emotional environmental engagement, a regression-based mediation analysis was conducted following established procedures [5]. Both direct and indirect effects were examined.

2.5. Data Availability

The dataset generated and analyzed during the current study is available from the corresponding author upon reasonable request.

2.6. Ethics Statement

This study was conducted in accordance with ethical research standards. Ethical approval was obtained from the Nevşehir Hacı Bektaş Veli University Ethics Committee (Approval No: 4250, 25 February 2019). All participants provided informed consent prior to participation.

2.7. Generative AI Statement

No generative artificial intelligence tools were used in the design, data collection, analysis, or interpretation of this study.

3. Results

3.1. Descriptive Statistics and Normality

The distributional properties of the main variables were first examined. As shown in Table 1, skewness and kurtosis values for the EPBPEMA scale fall within the acceptable range of −1.5 to +1.5, indicating that the normality assumption is satisfied.

Similarly, the EAAS subdimensions also meet normality criteria. As presented in Table 3, skewness and kurtosis values for individual action, emotional engagement, and collective action remain within acceptable thresholds, confirming the suitability of parametric statistical analyses.

3.2. Factor Structure and Reliability

Exploratory factor analysis was conducted to assess the construct validity of the measurement instruments. The EPBPEMA scale demonstrated a strong unidimensional structure, with all factor loadings exceeding acceptable thresholds (Table 2). The Kaiser–Meyer–Olkin (KMO) value (.903) and significant Bartlett's test ($p < .001$) indicate sampling adequacy and factorability. The scale also exhibited high internal consistency (Cronbach's alpha = .937).

The EAAS scale revealed a three-factor structure corresponding to individual environmental action, emotional environmental engagement, and collective environmental action (Table 4). Factor loadings were substantial across all dimensions, and reliability analysis indicated strong internal consistency (Cronbach's alpha = .876).

3.3. Participant Characteristics

The sample consisted of 515 participants with diverse sociodemographic characteristics. As shown in Table 5, 61.9% of respondents were female and 38.1% male. The largest age group was 18–25 (37.9%), followed by 26–35 (22.5%). In terms of education, nearly half of the participants held a bachelor's degree (47.0%), while 17.5% had doctoral-level education.

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The sample also exhibited diversity in professional and socioeconomic status, with the majority reporting a middle level of economic well-being (71.3%). These characteristics indicate a heterogeneous sample suitable for examining variations in environmental perceptions and behavior.

3.4. Group Differences

Independent samples t-tests and ANOVA analyses were conducted to examine group differences.

As presented in Table 6, statistically significant gender differences were observed in policy legitimacy, emotional engagement, and collective environmental action ($p < .05$), while no significant difference was found for individual environmental action.

ANOVA results (Table 7) indicate that environmental attitudes and engagement vary across sociodemographic characteristics, particularly age, education, and occupational status. Emotional engagement appears to be the most sensitive dimension, showing significant variation across multiple demographic variables.

3.5. Correlation Analysis

Correlation analysis reveals significant positive relationships among the key variables (Table 8). Perceived policy legitimacy is moderately associated with overall environmental awareness and action ($r = .257$, $p < .01$).

Strong relationships were observed between environmental awareness and its subdimensions, particularly between individual and collective action. Emotional environmental engagement is also positively associated with both legitimacy and behavioral outcomes, supporting the theoretical expectation of its mediating role.

3.6. Regression and Mediation Analysis

Regression analyses provide strong support for the proposed mediation model.

As shown in Table 9, emotional environmental engagement significantly predicts individual environmental action ($\beta = .40$, $p < .001$), explaining approximately 8% of the variance ($R^2 = .08$).

Similarly, Table 10 indicates that emotional engagement has a positive and statistically significant effect on collective environmental action ($\beta = .271$, $p < .001$), accounting for 7% of the variance ($R^2 = .073$).

Furthermore, Table 11 shows that environmental awareness significantly predicts perceived policy legitimacy ($\beta = .257$, $p < .001$), indicating reciprocal relationships between perception and behavior.

