

## Article

# Environmental Consciousness in Local Sustainable Development: A Case Study of the Anti-Idling Policy in Taiwan

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**Abstract:** To address the increasing impact of global warming, Taiwan has devised a variety of activities to promote energy savings and carbon reduction. Although the city of Tainan was the first in Asia to enforce an anti-idling policy, the intersection between public value creation and local sustainable development has not yet been analyzed. Hence, this article explores the anti-idling policy in Tainan through the lens of social judgment theory (SJT). It also considers criteria related to the core values of environmental, economic, and social sustainability to understand the public values held by stakeholders in Tainan. The results of this article illustrate and dismantle the differences between several groups' understanding of public value as it relates to local sustainable development, and suggest the establishment of intersectoral collaboration and community participation regarding value perception. Although the case is specific to Taiwan, its characteristics are typical of local sustainable development globally, especially in Asia.

**Keywords:** public value; local sustainable development; anti-idling policy; intersectoral collaboration; community participation

## 1. Introduction

Cities need to be understood as urban ecosystems that are composed of interactions between their social, biological, and physical components [1]. The understanding of the perceptions between people and the environment is key to achieving sustainability [2]. Many scholars [3–6] have called for the integration of participatory, localized, and public perceptions on sustainability. In order to properly address the perceptions among different stakeholders on the sustainability of a city, a comparative analysis is needed.

The current trend of minimizing carbon emissions to reduce air pollution and promote global sustainable development has called increasing attention to the concept of an anti-idling policy. On the basis of the environmentally sound ideas of carbon reduction and energy savings through anti-idling policies (This type of policy states that motorists should turn off their engines after three minutes of no driving. In Tainan, this policy is the first step in an attempt to raise the public's awareness that when individuals change their habits, this can affect real change. Failure to comply with this policy will result in fines.), Taiwan has aggressively formulated relevant environmental protection policies. The city of Tainan was the first to formulate and promote an anti-idling policy in Taiwan. Therefore, the Environmental Protection Bureau of the Tainan City Government was honoured as

“The Most Creative Public Servant of Environmental Protection in Taiwan” by the Environmental Protection Agency (EPA) (The EPA is the highest authority for environmental protection in Taiwan. It is also the supervisory authority of each county and city environmental protection bureau. The EPA is responsible for environmental issues such as climate, water resources, and soil and water conservation. To mitigate climate change and reduce greenhouse gas emissions, the “Air Pollution Control Act” has been implemented.), affirming its efforts to maintain environmental quality and promote public value. Tainan set an example for many cities in promoting relevant policies. When pursuing legislation regarding “Autonomous Anti-Idling Regulations of Tainan City”, the Environmental Protection Bureau of the Tainan City Government held consultations to promote the policy and to solicit feedback [7]. However, the attendees invited to attend the public hearings were primarily public functionaries, scholars, and other experts from relevant agencies. By comparison, it seemed that the general public, non-profit organizations, and private sectors had limited opportunities to provide comments [8].

The expansion of the public’s participation in public affairs may lead to a prolonged period of decision-making and a significant increase in decision-making costs, resulting in poor administrative efficiency [9]. However, the consolidation of experts’ decision-making and the lack of the public’s comments will lead to policy blind spots and decision-making limitations [10,11]. Therefore, in a democratic society, to avoid experts’ monopolization of decision-making processes and to promote the transparency of information concerning public affairs decision-making, groups representing both the general public and the authorities implementing policies are included in the decision-making processes of sustainable development, in the hope that the procedural rationality of democracy and substantive rationality of multifaceted considerations can be included in policy formulation processes to create public value [12–14].

To create public value, public managers should consider cooperating with stakeholders from various sectors [15–17]. However, individual cognitive differences among various stakeholders may have differing effects on policies [18]. From the rise of the anti-idling policy in Tainan to the formulation of the “Autonomous Anti-Idling Regulations of Tainan City”, the Tainan government collaborated with multiple stakeholders in various sectors, but did not employ the community participation mechanism [19]. The city government aimed to remind the public sector about the provision of public services and share information regarding policy implementation via intersectoral collaboration and community participation. In doing so, the city government hopes to contribute to the health of Tainan’s citizens. The encouragement of community participation would enhance cross-sector collaboration and residents’ satisfaction with public services. It could lead the public sector to stimulate conscious change, while also satisfying residents’ public service needs. Most importantly, it will foster cross-sectoral cooperation in decision-making processes. Under such circumstances, the groups that participated in decision-making did not expand. After the community participation mechanism was introduced in 2019, the stakeholders’ commitment to sustainable development was thoroughly analyzed. Consequently, the decision-making opacity and the failure to clarify the core value of sustainable development became uncontroverted [8]. This study focuses on the “Autonomous Anti-Idling Regulations of Tainan City”, utilizing social judgment theory (SJT) (SJT is a psychological decision-making method that people commonly use when making decisions regarding public affairs. It is primarily used to comprehensively evaluate the environment’s influence on decision-making [20,21] to identify the difference between fact and value based on the community participation mechanism that was introduced in 2019 [22], so as to clarify the basis for determining and perceiving the value of such regulations and to elucidate the means by which public value is created in relation to local sustainable development. Therefore, the quasi-experiment of psychological cognition is adopted in this research to fully clarify the principles of cognitions and judgments of local multi-groups, in order to avoid decision-making errors and improve public policy quality [23].

