

## Article

# To Strengthen the Practice of Ecological Civilization in China

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**Abstract:** Ecological civilization is the inevitable route of human development. However, the practice of ecological civilization is not as positive as expected, especially for college students. Hence, the aim of this research is to investigate how to strengthen the practice of college students towards ecological civilization in China. Based on the Triandis' Interpersonal Behavior Model, a questionnaire survey is performed to explore the status quo of factors affecting college students' ecological civilization behaviors. Results reveal that society does not provide enough facilities for ecological civilization. Thus, as personal interests conflicting with the environment, some college students would not carry out the concept of ecological civilization. Meanwhile, though most of college students have the right attitude and good habits of water saving and waste batteries proposal, the guidance of ecological civilization for the habits of takeout and online shopping has not been formed. Also, college students could not actively participate in ecological civilization construction. Therefore, to strengthen ecological civilization practice, it is indispensable to acquire joint efforts from individuals, government, families, universities and social organizations. The practice of ecological civilization is inseparable from the efforts of every college student. Besides, the government, every social organization, every family, and every university should create appropriate facilitating conditions, so that college students could form ecological civilization habits consciously. At the same time, universities, society and family should form good social reference standards to directly and indirectly educate college students so as to help them identify their roles and self-concept.

**Keywords:** ecological civilization practice; behavior; college students; questionnaire; Triandis' Interpersonal Behavior (TIB) model

## 1. Introduction

Rapid economic growth, drastic social development, and fast technological advancement have enriched people's lives, spiritually, mentally, physically and materially, at the enormous expense of extensive environmental pollution, significant ecological degradation, and fast resources depletion, worldwide [1]. For example, the overall air quality in China is still nonattainment in many areas, showing a complex feature of air pollution by soot and motor vehicle pollution, while regional air pollution has become an important task for local governments. For surface water, in 2017 in China, 23.8% of the surface water was categorized as Class IV and Class V, and 8.3% of the surface water was worse than Class V, in addition to the prominent problem of lake eutrophication. Furthermore, industrialization, modernization and urbanization have considerably stimulated the sharp rising of resources demands to cause overexploitation and overdevelopment of nature resources. Consequently, ecological degradation and resources depletion are inevitably ensued. There is no doubt that the negative impact of a series of environmental problems seriously endangers the sustainable development

of human society and civilization to force people to rethink the process of development and find a new pattern and direction of development after industrial civilization.

In 1973, during the convening of the First Environmental Protection Working Conference, China has proposed policies and started work on environmental protection. At the Second Environmental Protection Working Conference ten years later, environmental protection was identified as a basic national policy. These ten years can be seen as the embryonic stage of ecological civilization. Then, with the implementation of the Agenda 21 for sustainable development of the United Nations, China released China's Agenda 21 in 1994, namely, China's White Paper on Population, Resources, the Environment and Development, which mainly incorporated sustainable development strategy into long-term planning for social and economic development. Three years later, during the 15th National Congress of the Communist Party of China (NCCPC), held in September 1997, sustainable development was determined as a strategy for national environmental protection. In general, ecological civilization began to be on the track in the 1990s.

With the advent of 21st century, in order to deal with the new situation of environment and resources, China proposed to build a moderately prosperous, well rounded society and set the objectives of ecological and environmental improvement and sustainable development on the 16th NCCPC in November 2002, which means China has paid more attention to ecological civilization. Ecological civilization was first proposed during the 17th NCCPC, held in October 2007, and was promoted to be a national strategy during the 18th NCCPC, held in November 2012. Ever since, ecological environmental protection was listed as one of the prioritized tasks among the agenda for the Communist Party of China (CPC) and the Central Government. In 2015, the overall design and roadmap for ecological civilization construction in the future was defined. As well, China proposed the concept of green development and incorporated ecological civilization as an important part of the Five-Year Plan in 2016, pushing ecological civilization to a new period of overall development. In 2018, the 13th National People's Congress (NPC) adopted the amendments of the Constitution to include the construction of ecological civilization in the Constitution. The development of China's ecological civilization is shown in Figure 1.