Overall, these findings demonstrate that emotional environmental engagement functions as a key mechanism linking perceived policy legitimacy to both individual and collective environmental action. The results provide consistent empirical support for the proposed mediation framework.

This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn.

Table 1. Normality Test Results for EPBPEMA.

Variable	M	SE	Skewness	SE	Kurtosis	SE
EPBPEMA (Total)	3.41	.04	−.59	.11	−.27	.22

Note. M = mean; SE = standard error. According to Tabachnick and Fidell (2013), skewness and kurtosis values between −1.5 and +1.5 indicate an acceptable approximation to normal distribution. The EPBPEMA scores met the normality assumption.

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As shown in Table 1, skewness and kurtosis values fall within the acceptable range of −1.5 to +1.5, indicating that the EPBPEMA variable satisfies the normality assumption required for parametric statistical analyses.

Table 2. Exploratory Factor Analysis Results for the EPBPEMA Scale.

Item	Factor 1
The paid plastic bag scheme has saved the lives of numerous land and marine animals.	.888
The paid plastic bag scheme has made a significant positive contribution to preventing environmental pollution.	.883
The paid plastic bag scheme has made a significant positive contribution to preventing water pollution.	.870
The charge for plastic bags has made a significant positive contribution to preventing air pollution.	.864
The charge for plastic bags has made a significant contribution to raising awareness about protecting the natural environment.	.851
Thanks to the charge for plastic bags, plastic bag usage has decreased significantly.	.844
The paid plastic bag policy has positively contributed to the formation of awareness of "modernity that does not harm the natural environment (ecological modernity)."	.812
The paid plastic bag policy has positively affected our country's image as a modern/civilized nation.	.722
After the paid plastic bag policy began, the number of people who started using shopping bags increased.	.574

Note. Extraction method = Principal Component Analysis. One factor was extracted. Factor loadings below .40 are suppressed. Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy = .903. Bartlett's test of sphericity was significant ($p < .001$). Cronbach's alpha for the scale was .937.

Table 2 presents the EPBPEMA, which was developed to measure the impact of the paid plastic bag initiative launched in Turkey in 2019 on the formation of ecological modernization awareness among participants. The scale consists of a total of nine items presented in a five-point Likert-type format.

Table 3. Normality Test Results for EAAS Subdimensions.

Variable	M	SE	Skewness	SE	Kurtosis	SE
EAAS—Individual Action	3.50	.03	−.16	.11	−.49	.22
EAAS—Emotional	4.71	.02	−.37	.11	.37	.22
EAAS—Collective Action	3.16	.04	−.13	.11	−.42	.22

Note. M = mean; SE = standard error. According to Tabachnick and Fidell (2013), skewness and kurtosis values between −1.5 and +1.5 indicate an acceptable approximation to normal distribution. All variables met the normality assumption.

As shown in Table 3, skewness and kurtosis values for the EAAS subdimensions fall within the acceptable range of −1.5 to +1.5. According to Tabachnick and Fidell (2013), these values indicate that the variables approximate a normal distribution. Therefore, the normality assumption required for parametric statistical analyses is satisfied.

Table 4. Exploratory Factor Analysis Results for the Environmental Awareness Scale.

Item	Factor 1	Factor 2	Factor 3
I prefer to consume products that do not harm nature with their packaging.	.807	—	—
I prefer products that can be recycled when shopping.	.790	—	—

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I prefer to use products from companies that manufacture without harming nature.	.717	—	—
When shopping, I prefer businesses that provide compostable bags.	0.691	—	—
I prefer to use transportation that pollutes the natural environment less.	0.679	—	—
I prefer energy- and water-efficient models for the appliances I use at home or at work.	0.678	—	—
When disposing of my trash, I separate it and place it in the appropriate recycling bins.	.553	—	—
If I see a business polluting the natural environment, I complain to the relevant authorities.	.421	—	—
I try to prevent water, energy, or food waste in my environment.	.407	—	—
I feel very sad when an animal dies because of plastic or glass items thrown into nature.	—	.827	—
I feel very sad when I see an animal injured or disabled because of plastic or glass products thrown into nature.	—	.791	—
I feel very uncomfortable when I see plastic bags, bottles, or packaging flying in the air.	—	.749	—
I think of the natural environment as our shared living space with other species.	—	.739	—
Seeing a person or organization working to meet the needs of street animals makes me very happy.	—	.585	—
I volunteer in campaigns to protect the natural environment.	—	—	.736
I volunteer in campaigns to meet the needs of street animals.	—	—	.706
Participating in campaigns aimed at protecting the natural environment makes me happy.	—	—	0.668
I actively participate in campaigns aimed at protecting our natural environment.	—	—	.552