## 2. Literature Review

### 2.1. Local Sustainable Development

In 1992, the United Nations Conference on Environment and Development (UNCED) presented “Agenda 21”, which announced that “governments, in collaboration with the national and international scientific community and in cooperation with international organizations, as appropriate, should intensify efforts to clarify the interactions between and within social, economic, and environmental considerations. Research should be undertaken with the explicit objective of assisting policy decisions and providing recommendations on improving management practices.” (UN Economic and Social Development, Agenda 21. Retrieved on 16 December 2010, from [http://www.un.org/esa/dsd/agenda21/res\\_agenda21\\_08.shtml](http://www.un.org/esa/dsd/agenda21/res_agenda21_08.shtml)). In addition, “Local Agenda 21” was submitted [18]. Local government plays the most important role in the local development of regions. In addition, it is widely accepted that, to achieve the global objective, it is necessary to promote projects by local government [24,25]. Therefore, in recent years, regional and local sustainable development has gradually aroused global attention.

During the promotion of “Local Agenda 21”, it is necessary to construct and develop a communication channel for promoting issues. Moreover, good partnership between public sectors and private sectors should be established. In 1996, the promotion of the Model Communities Program was initiated—14 cities or countries were selected to participate in the thematic project of “Local Agenda 21” to facilitate the promotion of consultation in “Local Agenda 21”. The agenda emphasized that the ICLEI and members following this agenda should assess its effectiveness after 1999. They should assess the most important issue: whether the public value aspects, such as environment, economy, and society, are adequately taken into consideration [24].

After 2000, many changes had taken place, particularly in terms of reforms related to European Union (EU) accession [26,27] and the harmonization of national legislation with the EU Acquis on environment and climate change [28]. Moreover, new sustainable development initiatives had been launched regionally and globally [29], prompting the need for a thorough revision of the NSSD. In September 2015, world leaders adopted the 2030 Agenda for Sustainable Development [30], including 17 Sustainable Development Goals (SDGs) and 169 targets [31,32].

### 2.2. Public Value in Sustainable Development

On the basis of the goals of “Agenda 21” and “Local Agenda 21”, local sustainable development can be regarded as a policy issue based on three foundations: environmental protection, economic development, and social harmony and justice. It seeks a balance of dynamic sustainability between the apparently conflicting aspects of environment, economy, and society to promote the sustainable development of human life [33]. Therefore, sustainable development should encompass all three of these core values.

#### 2.2.1. Environmental Sustainability

Because the sustainable development of the natural environment has a significant effect on human existence, the IUCN, UNEP, and WWF [34] have proposed that it is necessary to improve human quality of life without exceeding the assimilative capacity of the ecosystem, to attach importance to the balance between human lifestyles and the earth’s capacity, and to protect the vitality and biodiversity of the earth. On the basis of this concept, Barbier [35] suggested that the general welfare that one generation passes to the next should not be less than what the previous generation passed to the current generation. If current economic or social behaviors diminish the welfare of the subsequent generation, it is necessary for the first generation to make compensations. Forman [36] promoted sustainable development based on the concept of the ecosystem and suggested that sustainable development should seek the best ecosystem to support ecological completeness and a sustainable human living environment. Markandya and Pearce [37] argued that “in terms of sustainable development, it is

necessary to achieve the most adequate use of current resources under the premise that future actual income should not be reduced.”

Decision-makers currently face the challenge of navigating through a wealth of disparate information. As sustainability is primarily a transdisciplinary issue, no single metric exists that is able to independently and solely address the full complexity of sustainability [38,39]. In consideration of environmental and ecological sustainability, environmental sustainable development should focus on ecological balance, natural preservation, sustainable use, technological advances, and adaptive lifestyles. In terms of technology, the objective is to establish new energy technologies to reduce the environmental impact and to develop environmentally friendly technologies, effective energy-saving technologies, and recyclable products. In terms of lifestyle, the objective is to change patterns of consumption and to reduce environmental burdens related to food, clothing, housing, and transportation [40]. Specifically, environmental sustainability by means of mitigating greenhouse gas (such as CO<sub>2</sub>) emissions represents a recent pressing agenda [41,42].