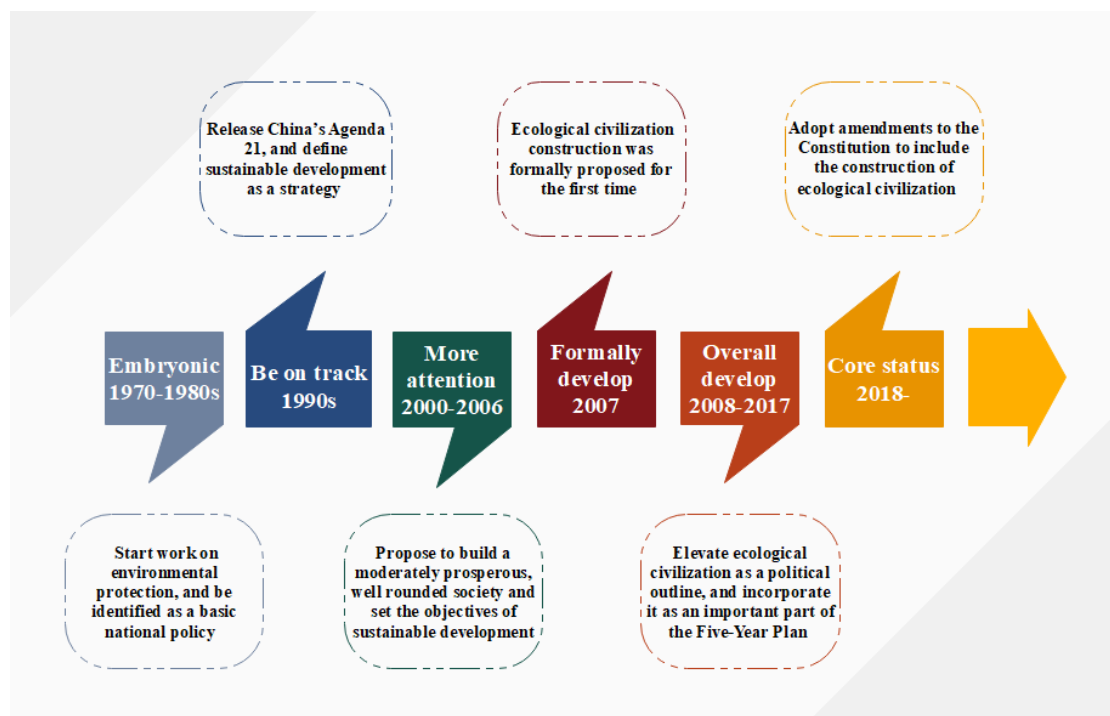


Figure 1. China ecological civilization development.

From the development of ecological civilization in China, it is easy to conclude that ecological civilization is an advanced form of human civilization evolved after the prehistoric civilization, agricultural civilization, and industrial civilization, and is the outcome of civilization advancement and society development at certain stage [2]. Ecological civilization, material civilization, political civilization, and spiritual civilization, together, constitute an organic whole of the socialist civilization form [3], in which the value and power of nature while is significantly elevated and human beings is positioned to a less dominant role.

In order to achieve the harmonious coexistence between human and nature, the core of ecological civilization is to ensure the harmonic development between human, nature and society, so as to safeguard the safety of people's health, life and property, and to maintain social stability. In addition, the common responsibility and obligation of the whole mankind to the earth was emphasized in ecological civilization to form an equal cooperative relationship in a wider field in protecting the earth, jointly [4]. Furthermore, ecological civilization is the only way to achieve win-win situation between economic development and environmental protection [5]. It is not only a framework for policy and law-making aiming at a more environmentally sustainable world, but also a more extensive vision of sustainable development with socio-political and moral dimensions [6]. Moreover, ecological civilization conforms to Chinese traditional culture in which ecological ethics is one of the main connotations of Chinese traditional culture. In sum, ecological civilization is a vision of a society characterized by ecologically sustainable modes of resource extraction, production and trade, inhabited by environmentally conscious and responsible citizens [2].

