

## Article

# Why People Do Not Keep Their Promise: Understanding the Pro-Environmental Behavior in China

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**Abstract:** The promise-implementation gap is a particularly salient feature in promoting individuals' pro-environmental behavior (PEB). Many individuals are becoming aware that their past behavior has not actually been in line with the norms they have made promise to. Prior studies have suggested an array of constraints restricting individuals' pro-environmental involvement. In addition to individuals' behavioral incapability, the said inconsistency can also be traced back to the affected willingness, hard trade-off decisions, and/or the failure of stakeholders' collaboration. Based on the line of reasoning, this research develops an attitude model and frames the potential types of gaps from the perspective of attitude formation and transition surrounding PEBs. The promise-implementation gap is closely related to a sequence of attitudes showing great motivation differences from being reactive to reactive-active transition and to the active-proactive transition. The paper contextualizes the model to examine the promise-implementation gap in the Chinese environmental context. Importance of this context is high with quite mixed economic and social development across the country, which is the same across the world. The application of the model in the Chinese context justifies the validity and generalizability of the theoretic framework. The paper contributes a novel understanding of the promise-implementation gap, and illuminates potential analytic measures and managerial implications for literature of this stream.

**Keywords:** pro-environmental behavior; promise-implementation gap; environmental attitude; attitudinal transition; China

## 1. Introduction

In recent years, environmental degradation issues have been catching considerable attentions. Meanwhile, policymakers are being more concerned about the antecedents of pro-environmental behaviors (PEBs). People's environmental awareness and willingness to contribute to the environmental well-being seems to be a rising trend in which individuals want to take environmental responsibility, and are even willing to put them into concrete practices and encourage a pro-environmental lifestyle in the whole society. PEBs can be defined as the behavior consciously adopted by individuals to seek to minimize the negative impact on the natural world and maximize benefit to the environment in a sustainable way [1]. To promote PEBs, scholars have attempted to examine the main factors underlying PEBs: from the analysis levels of individual factors, public settings and economic development, to those of social, psychological and anthropological points of view, and contributing a considerable number of theories which can be used to explain for—and influence—particular behavior: the Theory of

Norm Activation Model (NAM), the Planned Behavior (TPB), the Value Attitude Behavior (VAB) and Attitude-Behavior-Condition (ABC) model, and the Value-Beliefs-Norm (VBN) theory.

Despite growing evidences seemingly showing that people express commitment to the environment, participation in PEBs rarely mirrors the strength of this commitment [2,3], which we call the promise-implementation gap. This paper reports about comparable approaches that define associated “gaps” such as the attitude-action gap [4,5], the knowledge-action gap [6,7], and the value-behavior gap [8]. We classify the relevant findings into two dimensions: (a) human subjective factors such as knowledge and experience; and (b) more objective factors such as the financial state, time and facility obtainable, which can limit the capability of environmental behavior. Having access to insights on objective and subjective factors/antecedents of behavior can accumulate favorable behavioral consequences, whereas the lack of them may lead to unethical and/or anti-ecological behavior. However, problems arise, as the individual who has the resource access may not do better than the one who does not. A typical example is that the federal government of U.S.A. shows a large recession on the greenhouse issue, while some organizations of certain developing countries view it seriously as an important sustainable public issue, and move progressively forward [9].

Turning to the academic points of view, we may be able to see a great difference applied in PEBs and the promise-implementation gap, respectively. The former focuses on the formation mechanism, a dynamic manner, while the latter draws conclusion from sectional data, a static fashion. It cannot be denied that the promise-implementation gap can manifest quite different features in different settings, especially in the formation of PEBs, from the affected willingness with no associated actions [10], through so-called window dressing, to one-shot deals with good intentions, and to sizable eco-actions that, however, prove hard to continue. Understanding the antecedents of the promise-implementation gap may have broader behavioral implications than extant literature has shown. In general, research has focused on the ‘want-can-do’ sequence (in which Kennedy and Mcfarlane portray the environmental behavior in Canada [8]). However, behavioral attitudes can also include: “I don’t really want to”, or “I can’t but I have to”, or “I want to but don’t want to now”, or “I really want to but it is too hard to keep it up”, and so on. A richer behavioral repertoire is necessary to re-focus on in order to figure out how the promise-implementation gap can be overcome.

For instance, macroscopically, the environmental Kuznets curve (EKC) hypothesis sheds light on the relationship between the growth of economy and the environment focusing on the well-believed “grow first clean later” procedure in which people will not take a green lifestyle until the economy surpasses a turning point, when economic growth can provide the resources and technology to tackle the problem of the environment—despite their individual commitment to a healthier environment [11,12]. A lack of money can clearly prevent individuals—who hold pro-environmental values—from the sustainable purchase of more expensive, environment-friendly products. However, what if this is influenced by “perceptions” of their own willingness to purchase products (for instance as a trade-off between economic well-being and personal health), or if the perception prevents them from taking action to lower costs, or developing alternative approaches to implement their PEB? There are subjective and objective dimensions of these types of considerations that need to be understood in order to bridge the intention-realization gap. In this regard, motivational research shows that actors rarely develop singular approaches and motives over time—partly a result of difficulties they have experienced with finding what motivates them as well as changes in attitude and motivation over time. Overcoming the intention-realization gap represents a “mixed motives” game that is extremely hard to map and manage—for individuals as well as for organizations. Bridging these gaps in different regulatory and cultural contexts requires different managerial and policy practices. This makes it difficult to compare the experience on a cross-country basis. Relevant distinctions have been made between developed and developing countries. However, what about in mixed systems? These are found in countries in which individuals and governments acknowledge the importance of overcoming the gap, but are nevertheless trapped in ambiguity regarding the right approach to undertake. Such a mixed context can be found in China, where the high regional imbalances in the social and economic development exist, but are also