### 2.2.2. Economic Sustainability

With the development of the field of environmental ecology, scientists and the public have gradually come to appreciate the close and interdependent relationship between human beings and their environment; they are now aware that human economies develop in a relationship with the natural environment. Therefore, ecology has a substantial effect on sustainable development—it is the field related to the economy of nature. In other words, compared with the human-oriented traditional economy, ecology represents the economics of the natural environment. The application of ecological economics may be beneficial to clarifying and interpreting issues concerning sustainable development; in this way, ecology and economics may be properly combined [43]. Given this context, the assessment of economic development and effectiveness should be expanded to include the overall environmental and ecological system, with the goal of gradually developing the concept of ecological economics [44].

In the recent past, global society has achieved some significant successes, such as the reduction of ozone-depleting chemicals and the increased use of renewable energy sources, as well as the decoupling of emissions and economic development [45], becoming more efficient in terms of production, consumption, and the re-use of resources and materials. As resource and material consumption grows, there is a decline in emissions, energy, and material use per output [46]. According to the combination of environmental ecology and economic development, sustainable development can be defined as the maximization of the net profit of economic development while ensuring the quality of natural resources and services [35]. To achieve the objective of economic sustainability, sustainable development should focus on regional development, resource allocation, productivity enhancement, structural optimization, and supply–demand balance. As for the objective and direction of the new economic system, there is a need to formulate specific policies and to take specific actions to coordinate rules related to environmental protection, environmental protection taxation, and the pollution emissions of various industries [40].

### 2.2.3. Social Sustainability

Barry [47] suggested that, in terms of the objectives of social practice, sustainable development can be regarded as conversation creation, rather than a product given by authority. Therefore, the implementation of sustainable development should be subject to the formation of democratic willingness. Van Steenberg [48] also indicated that sustainable development is a catalyst that can urge governments, experts, and civil groups to jointly participate in sustainable development goals and processes. On the other hand, it can change individuals’ short-sighted concept of economic interest and lead them to seek a living space where global sustainability can be maintained. Moreover, Jabareen [49] associated social sustainability outcomes with urban planning and design principles, such as compactness, mixed use, density, sustainable transport, and greening. Eizenberg and Jabareen [50] stressed diversity as the constitutive process ensuring social sustainability. Dempsey et al. [51] specified

a comprehensive list including education and training, inter- and intra-generational social justice, participation and local democracy, and so on.

Environmental issues are not only the result of environmental protection engineering and economic development, but also the system of interdependent social interactions and people's exchange of interests. Civil education providing explanations of ecological concepts to citizens is also highly valued [51]. Consequently, sustainable development should also take into account civic literacy; people's understanding of subjective values of moral, ethical, intellectual, and cultural concepts; and the effects of civic resources on sustainable development performance [52]. These components comprise the basic structure of civic culture [49]. Furthermore, the promotion of local public affairs in a democratic society directly affects numerous stakeholders. Thus, in addition to reducing the government's control and intervention, it is necessary to guide the public to participate in local activities and to cultivate their appreciation of social sustainable development [53]. Moreover, in order to resolve the conflicts caused by differences among multiple cultures and values, Barbier [35] suggested that the needs of the poor should be satisfied first based on the concept of social equality and generational balance. Furthermore, while raising people's standards of living, it is important to consider the welfare of disadvantaged citizens. To achieve the objectives of social sustainability, sustainable development should focus on social development, social allocation, social equity, and the balance of interests. New social values should be established in the modern system of democratic participation that emphasize the correlation between theories of civilization and the environment [40].

On the basis of the above criteria, only environmentally sustainable economic development can improve economic development for the sake of human welfare, and the improvement of human welfare cannot solely focus on the increase in economic growth or national income. The pursuit of social equity, safety, justice, and a dignified quality of life is also important for the improvement of human welfare. Therefore, sustainable development can be regarded as a comprehensive and systematic construct. It involves many different aspects, including environmental ecology, economy, and society, and is implemented via three systemic linkages. First, sustainable development is based on the sustainable utilization of natural resources and a healthy ecological environment. Second, its developmental promise is economic sustainability. Third, its objective is the overall improvement of society [54]. The public value of sustainable development cannot be fully presented until the aforementioned three systemic linkages are interactively and simultaneously accounted for.

### *2.3. Citizen Participation and Public Value Creation*

Given the local and social properties of sustainable development, citizen participation ought to be important in environmental governance. However, environmental issues are usually also defined as scientific, wherein expert knowledge is more important than the opinions, demands, or needs of citizens [55]. For that reason, it is necessary to flexibly select assessment scales based on the core concepts of intersectoral collaboration and community participation. It is particularly important to analyze the participation of stakeholders from various sectors [56].