Note. Extraction method = Principal Component Analysis. Rotation method = Varimax with Kaiser normalization. Factor loadings below .40 are suppressed.Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy = .903. Bartlett's test of sphericity was significant ($p < .001$). Rotation converged in five iterations. Cronbach's alpha for the overall scale was .876.

Table 4 presents the EAAS, which was developed to measure participants' environmental awareness and attitudes, including the environmental awareness individual action, environmental awareness emotional, and environmental awareness collective action dimensions. The scale consists of 18 items presented in a five-point Likert-type format.

Table 5. Sample Characteristics (N = 515).

1. Gender status	f	%	Faculty of Economics and Administrative Sciences	51	9.9
Male	196	38.1	Faculty of Tourism	8	10.6
Female	319	61.9	Faculty of Architecture	38	7.4
2. Age status	F	%	College/ Vocational School	27	5.2
18- 25	195	37.9	Faculty of Pharmacy	18	3.5
26- 35	116	22.5	5. The level of economic well-being	f	%
36- 45	92	17.9	Very low	22	4.3
46- 55	74	14.4	Low	87	16.9
56- 65	31	0.6	Middle	367	71.3
66 and more	7	1.4	High	38	7.4
3. Educational status	f	%	Very high	1	.2
Primary school	3	0.6	6. Professional status	f	%
Secondary school	3	0.6	Teacher	64	12.4

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High school	24	4.7	Faculty member/ Lecturer	90	17.5
College/ Vocational school	82	15.9	Engineer	49	9.5
Faculty	242	47.0	Military/ Police/ Security	2	.4
Post Graduate	71	13.8	Artist	2	.4
Doctor's degree	90	17.5	Student	180	35.0
4. The status of the graduated school	f	%	Housewife	7	1.4
Faculty of Science and Literature	203	39.4	Tradesmen	2	.4
Faculty of Theology	27	5.2	Worker	27	5.2
Faculty of Medicine/Dentistry	10	1.9	Unemployed	14	2.7
Faculty of Law	3	0.6	Retired	10	1.9
Faculty of engineering	53	10.3	Officer	51	9.9
Faculty of Sports Sciences	13	2.5	Religious officer	2	.4
Faculty of Fine Arts	3	0.6	Health worker	11	2.1
Faculty of Education	53	10.3	Other	4	.8
Faculty of Health Sciences	8	10.6	Total	515	100

Note. f = frequency. Percentages may not total 100 due to rounding.

Table 5 shows that a total of 515 participants took part in the study, of whom 61.9% were women and 38.1% were men. Regarding age distribution, 37.9% of the participants were aged 18–25, 22.5% were aged 26–35, 17.9% were aged 36–45, 14.4% were aged 46–55, 6.0% were aged 56–65, and 1.4% were aged 66 and above. In terms of educational level, .6% of the participants had completed elementary school, .6% middle school, 4.7% high school, 15.9% associate degree/college, 47.0% bachelor's degree/university education, 13.8% master's degree, and 17.5% doctorate education.

With respect to faculty affiliation, 39.4% of the participants were graduates of the Faculty of Science and Letters, followed by the Faculty of Engineering (10.3%), the Faculty of Education (10.3%), the Faculty of Economics and Administrative Sciences (9.9%), and the Faculty of Architecture (7.4%). Smaller proportions were graduates of the Faculty of Theology (5.2%), college/vocational schools (5.2%), the Faculty of Pharmacy (3.5%), the Faculty of Sports Sciences (2.5%), the Faculty of Medicine/Dentistry (1.9%), the Faculty of Health Sciences (1.6%), the Faculty of Tourism (1.6%), the Faculty of Law (0.6%), and the Faculty of Fine Arts (0.6%).