interesting initiatives to leap-frog the western developed countries' efforts in the implementation of environmental systems and support of PEB behavior. Thus, the study of this stream shall be of great essence for policymakers in introducing differential effective strategies on PEBs in highly complex situations, where various types of promise-implementation gaps are often the case. The contribution of this study is threefold. Firstly, from a theoretical standpoint, this paper sheds light on the mechanism of the attitude formation in addressing why many promises of environmental commitment have not delivered actual effective behavioral outcomes. This study re-frames and re-interprets the findings of prior studies. We suggest that inconsistencies in findings may emerge not only from the basic value and capability of actions, but also from the difficult trade-offs and the wicked features of the environment itself. Secondly, from a managerial standpoint, we identify several routes of attitudinal transition that show distinct challenges in each phase and trajectory, and this study validates the urgent need for knowledge in enriching our understanding of what environmental strategies can be implemented to deliver sustainable behavior. Thirdly, in this study, we highlight that the sustainable nature should be of significant essence, and that any eco-action without sustainability cannot be correctly defined as PEBs because the inconsistency in environmental behavior may imply great behavioral gaps, requiring appropriate responses from the academia and policymakers. In so doing, this study shall advance the PEBs research in specifying research design and methodologies.

The paper is structured as follows: It begins by introducing a literature review of the attitude formation and multi-staged attitudinal transition gap serving as the theoretical framework of this study. We then provide detailed outline of research methods of study for the inspection of the gap situation in the Chinese environmental context, which include sampling procedures, research variable designation, and data analysis. Furthermore, we discuss key findings, theoretical and managerial implications, and applications and recommendations of this study for future research.

## 2. Theoretical Foundations

### 2.1. Sources of Motivation and Attitude Forming

As illustrated in Figure 1, motivation, incentive, and decision-making theories generally distinguish between two types of motivations: primary and secondary motivations. Primary motivations refer to the origins of motivations, which can be intrinsic, extrinsic, or mixed. Intrinsic motivation is linked to peoples' passion and ambition, and is associated with the development of one's own capabilities. Extrinsic motivation, on the other hand, is caused by instrumental external influences. It is aimed at attaining outcomes that cannot be achieved solely through intrinsic motivation. Extrinsic motivation includes rewards such as high finance or other outcomes based on returns on investment. Even penalties due to (perceived) misbehavior can be viewed as a type of extrinsic motivation.

When individuals 'internalize' extrinsic motivations through self-examination and integration, new regulations become congruent with their other values and needs. The individual development psychology has developed the so called self-determination theory [13]. However, the self-determination theory, focusing on internalization, cannot well address most social problems that involve various stakeholders with conflicting interests under specific circumstances—for instance, the plastic pollution. From the perspective of game theory instead, a mixed-motive-game requires that players both cooperate and compete. The mixed motivation comes into play when intrinsic and extrinsic motivations both function in a situation, which goes beyond integration and self-determination of individuals.

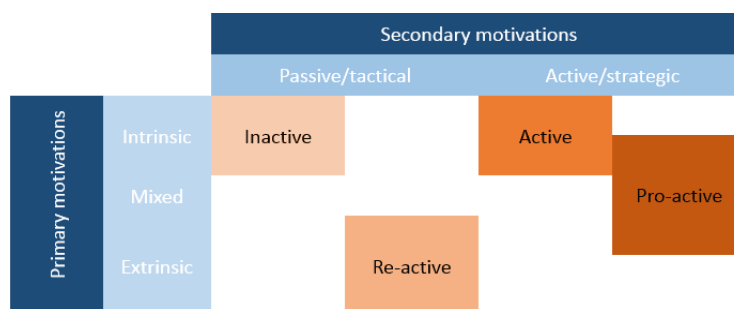


Figure 1. Motivational constellations [14].

What is more, secondary motivations define aims or goals of a motivation that people can learn and act upon. So to speak, people may passively or actively pursue what represents the dynamics and direction of a motivational project. In both psychology and organizational behavior theories, secondary motivations include power, security, status, achievement, and the like. Secondary motivations can be tactical, strategic, or mixed, too. Among them, strategic motivations have a long-term perspective, whereas tactical motivations mostly rely upon short-term considerations [14].

Turning to the intention, the intention of PEBs cannot be simply distinguished as altruistic or egoistic values (or as pro-social or pro-self intentions, see Roger (2018) [15]). Whatever an individual behaves out of self-transcendence or self-enhancement [16], intent needs to be categorized into strategic intent or tactical intent. The strategic intent is in no case treated as self-transcendence values but as the desire for a long-term advantage, whereas, the tactical intent should not be equated as self-enhancement value, but refer to individuals' reactions to external influences out of their duties, expectations, and responsibilities.

As a result, the interactions of primary and secondary motivations may lead to four types of attitude: inactive, reactive, active and proactive. To elaborate, if intrinsic motivations are primarily tactical—and unfortunately, society as a whole has not yet recognized the importance of environmental issues so that no extrinsic intervention involves—the *inactive* attitude may prevail, a situation where “I needn’t” is the regular term with the nonfeasance towards PEBs.

If social norms for environmental protection prevail, a more *reactive* attitude—“I must” can be expected in the pro-environmental decision-making, which fall within tactical considerations. However, in reality, people may not like to be called reactive, even if they are. Instead, considering the stress of circumstances—force of public opinions [17], they actually might see themselves as being very active when facing sustainability issues. Their denial attitude leads to the lack of awareness and, subsequently, inappropriate follow-up actions. More importantly, denial feeds into the rationalizing (hindsight bias) tendency of people to link reactive attitude to moral arguments. Critics call this window-dressing or end-of-pipeline work, which could be too fickle or naive because external influences prevail and, in this situation, people can always find certain pretexts for their inadequate efforts.

Comparatively, the motivation for a long-term advantage is known as strategic intent. A precondition for typical PEBs should be the strategic intent with an *active* attitude towards environmental issues, which is a deliberate manner with more confidence—“I can”, and could be expected in a repeated pattern. However, even if people are convinced of their commitment to sustainability, how sure can an individual strategy be realized only on the basis of the original capabilities of an individual or organization? According to the work of two urban planning scientists, Rittel and Webber (1973), most environmental issues cannot be solved by planning per se, as the problems may be wicked as the involved or affected stakeholders can be so diverse [18]. The wicked problems theory shows that these stakeholders themselves are troublemakers and key producers of the problems. To address such problems, “collaborative advantage” is highly demanded [19], critically depending on cross-sector collaborations that would establish systemic goals and adaptive changes.