From the perspective of intersectoral collaboration and community participation, as long as the citizens in a social group stand for public good and aggressively participate in public affairs, the members in it must have a strong sense of belonging and identity. On the contrary, if the citizens in a social group lack the tendency of active participation in the social and political environment, this social group will inevitably become stagnant. If citizens care about public affairs and participate in activities concerning joint living, their self-identity will be developed unconsciously through their participation. Moreover, their sense of belonging and identity will also be strengthened. Such public good or participation in policy formulation can also be regarded as the representation of public value [57–60].

Sustainable development is a long-term process of social transformation. Thus, a sustainable society—in addition to indicating that the environment on which people depend for survival is “sustainable”—entails joint efforts in economics and technology, laws and enforcement mechanisms,



and culture and civil society [61,62]. In other words, to observe “sustainability” changes in the long-term evolution process, it is necessary to observe the relationship between different groups and sustainable issues. In this way, sustainability-focused messages and trends regarding environmental, economic, and social issues can be promoted to local groups [61–63]. Through the dialogue of local groups on sustainable issues, the core values of local sustainable development will gradually become clear, which is also a process of creating public value [8,15,64,65].

Although public participation in the decision-making process offers many advantages, it also faces certain obstacles. Governments and experts lack the incentive to incorporate public participation into their decision-making processes [66]. As a result, when the public lacks policy-related information, conflict between the general public and governmental officials will ensue. Therefore, in terms of governmental sectors, a prerequisite for public participation is a basic “knowledge of politics” [67]. If the public fails to possess such knowledge, its lack of participation will allow the government to act without public input, resulting in an “ignorance is bliss” mentality [68].

To avoid the negative effect of citizen participation on decision-making and to effectively capitalize upon it, managers must explain public affairs according to differences in contexts, civic participation groups, and public decision-making models to attract the public’s participation. Such explanations can encourage positive participation, developing the public value of a “well-informed public” and engaging diverse stakeholders in a democratic dialogue [15,66,69].

### 3. Methodology

#### 3.1. Background of the Anti-Idling Policy

In Asia, Japan was the country to pay close attention to idling issues. However, its anti-idling action mainly involved the promotion of slogans prohibiting vehicle idling in all parking lots, so as to avoid air pollution, slow down global warming, and improve human health. Comparably, based on the sustainable development plan for a healthy city, the Tainan City Government took the issue more seriously and acted more aggressively, as it began to enforce the “Autonomous Anti-Idling Regulations” in 2008 [7].

Tainan was the first Asian city where an anti-idling policy was legislated and enacted. Its policy achievement was also reported by NHK news in Japan. (Compared with the penalty clauses in Tainan, the enforcement of Japan’s anti-idling focuses more on the terms of parking lot use to avoid air pollution caused by idling vehicles [70].) Because Tainan was the first city to plan and promote an anti-idling policy in Taiwan, there was no precedent in terms of the formulation of policies and laws. To ensure that the policy formulation met actual needs, the Environmental Protection Bureau of Tainan City Government adopted the mechanisms of intersectoral collaboration and community participation based on the “Tainan City Healthy and Sustainable Green City Energy Saving and Carbon Reduction Project” [19]. The Bureau hoped to support intersectoral collaboration, promote intersectoral learning, and solve problems encountered during policy promotion through experience-sharing among senior administrative supervisors and experts [71]. The Bureau then invited relevant public sectors to a “Public Sector Consultation on the Draft of the Autonomous Anti-Idling Regulation”. A preliminary legislative consensus was reached after a discussion among various public agencies. However, as the community participation mechanism was not employed, the other stakeholders’ commitment to sustainable development was not thoroughly analyzed. Consequently, the decision-making opacity and the failure to elucidate the core values of sustainable development became controversial.

To bridge this gap, the Bureau held a community participation mechanism-based “Public Hearing on the Draft of the Autonomous Anti-Idling Regulations”, inviting the general public, non-profit organizations, and private sectors to participate in the discussion. After a series of public hearings held in 2019, the comments that emerged from these forums on the “Autonomous Anti-Idling Regulations” of Tainan City served as the basis for amendments to the regulations, leading to the law’s final formulation [7].

Because stakeholders represented different groups, there were differences among their public policy values [72]. Tainan's anti-idling policy would have great impacts on diverse and complex local stakeholder groups; however, the policy formulation primarily involved the decision-making perspectives of governmental departments and experts, while the comments from other groups were ignored [8]. The emphasis placed on the perspective of specific groups might unduly influence public policies in a democratic system. Thus, this study aimed to deconstruct and analyze the issues concerning the value cognition of local sustainable development [72]. It also intended to clarify various groups' positions on the "Autonomous Anti-Idling Regulations" of Tainan City through the utilization of SJT, according to Hammond and Joyce [20], and to identify the difference between fact and value [21].