In terms of perceived economic status, Table 5 indicates that 4.3% of the participants identified themselves as being at a very low economic level, 16.9% at a low level, 71.3% at a medium level, 7.4% at a high level, and .2% at a very high level. Regarding occupational status, 35% of the participants were students, 17.5% were faculty members/lecturers, 12.4% were teachers, 9.9% were civil servants, 9.5% were engineers, and 5.2% were workers. Smaller proportions consisted of graduates of college/vocational schools (5.2%), unemployed individuals (2.7%), doctors/pharmacists/health workers (2.1%), retirees (1.9%), housewives (1.4%), tradespeople (.4%), soldiers/police/security guards (.4%), artists (.4%), religious officials (.4%), and participants from other occupational groups (.8%).

Table 6. Independent Samples t-Test Results for EPBPEMA and EAAS Scores by Gender.

Variable	Gender	N	M	SD	p
EPBPEMA (Total)	Male	196	3.40	1.02	
	Female	319	3.41	.90	.03 *
EAAS—Individual Action	Male	196	4.88	.71	
	Female	319	4.92	0.66	.26
EAAS—Emotional	Male	196	4.60	.55	
	Female	319	4.77	.42	< .001
EAAS—Collective Action	Male	196	3.09	.87	
	Female	319	3.20	.78	.04 *

Note. M = mean; SD = standard deviation. p values are from independent samples t tests. * p < .05. ** p < .01.

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Table 6 shows that participants' scores on the ecological modernization awareness dimension of the paid plastic bag application, the emotional environmental engagement dimension, and the environmental awareness and environmental attitude collective action sub-dimension differed significantly according to gender ($p < .05$). In contrast, no significant differences were found in the environmental awareness and environmental attitude individual action sub-dimension scores based on gender ($p > .05$).

Table 7. Results of ANOVA Tests for EPBPEMA and EAAS Scores According to Participants' Sociodemographic Characteristics.

Dependent Variables	Age	Education	Faculty Type	Economic Status	Occupational Status
EPBPEMA (Total)	.09	.57	.49	.05	.16
EAAS—Individual Action	< .001	.02 *	.33	.27	.16
EAAS—Emotional	.05 *	.05 *	.03 *	.09	.01 *
EAAS—Collective Action	.04 *	.04 *	.75	0.63	.34

Note. Values represent p values from one-way ANOVA analyses. * $p < .05$. ** $p < .01$.

Table 7 shows that participants' scores for the impact dimension of the paid plastic bag policy on ecological modernization awareness, the emotional environmental engagement dimension, and the environmental awareness and environmental attitude collective action sub-dimension differed significantly according to age ($p < .05$). However, the effect of the paid plastic bag policy on ecological modernization awareness did not differ according to educational status ($p > .05$). In contrast, scores for the emotional environmental engagement dimension and the environmental awareness and environmental attitude collective action sub-dimension differed significantly by educational status ($p < .05$).

Furthermore, Table 7 indicates that participants' scores regarding the effect of the paid plastic bag policy on ecological modernization awareness and the emotional environmental engagement dimension differed significantly according to the type of faculty from which they graduated ($p < .05$). No significant differences were found in the environmental awareness and environmental attitude individual action sub-dimension or the collective action sub-dimension based on faculty type ($p > .05$).

In addition, Table 7 demonstrates that participants' perceptions of the effect of the paid plastic bag policy on ecological modernization awareness and the emotional environmental engagement differed according to economic status ($p < .05$). However, economic status did not result in significant differences in the individual action or collective action sub-dimensions of environmental awareness and pro-environmental attitudes ($p > .05$).

Table 8. Correlations Among EPBPEMA, EAAS, and Their Subdimensions.