Under these circumstances, intrinsic and extrinsic motivations may combine at the certain point, leading to the different types of strategy advantages, a process being *proactive*. Compared to the reactive phase during which one needs others' help to mitigate a negative attitude, the collective route means that the individual moves from the "I can" to the "we can" stage, focusing on "making things happen" by working out problems and seizing up opportunities collectively [19]. This attitude and its corresponding constellation of motivations go beyond the active attitude, and instead, aim at seizing opportunities for individuals or their organizations. If we look closely, involving others implies that the individual combines intrinsic and extrinsic motivations at the highest possible level of ambitions.

Wicked environmental issues require a proactive/collaborative attitude since nobody can solve systemic or collective problems on their own. Furthermore, diverse actors in the ecosystem can create new value through implementing productive and sophisticated models of collaboration [20], which could produce pragmatic (financially sustainable) and idealistic (ecological or socially sustainable) sustainable solutions. This can bring individuals and organizations into the so-called mixed-motivation games in which involved parties pool resources, capabilities, and motivations to reach a common goal that is sustainable beyond their short-term motivations and ambitions. Being aware of the importance of involving others in the game is the starting point for this attitude. The more systemic the sustainability challenges are, the more individuals and organizations are required to pool efforts to establish the sustainable solutions [21].

From above, insights can be researched that four basic attitudes are the result of the interactions of "want" and "must" (See Figure 1). When individuals act on the environmental issues, their attitude is unlikely inactive since the inactive means no personal desire or perception of social pressures. As such, their attitude turns reactive to "I will do it when I am reminded or called out by others, or when I can prevent penalties or negative opinions of others". Or, it can be active—"I do the things because they are part of my perceived identity and strongly held beliefs (I try), or I am also motivated to engage in PEBs on a regular basis (I really want)". Or, be proactive—"I will do my best and encourage others to do the same in order to really address such environmental problems (we can)." We next reveal various promise-implementation gaps from the perspective of attitude features and its transition.

## 2.2. Attitude and the Related Gap

A particularly relevant conclusion in the motivational research is that very few individuals are equipped with a coherent attitude towards most sustainability issues [22]. The psychological state reflects that personal motivation is a dynamic process of work in progress during which trade-offs of pros and cons are not manageable at all in principle (what you want to do) or in practice (what you can do). Capturing these dynamics turns into an important precondition for the effective progress in sustainability. Whether or not an individual is able to be consistent and take on an active approach towards sustainability depends on the dynamics of his/her motivations, which in turn are determined by how s/he moves from one position to another.

Depending on the positioning of the starting position and intended direction—each with its own conditions, stipulations, and challenges (Figure 2), four transition routes can be found; all are driven by intrinsic and extrinsic motivations. Since involved parties have made their commitment to the environment, they are expected to take an active attitude to the pro-environmental requirements and external pressures, and to behave reactively. Accordingly, this research focuses on the gap flow from reaction, to the capabilities route (C), to active, and to the collaborative route (D).

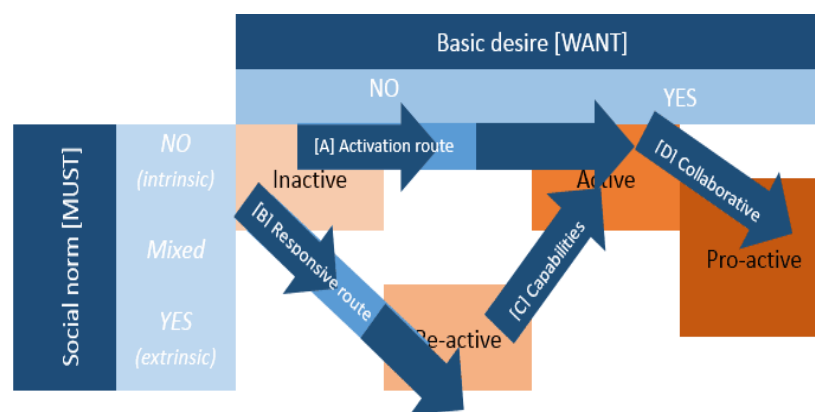


Figure 2. Attitudinal transition route [14].

Even though environmental awareness is necessary to implement PEBs, an important argument is that, many of the sustainability-related trade-offs are not necessarily due to the moral choices. In other words, people make their moral decisions not on their wants, but on their inability to make a difference [22]. Interesting findings in this regard include, for instance, human beings are the master of self-deception: They find dozens of plausible-sounding reasons to explain why they are not doing anything even when they are faced with serious problems of endangering their existence. The tension between intent and realization is, therefore, not only influenced by normal problems of strategy implementation, but by the perceptions of individuals who, in an organizational setting or their own lives, need to facilitate the transition to a more active strategic level. Here, an important question arises, whether individuals' motives, incentives, and decision-making can best be influenced by direct instructions, legislation, or be enforced by the so-called positive nudges—subtle reinforcements through indirect indicators of group behavior that can serve as stimulus for desirable behavior [23]. By the detailed illustration of the attitudinal evolution and transition, we can gain a better understanding of the features of various promise-implement environmental gaps and the effective ways to bridge such gaps.