### 3.2. Social Judgment Theory (SJT)

During the actual formulation of public policies, how decision-makers use objective fact judgment and subjective value judgment to develop the best decision is a complicated process, involving the scope of psychological decision-making. On the basis of the "Lens Model" [73], SJT was developed by Hammond et al. [74], commonly used by people when faced with multiple public affair cognition and judgment, and has been widely applied to the comprehensive evaluation on influence of environment [75].

The main point of SJT is to describe the combination of decision makers' weights and information cues. As such, the confirmation of cues, judgment analysis, or policy capturing makes up the core components of the principles of decision-makings and covers the main steps of typical SJT analysis [20]. SJT aims to explore the integration of decision-makers with different cues and environmental perceptual information. Through the cognitive process captured by the judgment principle, the clue setting status (including the number and function graph form) is presented so as to describe the cognition of values like morality and ethics and to reflect the consistency record of the judges [75]. The SJT questionnaire mainly embraces the representative design principle, from cognition to quasi-rational judgment, paying attention to how the subject obtains stimuli to judgments and confirming psychological cognition priorities such as achievement, relative weight, and cognitive consistency using idiographic statistical analysis [76]. Doyle and Thomas [77] explain the technique of judging principles, emphasizing that the "representative design" (According to the quasi-experimental principle, the "minimum sample size" of 10–20 people can be investigated theoretically. The representative principles can be adopted in questionnaires to representatively obtain interview results [76]. For this reason, the representative principles are adopted and the idiographic statistical analysis is also used to confirm the priority of psychological cognition, weights, and cognitive consistency) of Brunswik [73] is closer to the experimental case of simulating the real world. The design of the SJT questionnaire is different from a general questionnaire design. The principle of "representative design" is mainly used to influence the reliability and validity of the SJT questionnaire. Although it is affected by disturbance variables such as the testimony of the subject's intelligence, genders, and motivational emotions, it mainly depends on the correlation of the decision-making reference variables. Moreover, the cognitive feedback influences the actual judgment results of the decision makers (In most studies, the coefficient of determination means the measure of fitness for a linear complex regression model [78]. The coefficient of determination obtained by the complex regression model can be used to estimate the cognitive consistency of each decision maker in making judgments. This cognitive consistency is used to indicate the coefficient used by the decision maker for the decision reference variable. The higher the consistency of the judgments, the higher the quality of the judgments [79]).

Regarding the judgments, achievements, or consistency between decision makers refers to the linear correlation coefficient between the criteria and individual decision-making—that is, the quality of judgment of public value variables by local public groups. The higher the judgment quality, the lower the cognitive difference among decision makers, and the better the decision maker's judgment quality. In short, in SJT's study, the relative weight indicates the importance of each decision reference variable in the mind of the decision maker, and the cumulative relative weight is 100%. In other

words, the decision reference variable is prioritized in the subject's mind. In addition, the function form represents the function relationship between each decision reference variable and the decision target. It can be explained by the function relationship between beta ( $\beta$ ) weights, decision criteria, and decision reference variables in the complex regression model. The functional type of the public group is positively correlated or negatively correlated, and the opening parabola is the best or the worst.

According to the above, SJT is a social study based on quasi-experiments. Social experimentation is one of the most common ways to monitor whether a particular public policy achieves its intended policy objectives [70]; it applies the experimental methods used by natural scientists in the laboratory for public affairs to monitor the impact of public policies on the situation of the social status quo. Because the experimental venue for public policy is "social" and its experimental object is "person", it is extremely difficult to control the changing situational factors. However, the quasi-experiment of social research is a process of systematically manipulating policy actions to more accurately understand the source of changes in policy outcomes, and thus remains a way to monitor policy outcomes. In this study, the researchers conducted local sustainable development of different value variables, although they did not have a high degree of control over the distribution of the subjects. On the basis of the quasi-experiment of social research, the researcher adopts the convenience sampling mode to select the subject and focuses on the social research of the subject's psychological cognition and internal validity. This also helps produce the ability to make effective causal inferences from action to outcome [80]. Therefore, policy analysts can also monitor the situation through the policy action of the social quasi-experiment in this study and consider whether to initiate larger policy actions.