Variables	1	2	3	4	5
1. EPBPEMA (Total)	—				
2. EAAS (Total)	.257 **	—			
3. EAAS—Individual Action	.232 **	.914 **	—		
4. EAAS—Emotional	.152 **	.542 **	.282 **	—	
5. EAAS—Collective Action	.175 **	.783 **	.584 **	.271 **	—

Note. N = 515. Values are Pearson correlation coefficients. ** $p < .01$ (two-tailed).

Table 8 shows that there is a moderate positive relationship between participants' EAAS and their EPBPEMA status. There is also a moderate positive relationship between participants' individual action sub-dimension of EAAS and their EPBPEMA status. In addition, a high positive relationship exists between participants' individual action sub-dimension of EAAS and their overall EAAS. Furthermore, a moderately positive relationship was observed between participants'

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emotional environmental engagement of EAAS and their EPBPEMA status, while a highly positive relationship was found between the emotional environmental engagement of EAAS and overall EAAS.

Moreover, Table 8 indicates that there is a moderately positive relationship between participants' collective action sub-dimension of EAAS and the individual action sub-dimension of EAAS. A moderately positive relationship was also identified between participants' collective action sub-dimension of EAAS and their EPBPEMA status. Additionally, a high positive correlation was found between participants' perception of the collective action sub-dimension of EAAS and overall EAAS, as well as between the collective action sub-dimension and the perceived sub-dimension of EAAS. Finally, a moderately positive relationship was observed between participants' collective action sub-dimension of EAAS and the emotional sub-dimension of EAAS.

Table 9. Linear Regression Results Predicting Individual Environmental Action from Emotional Environmental Engagement (EAAS).

Predictor	B	SE B	t	p
Constant	3.02	.28	1.63	< .001
Emotional environmental engagement (EAAS)	.40	.06	6.66	< .001
Model fit: $R = .28$, $R^2 = .08$, $F(1, N - 2) = 44.33$, $p < .001$				
Durbin–Watson = 1.89				
Standardized residuals ranged from −2.93 to 2.01				
Cook's distance ranged from .00 to .03				

Note. Dependent variable = Individual action subdimension of the EAAS. All predictors were entered simultaneously using the enter method.

Table 9 shows that the regression model is significant, as the significance level is $p < .05$. According to the regression analysis conducted to predict the relationship, participants' emotional environmental engagement (EAAS) has a positive and statistically significant effect on their EAAS individual action dimension. The R^2 value, which represents the explanatory power of the model, was calculated as .080. This result indicates that approximately 8% of the variance in participants' EAAS individual action variable is explained by the independent variable in the model, namely the emotional sub-dimension of EAAS.

Table 10. Linear Regression Results Predicting Collective Environmental Action from Emotional Environmental Engagement (EAAS).

Predictor	B	SE	β	t	p
Constant	.987	.342	—	2.886	< .01
Emotional environmental engagement (EAAS)	.461	.072	.271	6.376	< .001
Model statistics:					
$R = .271$, $R^2 = .073$, $F(1, 513) = 40.65$, $p < .001$					
Durbin–Watson = 1.92					

Note. Dependent variable = Collective action (EAAS). All predictors were entered simultaneously using the enter method.

Table 10 shows that the regression model is significant, as the significance level is $p < .05$. According to the regression analysis conducted to examine the relationship, participants' emotional environmental engagement (EAAS) had a positive and statistically significant effect on the EAAS collective action dimension. The R^2 value, which represents the explanatory power of the model, was calculated as .073. This result indicates that approximately 7% of the variance in participants' EAAS collective action variable is explained by the independent variable in the model, namely the emotional sub-dimension of EAAS. This finding is consistent with recent studies demonstrating that

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affective processes play a crucial role in shaping pro-environmental behavior (Brosch, 2021; Bergquist et al., 2022).

These findings have important implications for debates on environmental justice and sustainability. Recent research highlights that policy acceptability, perceived fairness, and emotional responses are central to environmental policy effectiveness (Carattini et al., 2021; Drews & van den Bergh, 2020; Steg, 2021; Brosch, 2021). In this sense, policy legitimacy is closely tied to justice considerations, particularly in local contexts where policy impacts are unevenly distributed. This perspective aligns with emerging work on environmental and climate justice, which emphasizes the role of fairness, inclusion, and legitimacy in shaping sustainable transitions (Newell et al., 2021).