### 2.2.1. Gaps of the Reactive and on the Capabilities Route

Under the influence of the tension between “want” and “must”, the reasonable reaction has to be active. The bigger the gap between “want” and “must”, the greater the need for the well-motivated choices, and a better understanding of what one can achieve. The maximum gap is that people may not be interested in PEBs at all, even though they feel greatly compelled to do so, the so-called *awareness gap*. In this situation, people consider the environmental issues to be the public ones, and all that they are concerned about are closely related to their private interests often in the concrete and near-term related form. Such environmental issues may not be taken into their accounts at a high priority even though the issues affect their present and future lives. Sometimes, they show specific green practices for self-interest, for example, switching off office lights. Yet, in most cases, they do not take any ecological practice for common interests at the cost of their own interests (according to their cognitions). In those cases, people regard their environmental commitment out of typical hypocrisies under social pressures. When the extrinsic forces are not strong enough, the said environmental wrongdoings are often glossed over by almost all kinds of pretexts to freeing involved parties from their ecological responsibilities and to cover their no-intention, mirroring a big awareness gap of the environment value.

When the gap between “want” and “must” is not so big, it can be defined as a gap on the capability route; that is, in the process of the reactive-to-active transition. Usually, people have to prioritize and make tough decisions on what to trade-off and what is to be ignored for an immediate moment. Decisions made by routines or past choices (also called ‘path dependencies’) need reconsiderations. Choice experiments by Dan Ariely and colleagues show how people can be manipulated in making



choices, or how they may make irrational choices [24]. People may not be as effectively under control of their own decisions as the way they think is due to three general gaps that are also extremely relevant to the environmental issues. The first one is “*desirability gap*”, the situation in which people do not know what they REALLY WANT. According to Ariely, “We have a gap between what we think is right and what we think we have” [24]. As far as sustainability issues are concerned, the desirability gap is linked to many different dimensions of sustainability and the related trade-offs that people face when trying to specify what they would like to focus on, for example, one may hesitate when faced with organic food at a higher price.

The second is called “*knowledge gap*”, the situation in which people do not know whether it is a big problem or a small (decreasing) one, or they do not (want to) know what the consequences are if problems are not addressed. This defines the MUST dimension in which there is a danger of denial. Denial is linked to various knowledge gaps if the issue is too broad to be dealt with. This particularly applies to various catch-all categories such as climate change and the epidemic risk in a very early phase.

The third is “*learning gap*”. Different from the previous two, this one defines how people do something about sustainability, and this dimension defines what people CAN do and how they align their capabilities across different sectors with their preferences for specific trade-offs. In dealing with the environment, people need to develop some skills to overcome their weaknesses; or in situations where problems are beyond their capabilities, to address in relation to their motivations. For example, technical innovation needs skills for green production and efficient utilization of clean energy. It induces serious considerable investments for individuals and organizations to build up skills. Apparently, the more people link this to the reach of their learning ability, the more active and inspired they will become and stay.

### 2.2.2. Gaps of the Active and on the Collaborative Route

People take an active attitude towards the environment. Even so, it does not necessarily mean their pro-environmental strategy would be realized. As illustrated above, it is the case, particularly for certain complex challenges such as sustainability that entail a large number of stakeholders and interests that are often difficult to integrate and put in action. When active people find other stakeholders have not followed their ambition, it could be a blow to their investment on the environment. Further, if they cannot change the stakeholders’ minds and make them take action, their best choice would be to adopt a wait-and-see strategy. In reality, it has been found that those people drew back from the intended strategy, and remained in an emergent approach, which can be regarded as the attitude on the capability route of the desirability gap, knowledge gap, or learning gap [25].

Additionally, the gap of the active can develop forward as a gap on the collaborative route. In this case, collective actions are expected to take and offer ‘common goods’ beyond private, public, or social goods. The resultant complexities from the process may induce involved parties not to take any action, as they may not be able to monitor and control all dimensions and consequences of the problem, or find the risk too high to be addressed on their own. As a result, they may prefer to be bystanders, a situation leading to inertia or deadlock where no party can stick out ahead, or is willing to initiate action. The problem of this kind is also known as the ‘tragedy of the commons’—a problem where everybody suffers, but nobody is motivated (able and willing) to act [26]. In the economics literature, the bystander effect is also referred to as the free-rider effect, with which, the free-rider motivation is based on the expectation that others will pay for the common good. However, the imminent danger of the lack of personal motivations is an under-provision of goods and services along with the consequence that all involved parties suffer. The crux of the matter lies in the *trust gap* in which, while trust is closely connected with reliance and accountability, the particular challenge in the collaborative transition is to build sufficient trust among all the stakeholders so as to take collective actions.

How would the environmental stakeholders play particular role in sustainability? There are the three most important societal stakeholders or—in institutional terms—societal actors surrounding the

environmental issues: governments, firms, and citizens (communities). Among them, the fiduciary duties and main competencies differ from each other remarkably. Specifically, firms supply clean goods that people want or can afford; governments hold the responsibility for pollution supervision and policy implementation; and civil society or communities remain liable to lead environment-friendly lives. The extant research has confirmed that certain community environmental programs retain great influence on behavior of daily life [27]. For instance, community initiatives can be established widely and successfully to target the household waste separation in China through information campaigns or reward strategies [27]. As such, societal sectors add different, complementary approaches to environmental tasks, and any sector failing to assume its responsibility would put societal trust in danger, causing a relapse to reactive tactics, a situation where all kinds of trade-offs bounce back and prevail among the stakeholders.

### 3. Methodology

#### 3.1. Data Collection

Based on the preceding literature review of the attitude formation and transition, this research is conducted in the domain of the promise-implementation gap flow, from the starting point—the gap of the reactive (Gap 1), to the gap of reactive-to-active transition—the gap on capability route (Gap 2), and to the gap of active-to-proactive transition—gap on collective route (Gap 3). As illustrated, the gap of the active is too fickle, and is treated as Gap 2 when active people lose their confidence in cooperation, or Gap 3 when the active people strive for cooperation.

To examine the promise-implementation gap in China in 2019, we surveyed data with cluster sampling from east to west regions in the country, with the help of a well-known market research company, who stratified sample to equal numbers of rural and urban households. More than two thousand (2332) samples were collected online (response rate at 93.3%), and 168 (6.7%) were collected completed by semi-structured interviews, considering the old and poorly educated respondents.