### 3.3. The Research Framework

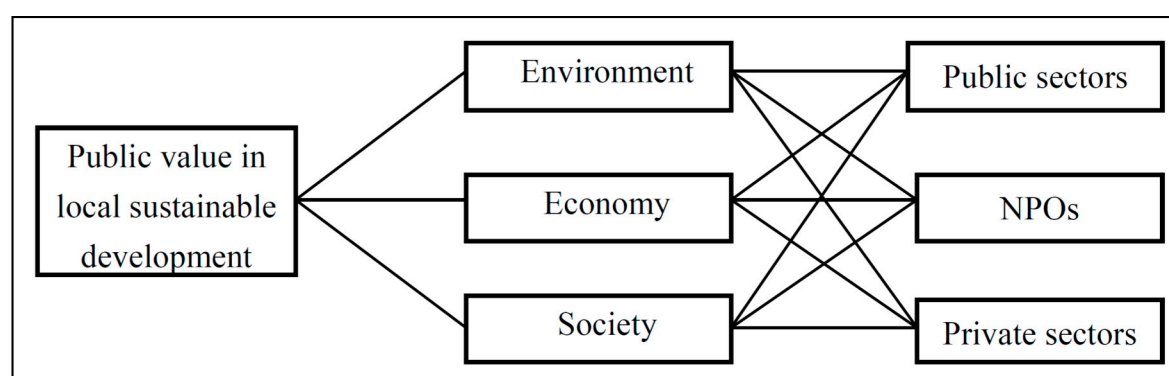
On the basis of the theoretical framework of the United Nations' "Agenda 21" and numerous other studies, sustainable development comprises three aspects: the ecological environment, economic sustainability, and overall social progress [35–37,43,66,81,82]. Therefore, this study utilized the core value indicators of the environment, the economy, and the society as the criteria for determining the value of local sustainable development.

In this context, the implementation of the anti-idling policy in Tainan City is directly related to the quality of life of the citizens, and the anti-idling policy also involves multiple factors of sustainable development affecting the environment (exhaust emissions from vehicles), social pressure (motor vehicles and population density), and the economy (consumption changes and purchasing power). As the identification of clues is the typical first step of social judgment theory [20,83], in order to explore the improvement of idling in Tainan, this study adopts the three core values of sustainable development: the ecological facet, the economic facet, and the social facet. Each indicator serves as a reference variable for the value judgment of the anti-idling sustainable development policy. Furthermore, combined with the judgment and analysis structure, the environmental cognitive structure of the people and the government was constructed in order to explain the significance of each core value (Table 1 and Figure 1).



**Table 1.** Core values of local sustainability.

Core Value Dimension	Content	Examples
Environment	Ecological balance, nature conservation and sustainable use, establishing new energy technologies, effective energy-saving technologies and recyclable products, changing consumption patterns to reduce environmental burden	Environmental maintenance, ecological environment management, reducing exhaust gas from cars and locomotives
Economy	Regional development, resource allocation, productivity layout, structural optimization and supply-demand balance, coordinating environmental regulations of various industries, environmental taxes and pollution emission trading	Reducing the density of steam produced by locomotives and the population; environmental alienation and spatial friction
Society	Social development, social distribution, social justice and balance of interests, establishing a modern democratic participation system that emphasizes the balance of civilization and the environment	Tracking the numbers of cars and motorcycles purchased; changing people's consumption patterns

**Figure 1.** Research framework.

For this study to fully reflect the composition of policy stakeholders, the subjects were divided according to sector, including the public sector, non-profit organizations, and the private sector. The study included a face-to-face quasi-empirical experiment regarding the subjects' value cognition. In terms of the public sector, the research subjects were those who needed to understand the enforcement of the anti-idling policy. Therefore, the 17 research subjects included inspectors from the Division of Air and Noise Pollution, the Environmental Protection Bureau of Tainan City Government, and the operators who were familiar with administrative environmental procedures at the Division of Waste Disposal. In terms of non-profit organizations, 20 civic-group representatives who had actively participated in the forums related to the anti-idling policy from 2011 to 2018 were selected as subjects. In terms of the private sector, 20 stakeholder group representatives of the Tainan City Taxi Association, the Tainan City Federation of Trade Unions, and the Tainan Automobile Commercial Association were selected as subjects (These group representatives from the private sector included stakeholders who would be directly influenced by the anti-idling policy and local representatives who had actively attended the public hearing for expressing opinions and policy formulation during the promotion of the policy. Therefore, this study selected these group representatives as the major subjects, meeting the representative design principle). The study included a questionnaire on subjects' cognition. It was hoped that the data obtained from the subjects' questionnaires could clarify the cognitive consistency, relative weight, and differences and similarities between function patterns.

#### 4. Results and Discussions

On the basis of the concept of value sharing in civil society, local public groups should actively participate in public affairs for the purpose of promoting environmental sustainability. In the process of promoting local sustainable policies, stakeholders should actively explore the public value pursued by the policy development and define the core values of diverse communities in the process of local sustainable policies, so as to promote, change, and even shape the public value that contributes to a sustainable environment [84]. This study focused on the analysis of public perception on sustainability of Tainan's stakeholders [13,85]. Therefore, stakeholders acting as the representatives of each group were mainly selected as the subjects. This study used idiographic statistics to verify the priority order of psychological cognition, such as decision-making performance, cognitive consistency, and so on, in order to obtain the information on how policy stakeholders are affected by judgments.