Table 11. Linear Regression Results Predicting Policy Legitimacy (EPBPEMA) from Environmental Awareness and Attitude (EAAS).

Predictor	B	SE	β	t	p
Constant	1.745	.279	—	6.262	< .001
EAAS dimension	.442	.073	.257	6.017	< .001
Model statistics: $R = .257$, $R^2 = .066$, $F(1, 513) = 36.21$, $p < .001$ Durbin–Watson = 1.98					

Note. Dependent variable = EPBPEMA. All predictors were entered simultaneously using the enter method.

Table 11 shows that the regression model is significant, as the significance level is $p < .05$. According to the regression analysis conducted to predict the relationship, participants' EAAS status has a positive and moderately significant effect on the EPBPEMA dimension. The R^2 value, which represents the explanatory power of the model, was calculated as .066. This result indicates that approximately 6% of the variance in the participants' EPBPEMA variable is explained by the independent variable in the model.

4. Discussion

These findings demonstrate that environmental policies operate not only through economic incentives but also through socio-emotional and normative processes. More specifically, the results provide strong empirical evidence that perceived policy legitimacy plays a central role in shaping environmental behavior by activating emotional environmental engagement. This finding corroborates existing research emphasizing the importance of affective processes in driving pro-environmental behavior (Brosch, 2021; Bergquist et al., 2022), but also extends this literature by demonstrating that emotional engagement functions as a mediating mechanism linking policy legitimacy to both individual and collective environmental action.

From a governance perspective, the findings contribute to regulatory governance and public administration scholarship by showing that market-based instruments operate as legitimacy-generating mechanisms rather than merely cost-imposing tools. This extends dominant economic approaches by demonstrating that the effectiveness of policy instruments depends not only on their capacity to alter cost structures, but also on their ability to generate trust, perceived fairness, and normative alignment among citizens. In this sense, policy legitimacy emerges as an active governance resource that facilitates voluntary compliance through socio-emotional pathways.

Moreover, the findings contribute to ongoing debates on environmental justice and sustainability by highlighting the central role of perceived fairness and policy acceptability in shaping behavioral outcomes. Consistent with prior research (Carattini et al., 2021; Drews & van den Bergh, 2020; Steg, 2021), the results indicate that environmental policies are more effective when they are perceived as legitimate and socially justified. However, this study advances the literature by demonstrating that legitimacy operates as a mediating mechanism through which justice considerations are translated into concrete environmental behaviors. The Turkish case further

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illustrates how these dynamics unfold in a middle-income context, where institutional trust and perceived fairness are particularly critical for policy effectiveness.

Finally, the observed variation across demographic groups suggests that environmental attitudes and responses to policy are socially differentiated. This finding underscores the importance of incorporating local socio-institutional dynamics into the design and implementation of environmental policies. Rather than assuming uniform responses, policymakers should recognize that the effectiveness of environmental interventions depends on how different social groups perceive and emotionally engage with policy measures. Accordingly, context-sensitive and legitimacy-enhancing policy design emerges as a key condition for achieving sustainable and socially embedded environmental outcomes.

5. Conclusions

This study demonstrates that market-based environmental policies operate through dual governance mechanisms: material deterrence and socio-emotional activation. Moving beyond conventional economic explanations, the findings provide robust empirical evidence that perceived policy legitimacy is a key driver of environmental behavior through its capacity to foster emotional environmental engagement. In doing so, the study shows that policy effectiveness cannot be reduced to cost sensitivity alone, but must be understood as a process shaped by institutional legitimacy and affective dynamics.

From a policy perspective, these results suggest that effective environmental regulation requires not only economic instruments but also governance strategies that enhance perceived fairness, transparency, and public trust. Policies that are perceived as legitimate are more likely to generate voluntary compliance and produce durable, socially embedded forms of environmental behavior. This highlights the importance of designing policy interventions that engage citizens not only as rational actors, but also as normative and emotional agents.