#### 3.2. Research Procedure

Focusing on the environmental promise-implementation gap, the empirical investigation of this study is to gather samples that demonstrate representative gaps of behavior. The following is to classify the behavioral gaps and identify the gap sources based on the attitudinal model developed in the study. Subsequently, the differential policy implications are discussed. Figure 3 shows the process and main methods which the empirical investigation follows.

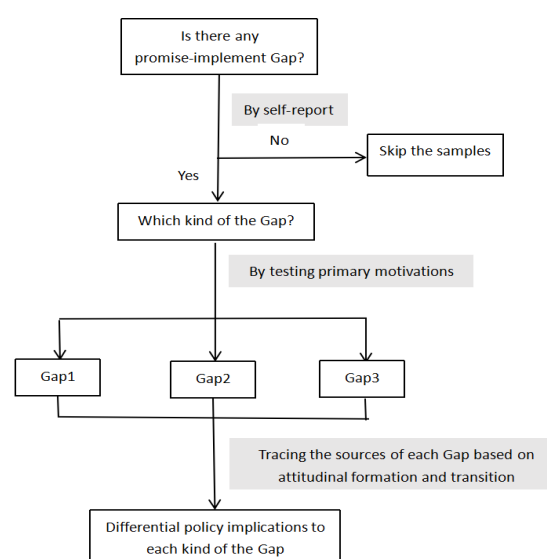


Figure 3. Process flow and main method of the empirical study in China.



We asked participants to self-report their perceived behavior and actual behavior when facing environment issues, through which we expect participants' promise-implementation gap can be screened out. In order to ensure reliability and validity of measurement, previously established and validated scales from key PEBs literature were adapted to measure the principal variables of this research. In view of different cultures in the Chinese context, some scales were adjusted upon in-depth interviews on measurement items. The measurement scales were finalized based on a pre-survey test with 140 Chinese participants. In this research, the principal constructs were measured on a 5-point scale. To strengthen the participation rate and effectiveness, a participation incentive (hongbao) was offered when participants completed the survey online, or were invited to the offline interviews.

### 3.2.1. Self-Reporting the Promise-Implementation Gap

We follow the procedure of Dickerson et al. (1992) [28] and Senemeaud et al. (2014) [29] to induce promise-implementation gap based on two steps. In the first step, respondents advocated a desired behavior, which we deemed as a promised state. We asked respondents, "What's your core claims regarding the importance of environmental behavior?" Responding to the question, respondents were directed to rate the importance on a 5-point scale ranging from 1 = not at all important to 5 = very important.

The second step aimed at inducing the behavioral gap. In this step, these more general claims were linked to respondents' past behaviors through a set of brief questions. Out of the questions established in prior study [1,30], we picked and specified for the Chinese context to capture respondents' past behavior: "In the past three months, have you separate your garbage and recycling into more than two bins?", "In the past three months, have you always switched off the stand-by mode on your appliances to save energy?" and "In the past three months, have you refused single-use plastic bags when grocery shopping?" The respondents' scalings, ranging from 1 = no to 5 = always, for the three questions were averaged to measure the PEBs. According to Dickerson et al. (1992) [28], Senemeaud et al. (2014) [29] and Gamma et al. (2020) [22], individuals without showing gaps show the consistency basically in the two steps. There should be gap-related behavior when the scoring is high in the first step, and/or low in the second. Therefore, the difference between the two steps reflects the promise-implementation gap where the larger difference is, and the more serious the gap will be.

To ensure the generalizability of the study, we selected those responses with the difference between two questions larger than 2 reflecting the significant behavioral gap. Moving forward to the next step, the study identified the exact attitude and type of the gap, and explored reasons behind the gap.

### 3.2.2. Identifying Environmental Attitude

Individuals show no promise-implementation gaps when they take an inactive or proactive attitude towards the environmental protection. Whereas, the reactive, active or the like attitude induces various behavioral gaps. The difference of behavioral gaps is identifiable because individuals are expected to respond differently to the same environmental issue as individuals' primary motivations are activated during cognitive information processing and problem solving [30]. Thus, we examined respondents' primary motivations towards environmental issues according to their ecological worldview and environmental beliefs. As illustrated above, intrinsic and strategic motivations are proposed to lead to the active attitude, and the reactive attitude comes into play when extrinsic and tactical motivations are prevailing. We assessed respondents' environmental beliefs based on Dunlap et al.'s (2000) 15-item (NEP) scales [31]. The NEP scales have been used extensively as indicators of environmental beliefs to assess such beliefs as: (1) humans and other species are intricately connected, (2) resources are limited and should be used conservatively, and (3) humans have inflicted much damage to other species. Many studies have shown a positive association between NEP scores and the ecological worldview [32–34].

To make the questionnaire understandable to the Chinese respondents, we have shortened the NEP scales to fit in the status quo and cultural contexts of China as Hong (2006) did [35]. The practice also enhances the internal consistency of the questionnaire. The five contextualized questions include,

“We are approaching the limit of the number of people the earth can support”, “Humans are severely abusing the environment”, “The balance of nature is very delicate and easily upset”, “Despite our special abilities, humans are still subject to the laws of nature” and “Humans have no rights to rule over the rest of nature”. The responses to the five questions were rated on a scale ranging from 1 = I strongly disagree to 5 = I strongly agree. Again, the response items were averaged to measure the respondents’ environmental attitude.

As the high scores (4–5) indicate a pro-ecological worldview with the active attitude, those groups scoring high along with the behavioral gap were classified as Gap 3. The lower scores (1–3) indicate a tactical consideration of the environment with the reactive attitude. The respondents scoring lower were treated as Gap 1. As to a medium score, the respondents scoring medium (3–4) between the high and low were categorized as groups who have been experiencing the transition from reaction to action towards the environment. The groups were treated as Gap 2.

### 3.2.3. Identifying Potential Gaps of the Reactive and on Capability Route

The starting point of the capability route is a reactive attitude. When external requirements or impetus are not powerful enough, reactive people are not expected to take eco-actions, and may raise various excuses for not doing so. It seems that their promise is too hypocritical. So, the low scoring on the environmental attitude should indicate Gap 1 of the promise-implementation gap. Whereas, the awareness gap may be generated from any external private or public reasons since what they declared may not be their real intention.