##### 4.1. Cognitive Consistency

The decision-making variable of cues utilization relates to making predictions or explanations according to the linear regression model between individual decision-making and the criterion. Cognitive control or cognitive consistency in decision-making is a stable and nonrandomized decision-making approach, where the first decision is consistent with the second decision, and the criterion information is fully utilized by the subject [76]. In this study, cognitive control was employed by the Tainan City Government in the determination of the public value of local sustainable development according to individual perception factors, such as information imparted. The coefficient of determination for the multiple regression model could thus be calculated as the basis of cognitive consistency among the decision-makers of different groups (Table 2).

**Table 2.** Cognitive consistency.

	R	R <sup>2</sup>
Public Sectors	0.95	0.91
NPOs	0.94	0.89
Private Sectors	0.88	0.78

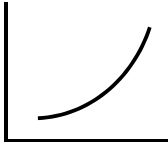
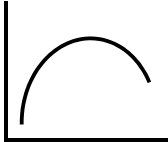
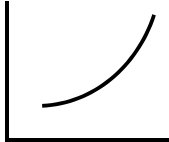


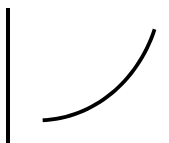
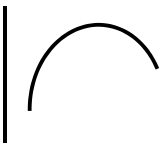
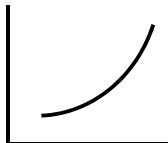
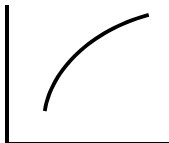
The coefficient of determination obtained from the multiple regression model can be used to estimate the cognitive consistency of various decision-makers' judgments. Cognitive consistency is the coefficient representing decision-makers' use of criteria. The larger the coefficient, the higher the decision-maker's decision consistency, that is, the higher the decision-maker's judgment quality [35]. The assessment of subjects' cognition and judgment of local sustainable development showed that the coefficient of determination for the public sector, non-profit organizations, and private sector was 0.91, 0.89, and 0.78, respectively. The results showed that as long as the representatives of various groups in Tainan City could fully utilize the criteria information of "environment, economy, and society", and their cognition and judgment concerning the value of local sustainable development was consistent, a stable and nonrandomized decision-making approach could ensue. The results showed that the judgment quality of various decision-making groups maintained a rational and acceptable level.

##### 4.2. Relative Weight and Function Form

Relative weight denotes the level of importance of each criterion in decision-makers' minds. The cumulative relative weight was 100. The function pattern denotes the functional relationship between each criterion and the goal of decision-making. Researchers can evaluate the decision-makers' preference according to linear and non-linear patterns [76]. In this study, the relative weight was the value used to assess the core value of local sustainable development among local groups in Tainan City, including the public sector, non-profit organizations, and the private sector. This study used multiple

regression analysis to estimate the level of importance of various criteria to the decision-makers (Table 3).

**Table 3.** Relative weight and function form.

Subject	Criterion	Environment	Economy	Society
Public Sectors	Relative weight	28	43	29
	Function form			
NPOs	Relative weight	41	20	39
	Function form			
Private Sectors	Relative weight	15	54	31
	Function form			

Note: The vertical axis displays the scores as assessed by decision-makers, and the horizontal axis displays the assessment indicators randomly organized by criterion.

As shown in Table 3, the relative weights of environmental value, economic value, and social value perceived by the public sector, non-profit organizations, and the private sector were (28, 43, 29), (41, 20, 39), and (15, 54, 31), respectively. The results showed that although the public and private sectors viewed local sustainable development differently, they both assigned the greatest importance to economic value. Contrarily, non-profit organizations attached more importance to environmental value and social value.

In this study, the function pattern was the value used to determine the core value of local sustainable development according to the public sector, non-profit organizations, and the private sector in Tainan City. The results revealed a functional relationship between the criteria (i.e., environmental value, economic value, and social value) and the goal (i.e., the core value of local sustainable development in Tainan), suggesting that there were differences in the preferences and cognition of perceived environmental value, economic value, and social value among various decision-makers. The difference was subject to the distribution and trend of curves. Table 2 shows the function patterns of the public sector (linear, non-linear-parabola opening downwards, and linear), non-profit organizations (linear, linear, and linear), and the private sector (non-linear-parabola opening downwards, linear, and linear). Further analysis found that although the function patterns were generally divided between linear and non-linear, there was a significant difference between patterns of the same types.

In terms of the public sector, the functions of environmental value, economic value, and social value were positive-slope linear function, non-linear function, and positive-slope linear function with increasing marginal utility, respectively. These results indicate that the subjects representing the public sector agreed that the public value of local sustainable development could be established when the environmental and social values ranked highest among their judgment criteria. In contrast, economic value should be moderate. When the value placed on the economy was high, it did not necessarily support the creation of public value related to local sustainable development.