More broadly, this study makes a theoretical contribution to environmental governance and public administration scholarship by integrating legitimacy, affect, and justice into explanations of policy effectiveness. Specifically, it reconceptualizes policy legitimacy as an active governance mechanism and demonstrates how emotional engagement functions as a mediating pathway linking institutional inputs to behavioral outcomes. In this sense, the findings advance the "just sustainabilities" perspective by showing that sustainability transitions depend not only on technical efficiency, but also on the capacity of policies to align with principles of justice, legitimacy, and local socio-institutional dynamics.

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References

1. Beetham, D. *The Legitimation of Power*; Macmillan Press: London, UK, 1991.
2. Baron, R.M.; Kenny, D.A. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J. Pers. Soc. Psychol.* **1986**, *51*, 1173–1182.
3. Bergquist, M.; Nilsson, A.; Schultz, W.P. A meta-analysis of field experiments on pro-environmental behaviors. *J. Environ. Psychol.* **2022**, *79*, 101741.
4. Brosch, T. Affect and emotions as drivers of climate change perception and action. *Curr. Opin. Behav. Sci.* **2021**, *42*, 15–21.
5. Carattini, S.; Carvalho, M.; Fankhauser, S. Overcoming public resistance to carbon taxes. *Nat. Clim. Chang.* **2021**, *11*, 93–100.
6. Catton, W.R.; Dunlap, R.E. A new ecological paradigm for post-exuberant sociology. *Am. Behav. Sci.* **1980**, *24*, 15–47.
7. Drews, S.; van den Bergh, J.C.J.M. What explains public support for climate policies? *Clim. Policy* **2020**, *20*, 855–876.
8. Dunlap, R.E.; Catton, W.R. Struggling with human exceptionalism: The rise, decline and revitalization of environmental sociology. *Am. Sociol.* **1994**, *25*, 5–30.
9. Eckersley, R. *Environmentalism and Political Theory*; SUNY Press: New York, NY, USA, 1992.
10. Freudenburg, W.R.; Frickel, S.; Gramling, R. Beyond the nature/society divide: Learning to think about a mountain. *Sociol. Forum* **1996**, *11*, 361–392.
11. Gifford, R.; Nilsson, A. Personal and social factors that influence pro-environmental concern and behaviour: A review. *Int. J. Psychol.* **2014**, *49*, 141–157.
12. Hannigan, J. *Environmental Sociology*; Routledge: London, UK, 1995.
13. Levi, M.; Sacks, A.; Tyler, T.R. Conceptualizing legitimacy, measuring legitimating beliefs. *Am. Behav. Sci.* **2009**, *53*, 354–375.
14. Levi, M.; Stoker, L. Political trust and trustworthiness. *Annu. Rev. Polit. Sci.* **2000**, *3*, 475–507.
15. Mol, A.P.J.; Spaargaren, G. Environment, modernity and the risk-society. *Int. Sociol.* **1993**, *8*, 431–459.
16. Naess, A. Deep ecology. In *The Green Reader*; Dobson, A., Ed.; Andre Deutsch: London, UK, 1991; pp. 240–245.
17. Newell, P.; Srivastava, S.; Naess, L.O.; Torres Contreras, G.A.; Price, R. Toward transformative climate justice: An emerging research agenda. *Wiley Interdiscip. Rev. Clim. Chang.* **2021**, *12*, e733.
18. Steg, L. Values, norms, and intrinsic motivation to act pro-environmentally. *Annu. Rev. Environ. Resour.* **2021**, *46*, 277–292.
19. Tyler, T.R. *Why People Obey the Law*; Yale University Press: New Haven, CT, USA, 1990.
20. Tyler, T.R. Psychological perspectives on legitimacy and legitimation. *Annu. Rev. Psychol.* **2006**, *57*, 375–400.
21. World Wildlife Fund. *Plastics: The Facts*; WWF: Gland, Switzerland, 2005.