In this study, the medium scoring on the environmental attitude was treated as Gap 2. We argue that the three gaps need to be bridged to achieve intrinsic-driving PEBs for three reasons. Firstly, although people may make promises to undertake actions in an eco-friendly way, they, in practice, need to make trade-offs when facing sustainability issues such as money, time, and support from others. In a Kennedy study of environmental behavior, the translation of social norms in our own homes can influence an individual’s environmental behavior. For instance, individuals living with powerful others who have different habits and routines may feel restricted in their ability to support green activities [8]. So, we used three items to measure the desirability gap: “Not enough time”, “Not enough money” and “Lack of support from other household members”. All were rated on a scale ranging from 1 = not at all important to 5 = very important.

Secondly, in a context where various new technologies dominate whereas the biological world is still vulnerable, the lack of knowledge and the limited predictive ability play a significant role in restricting PEBs. Thus, the study adopted the following two items to measure respondents’ knowledge gap: “How do you think the importance of knowledge or information about a certain product” on a 5-point scale ranging from 1 = not at all important to 5 = very important.

Thirdly, when PEBs appear afar, the action capability is of knowledge managerial relevance such as, how to select energy-saving appliances, or how to properly use fuel cars pro-environmentally. Facing the case, even garbage sorting seems difficult for many old residents in Hangzhou, China [36]. So, this study estimated the learning gap with one measurement item: “How do you think the importance of learning ability is to take pro-environmental actions” on a 5-point scale ranging from 1 = not at all important to 5 = very important.

### 3.2.4. Identifying Gap on the Collaborative Route

Active individuals cannot address environmental issue alone. With the ingrained boundary-spanning nature, the environment protection requires collaboration of the whole set of societal sectors including governments, enterprises, and civil societies. Trust among the societal sectors is effective and adhesive to establish the associated stakeholders’ cooperation based on mutual responsibilities of each party respectively. Moreover, the trust gap, Gap 3, may lead to behavioral inconsistencies with the environmental promise. To estimate respondents’ gap of trusting government, this study adopted the following two items: “The capacity of government to implement environmental

protection policies” and “the capacity of government to provide necessary infrastructure to facilitate environmental protection”. Likewise, to estimate respondents’ gap of trusting enterprise, two items were used: “The transparency of pollution emission in production”, and “the technology of pollution abatement”. Additionally, to estimate respondents’ gap of trusting community, two items were as follows: “Effective support for inhabitants provided by community” and “community members inclined to take environmentally-supportive action”. All the measurement items were rated on a scale ranging from 1 = fully confident to 5 = very suspicious, in which a higher score indicates a greater trust gap.

### 3.3. Data Analysis and Key Findings

To start, the collected data were analyzed using the Statistical Program for the Social Sciences (SPSS), version 14.0. We first ran a frequency analysis to find the percentage of respondents who self-reported a gap. The subsequent analyses explored constraints for those who had a definite behavioral gap. For each analysis, the data was weighted to reflect the actual urban-rural distribution in China (approximately 60/40) rather than the distribution of our sample (50/50). The data analysis has been structured to show the prevalence of the promise-implementation gap in the Chinese sample, to portray the gap flow, and to track the sources of various gap types. Table 1 below shows the results of the self-reported promise-implementation gap. It is shown that 33.1% of purport shows no significant gaps between desired behavior and actual lifestyle for the environment; among them, 6.25% claimed the walk-talk for PEBs, whereas 66.9% reporting that they were greatly prevented from what they had promised to do. We then analyzed the data (66.9%) for the environmental attitude.

**Table 1.** Distribution (%) of self-reported gap between the promise-implementation gap in pro-environmental behavior ( $n = 2492$  \*).

Promise-Implementation Gap		Result
Gap between Desired Behavior and Actual Past Behavior		
≥2		66.9 (1667)
<2		33.1 (825)

\* Invalid questionnaires are not included in which score is less than 0.

#### 3.3.1. Three Categories of Promise-Implementation Gap

As discussed, the promise-implementation gap is divided into three types—the gap of the reactive (Gap 1), the gap on the capability route (Gap 2), and the gap on the collaborative route (Gap 3)—based on the results of an environmental attitude analysis. Table 2 presents the scores and frequency (%) of the environmental attitude corresponding to each gap category. As illustrated, over half of the respondents have experienced the transition from the reactive to the active (54.9%). A smaller percentage of the sample reached a higher stage in Gap3, the transition from the active to the proactive (24.4%). Meanwhile, 20.7% held the reactive attitude to the environment on the gap of the reactive.

**Table 2.** Environmental attitude: Distribution (%) of the reactive, reactive-active transition and active-proactive transition ( $n = 1667$ ).

Environmental Attitude	Gap Category	Scores	Result
The reactive	Gap of the reactive (Gap 1)	1–3	20.7 (345)
The reactive-to-active transition	Gap of the capabilities route (Gap 2)	3–4	54.9 (915)
The active-to-proactive transition	Gap of the collaborative route (Gap 3)	4–5	24.4 (407)

#### 3.3.2. Pretexts in the Reactive Gap

It was found that reactive people show an awareness gap advocate for the environmental protection, while they tend to seek various pretexts, subjective or objective, for not taking practical actions. Table 3

demonstrates major excuses raised, in which higher scoring between 4 to 5 indicated the great ‘difficulty’ to action that the reactive respondents made use of. Additionally, as shown, the reactive people shifted responsibility to government, deeming that they were incapable of implementing environment-protective policies (50.6%), their seeming innocence due to no access to necessary knowledge about pollution products (50.4%), and complaints about the high price of green products (45.2%). In general, the data analysis shows reasons and excuses (20%–40%) that had been used as pretexts, and instead, they remain silent about no intentions in intrinsic eco-actions.