In terms of non-profit organizations, the function patterns of environmental value, economic value, and social value were positive-slope linear function with increasing marginal utility, positive-slope linear function with decreasing marginal utility, and positive-slope linear function with increasing marginal utility, respectively. Although the slope of all three functions was positive, the function pattern for both environmental value and social value was a positive linear function with increasing marginal utility. It could be inferred that the subjects representing non-profit organizations understood the positive developmental trend of these two values before complete assessment data had been collected. However, as the environmental and social values increased, they became more likely to encourage public value related to local sustainable development. As for economic value, its function pattern was positive-slope linear function with decreasing marginal utility. Therefore, these subjects suggested that although the importance placed on economic value was beneficial to local sustainable development, once the impedance reached a certain point, the core value of local sustainable development should no longer be subject to the economic value. Therefore, the marginal utility gradually decreased.

In terms of the private sector, the function patterns of environmental value, economic value, and social value were non-linear, positive-slope linear function with increasing marginal utility, and positive-slope linear function with decreasing marginal utility, respectively. In other words, the subjects representing the private sector suggested that local sustainable development should place importance on the environmental value. However, the level of importance attached to the environmental value should gradually decrease. Meanwhile, the level of importance attached to the economic value and social value should gradually increase. Thus, subjects from the private sector appear to emphasize economic and social values. Further analysis revealed that the function pattern of economic value was positive-slope linear function with increasing marginal utility, and that of social value was positive-slope linear function with decreasing marginal utility. Therefore, representatives of the private sector placed greater importance on economic value than on social value.

## 5. Conclusions

To promote local sustainable development and achieve the objective of creating public value as well as legitimacy, it is necessary to probe core public values [15–17,86]. As Tainan City was the first Asian city to enact an anti-idling policy, this article analyzed the perceived value of local sustainable development by subjects from various sectors in Tainan City. Although the policy is local to Taiwan, its characteristics are typical of local sustainable development globally, especially in Asia.

First, the research subjects' different decision-making and function patterns of cognitive judgment regarding the formulation of the anti-idling policy in Tainan City demonstrated that decision-makers in the public sector and other local groups had different perceived values. However, the value perception model was not static and appeared to vary according to subjects' satisfaction with specific values. Therefore, to establish public value, it is necessary to enable personnel participating in policy formulation to distinguish between aspirations and reality in terms of the three core values (environmental, economic, and social values) of sustainable development [22]. Various local groups' cognitive trends and value decision-making models regarding sustainable development should be taken into account when promoting such policies in the future.

Second, this article clarified the value judgment basis for sustainable development policies from the perspective of multiple stakeholders. It was found that local public affairs managers should conduct a quasi-empirical study with a reliability test to systemically analyze the public decision-making perception principle and criterion weight distribution for local sustainable development issues. Moreover, they should offer explanations and develop policies according to different contexts, the groups participating in public affairs, and the public decision-making models. For example, the representatives of the public and private sectors attached importance to economic value, whereas non-profit organizations attached importance to environmental and social values. Therefore, different policies should be formulated. To promote local sustainable development, it is necessary to pursue a

dynamic sustainable balance between the seemingly conflicting economic, environmental, and social value aspects [33].

Third, to avoid the negative effect that citizens may have on decision-making [68] and to optimize the effect of civic participation, local public affairs managers should consider expanding community empowerment activities and normalizing the establishment of intersectoral collaboration and community participation to increase the level of exchange and interaction regarding value perception among the public sector, experts, and local groups. Such interaction may increase the public's participation, knowledge, and sense of belonging and identity in a given social group [72]. It is hoped that the undue emphasis placed on the value perspective of an individual decision-making group can be balanced with the value cognition of other groups, thereby increasing the positive effect of civic participation on public affairs [56].

Finally, and most importantly, under the concept of sustainable development, local government would no longer be the dominant actor in local affairs, but would instead be cohesive and maintain cooperative relationships with relevant governments, organizations, groups, and individuals. Thus, it would be regarded as simply one of the participants in local sustainable development [64]. On the basis of the concept of value sharing in civil society, local public groups should actively participate in public affairs for the purpose of promoting environmental sustainability. In the process of promoting local sustainable policies, we actively explored the public value pursued by policy development and defined the core values of diversity in the process of participation in the formulation of local sustainable policies. Through this approach, it is possible to promote, change, and even shape the public value that contributes to a sustainable environment [84]. Therefore, by stimulating the connections of the various communities in civil society and the public interest gained through the dialogue of value sharing, a result can be achieved that is far better than the sum of individual private interests [87]. Only in this way can local sustainable development and the creation of public value be achieved in the process of establishing an anti-idling policy [84,88].

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