**Table 3.** Distribution (%) of various sources produced by the reactive respondents for their promise-implementation gap ( $n = 1667$ ).

Desirability gap	not enough time		not enough money		lack of household support	
	33.7		45.2		39.6	
Knowledge gap	lack of knowledge about product			lack of knowledge about the result of behavior		
	50.4			39.7		
Learning gap	lack of learning capability					
	24.4					
Trust gap	governmental capacity to implement policies	governmental capacity to provide infrastructure	corporate transparency of emission	corporate technology of abatement	supportive community	community members
	50.6	23.2	38.8	28.4	39.4	32.5

### 3.3.3. Contributors in Gap on the Capability Route

When people’s environmental attitude is towards the transition from the reactive to active, their promise-implementation gap is defined as ‘the gap on the capability route’. Table 4 of data analysis shows the major contributors to the gap, scoring high between 4 and 5. As shown, among the incomplete desirability gap, the lack of time showed itself the first (50.4%), and the lack of money was still the main factor (43.3%) constraining the PEBs. Quite differently, the learning gap seems becoming more important (47.7%) than any kind of knowledge gaps on the capability route, while the importance of the knowledge gap greatly surpassed the learning gap (24.4%) in the reactive gap. Interestingly, although the trust gap was not theorized as the main feature in the gap of the capability route, our data analysis instead showed that it has impact when people began to be active— a much higher distribution (over 54%) than in the reactive gap (less than 40% mainly).

**Table 4.** Distribution (%) of various sources produced by the respondents in the reactive-active transition for their promise-implementation gap ( $n = 1667$ ).

Desirability gap	not enough time		not enough money		lack of household support	
	50.4		43.3		32.9	
Knowledge gap	lack of knowledge about product			lack of knowledge about the result of behavior		
	28.5			38.2		
Learning gap	lack of learning capability					
	47.7					
Trust gap	governmental capacity to implement policies	governmental capacity to provide infrastructure	corporate transparency of emission	corporate technology of abatement	supportive community	community members
	69.1	54.8	59.5	71.4	69.3	79.2

### 3.3.4. Contributors in Gap on the Collaborative Route

When people's environmental attitude are towards the transition from the active to proactive, their promise-implementation gap may focus on the trust gap, a view that has gained empirical support in our study. Table 5 shows that the trust gap (mainly over 70%) is more important than the others; its distribution scoring significantly higher than that of the desirability gap (varying from 29% to 46%), knowledge gap (about 40%), and learning gap (43.2%), and also significantly higher than that of respondents in the reactive state (from 23% to 51%), and higher than that on the reactive-active transition route (from 54% to 80%). It demonstrates that the active respondents recognized the urgency of collaboration for engaging in PEBs with a sustainable feature. Among the three categories of the trust gap, as shown, most respondents have chosen trusting in government, following this, the community, and enterprises were chosen to be trusted least. The data analysis identified the same pattern with the gap on the capability route. Comparatively, the knowledge gap on the collaborative route was found nearly 10% higher than that on the capability route, while both the desirability and learning gaps were lower in general. It can be induced that the knowledge gap perceived is rather important in driving close collaboration.

**Table 5.** Distribution (%) of various sources produced by the respondents in the active-proactive transition for their promise-implementation gap ( $n = 1667$ ).

Desirability gap	not enough time		not enough money		lack of household support	
	46.3		34.4		29.5	
Knowledge gap	lack of knowledge about product			lack of knowledge about the result of behavior		
	38.1			45.8		
Learning gap	lack of learning capability					
	43.2					
Trust gap	governmental capacity to implement policies	governmental capacity to provide infrastructure	corporate transparency of emission	corporate technology of abatement	supportive community	community members
	96.4	87.8	57.9	72.7	81.4	73.3

## 4. Discussion

### 4.1. Summary of Key Findings

Nowadays, policymakers and non-governmental organizations employ a vast array of strategies and tools to evoke environmental protection and stimulate social PEBs. One of the driving strategies in this avenue that has recently sparked heated discussions is to bridge the promise-implementation gap. For example, people learn to be aware of the fact that their past behavior does not conform to what they are expected to be or have claimed to be. Despite previous efforts, the literature has yet to produce solid findings about behavioral constraints. It has remained unclear about the boundary conditions of various unrealized PEBs such as, whether the inconsistencies come from inadequate external conditions, or limited self-behavioral conditions, or even from the lack of the environmental awareness when their slogan is affected virtually. This research develops and validates a different set of phases of environmental attitude and attitudinal transition as our academic attempt to address the confusions.

Using the Chinese dataset to test the proposed theoretical model, this research shows that the promise-implementation gap is convincing, nearly 70% of the respondents showing a significant gap in addressing associated environmental issues, and that the barriers to take PEBs for most people in China span the spectrum of the sources of motivations from intrinsic willingness to extrinsic requirements, and to the mixed.

Firstly, it is found that the inadequate awareness of the environmental protection is a significant account for people's poor environmental practices. Our data analysis shows that about 40% of the respondents indicated that they basically did not take the environment into consideration, or structure their life choices around environmental impacts. 26.85% of the respondents declared to do so, and the rest held a reactive attitude, showing a wide promise-implementation gap turning to all kinds of pretexts to cover their carelessness on environmental issues. Secondly, for nearly 55% of the respondents showing a big behavioral gap, the behavioral inconsistency mirrors their insufficient desirability for engaging in PEBs, so that they were disturbed due to limited knowledge, the shortage of learning ability, and lack of time, money, and household support. In these cases, they held more than a reactive attitude, showing active indications on the reactive-active transition. Thirdly, 24.4% of the respondents with a significant gap seemed more active in environmental protection, but failed to implement sustainable actions due to lack of trust and cooperation among stakeholders including government enterprises and civil community. As they realized that environmental issues cannot be addressed without collaboration, people tended to evaluate the effectiveness of their PEBs prior to taking steps in the process.

#### 4.2. Theoretical Implications

The theoretical implications of this research are threefold. Firstly, the research extends our understanding of when the environmental promise-implementation gap occurs and how it functions in a theoretical manner. The extant research does not mean to provide a complete set of contexts which the gap emerges, simply attributing the inconsistency to individuals' behavioral incapability. Instead, the present research develops a conceptual framework and applies it to resolve the insufficiency of previous work and describe the spectrum of promise-implementation gaps from the perspective of the attitudinal formation and transition. Accordingly, the data analysis of the research found that individuals employ three different strategies making gaps of interest salient. When the reactive attitude is held, individuals do not buy the general environmental message, but instead, make an oral commitment simply responding to the social pressures. When the attitudinal active transition is activated, the targeted individual often makes multiple sustainable trade-offs and tackles all kinds of personal incapacities. When the active point is finally triggered, individuals tend to embrace the collaborate strategy to deal with wicked-perceived environmental issues. While it is widely acknowledged that individuals employ near-term considerations or future-related concerns to environmental issues, this paper is the first (to our knowledge) to specify the behavioral mechanisms spanning the primary (intrinsic or extrinsic) and secondary (tactical or strategic) motivations.

Secondly, this research illuminates the implications of the promise-implementation gap and its boundary conditions of different types. Scholars have been increasingly exploring the obstacles of environment-friendly behavior to better understand the key success factors of PEBs. Likewise, this study identifies personal and situational factors functioning as critical determinants of the occurring. We highlight the point that its implementation needs a sustainable feature. One-shot or countable eco-actions cannot achieve PEBs, they can be only deemed among some of various forms on the way to PEBs at best. To illuminate the boundary conditions of different gaps, we further develop an attitude model suggesting the gaps of different features underlying the model: (1) The reactive attitude may produce any kind of hypocrisies; (2) the attitude on the capability route can mix the inadequate desirability and hard decisions facing many dimensions of sustainability with incapability to engage in eco-actions; and (3) the attitude on the collaborative route emphasizes that trust and cooperation are greatly required among all stakeholders to achieve PEBs. Our data analysis has validated the categories underlying the proposed theoretical model.

Thirdly, while the existing research focuses on environmental awareness and appeals a great variety of resources to achieve PEBs, our research implies that active individuals would make joint efforts with other stakeholders to overcome the promise-implementation gap. We expect active individuals will be faced with increasingly more wicked environmental issues. Since these wicked problems cannot be solved due to the inadequacy of related resources, all that the active individuals



can rely on are their critical thinking, societal trust, and open honest collaboration. Our data analysis indicates the distinguished role of societal sectors in China. Among them, a capable government is the most important, united communities are of help, and, finally, so are enterprises with their environmental commitment.

#### *4.3. Managerial Implications*

Our study supports managerial recommendations of interest for dealing with different types of the promise-implementation gap. Firstly, intrinsic motivations can indeed be effective in making credible promises and avoiding affected conditions. It is clear that the general message regarding environmental protection has not been well-voiced in China. About 40% of respondents lack the environmental awareness, and complaints they have made are probably a kind of excuse, and may not deserve much attention for the environment managers. Law enforcement and stipulations can act as extrinsic forces to regulate rigidly individuals' environmental behavior on the condition that law and stipulations are in place and enforced. Otherwise, a large number of hypocrisies are fostered and can bring down the tone of society. In these circumstances, any encouraging nudge can only be treated as the means to reap fruits, and in no case can alter inner value systems and habits. Comparatively, ethics education on the environmental value has great formative effect on behavior, and morals and cultural value are central to both human experience and the environmental policy [37].

Secondly, when attitudinal transition turns to an active pattern, it is essential to reduce behavioral costs such as time and money for increasing the desirability of a good environment, and to provide full support such as the acquisition of knowledge or information for facilitating eco-actions. Advances in information systems and communication technologies allow much more tailored support and fine-tuned feedback in this regard. For example, people can be encouraged to share transportations or focus on green consumption by linking smart computing devices and social media. Moreover, the technology development allows the administration to interact with people and provide them with a certain sum of rewards for the past excellence or the timely feedback to promote the past transgression.

Thirdly, individuals' active attitude cannot address wicked environmental problems, as those problems involve cross-border externalities and often intertwine with other social problems. Proactive attitudes towards cooperation and mutual trust assume cardinal significance to such environmental issues and the success of PEBs. This poses a major challenge for the leadership of the collaboration. Generally, parties with more resources pose more influence and responsibilities. Whereas in the context of pluralistic democracies, enterprises and entrepreneurs can act as the front-runners, taking the initiative to introduce innovations in their products or services and making it easy for customers to opt for sustainability [29,38]; in the Chinese context of centralized democracies, the environmental target is recognized as the primary responsibility of government, which is expected to lead the whole society on the track of sustainability [39]. Our research confirms the point that governments of all levels in China should invest and provide more public goods in both forms of policymaking and infrastructure-developing to facilitate the PEBs. Meanwhile, governments need to efficiently organize stakeholders to function well. For instance, the NGOs and communities can serve as helping hands for the government to guide the public to be informed of the environmental issues instead of raising conflicts and complaints about the government performance. Enterprise innovative operations and decision-making can be largely encouraged to promote green products and services, thus inducing societal PEBs.

#### **5. Conclusions and Future Research**

This study develops a framework to illustrate and validate different types of the promise-implementation gap when people engage in PEBs. Our sample looks at the Chinese status with a mixed state of developed, developing, and underdeveloped economies. The managerial policy is found that, in the Chinese context of centralized democracies, government should first take an active attitude towards environment, then take every efforts to involve all stakeholders in environmental

protection, further establish cooperation and mutual trust among all stakeholders to promote PEBs. Considering context-specific limitations of this research, we call for future research that may collect data of different cultural contexts to test the framework's validity and generalizability. Additionally, owing to practical constraints of the survey methodology, the convenient samples of this research may not be able to be screened out, leading to certain inconsistent issues with usual practices. What is more, big data mining and analysis from social media (e.g., blogs, Facebook, Twitter) and video surveillance data can also be used to provide more methodological opportunities for future research in this avenue.

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