Current studies on ecological civilization are mainly focused on the strategies, policies and regulatory systems of ecological civilization, mainly focusing on the macro level. In terms of the strategy of ecological civilization, many analyses and researches are concentrating on the sustainable development strategy and strategic framework, such as the sustainable development strategy of urban economy and the energy, the strategic framework of ecological civilization under the background of new pattern urbanization, and so on [7]. Regarding the policy and regulation of ecological civilization, Li considered that it is necessary to integrate the idea of ecological compensation into the environmental legal system, and to design different system for different ecological compensation [8]. Sun proposed that "in order to make a good connection between legislation and reform decision-making, the key areas of establishing and perfecting the legal system of ecological civilization should be determined as soon as possible" [9]. In addition, Zheng, Lv, Song and other scholars are mainly exploring the construction of ecological civilization based on the system of ecological civilization [10–12].

So far, few scholars have studied the relationship between ecological civilization and citizens. However, the ultimate realization of ecological civilization requires joint efforts of all citizens. Therefore, it is imperative to strengthen the citizens' practice of ecological civilization. Among them, college students are the elites of the youth group. As the most advanced group of the citizens, strengthening college students' practice of ecological civilization is the primary task.

China has always attached great importance to environmental awareness, practice and education. Since the 21st century, many investigations and studies on public environmental awareness have been carried out, such as the 2007 Environmental Awareness Project of the Chinese Academy of Social Sciences and the Beijing Public Environmental Awareness Survey. In 2012, commissioned by the Department of Publicity and Education of the Ministry of Environmental Protection (MEP), the China Association for the Promotion of Environmental Culture also completed the study of the "National Environmental Awareness Assessment System". These projects have done some researches on the environmental awareness of different regions and groups and have a preliminary understanding of the public's eco-environmental friendly behaviors. Yet, a special survey on public awareness of ecological civilization was first emerged in 2013, which is the only large-scale survey on ecological civilization consciousness and practice at the national level. For example, the MEP conducted a multi-level random sampling from most provinces, autonomous regions and municipalities, including large and medium-sized cities, towns and rural areas, to investigate the three dimensions of public awareness,

recognition and practice of ecological civilization. A total of 14,977 valid questionnaires were collected. The results showed that higher-educated people including college students have higher degree of knowledge but lower degree of practice than others [13]. Subsequent studies by different scholars at different levels have also validated this outcome. At the regional level, various researches were performed not only for developed coastal cities, such as Shanghai [14], Nanjing [15], Hangzhou [16] and Shaoxing [17], but also for western and northern provinces, such as Guangxi [18], Shaanxi [19] and Inner Mongolia [20]. From the perspective of university type, agriculture universities, forestry universities and normal universities were the focus of the research [21].

As a whole, the researches on the education, behavior, and awareness of ecological civilization in China, whether from the macroscopic level or the microscopic level, have reached similar conclusions. Firstly, college students' ecological civilization participation behavior is negative. Although with higher recognition and approval for the construction of ecological civilization, college students' behaviors still lag behind. Secondly, the channels for college students to acquire the knowledge of ecological civilization and practice of environmental protection are more modernized and diversified. Thirdly, college students' consciousness of ecological civilization has a strong characteristic of "government dependency". They generally think that the governments and the environmental protection departments have the main responsibility for the construction of ecological civilization.

However, to date, there are no researches to elaborate the reasons why college students have lower degree of practice, and the status quo of factors affecting college students' ecological civilization practice. Hence, the purpose of this paper is trying to identify and understand these factors affecting the ecological civilization practice of college students. The paper consists of five sections. The first section explains the development and survey of ecological civilization in China. The methodology and data collection are presented in Section 2. Based on our analysis, the third section contains results and discussions. Policy implications in the future are illustrated in the fourth part. The main conclusions and potential further research are shown in the final part.

## 2. Methodology and Data Collection

### 2.1. Theoretical Model

Triandis' Theory of Interpersonal Behavior (TIB) has been used as the theoretical framework to study the factors affecting a specific group's practice by many scholars [22–24]. However, due to its complexity, the TIB model was mostly applied to study the behaviors in health arena, public safety, and environmental protection. For example, Ittiravivongs [25] applied the TIB model as the theoretical framework to explore the influencing factors of household garbage recycling behaviors from the perspective of habits, to find out that recycling intentions, habits, abilities, facilitating conditions and recycling information could all have significant influences on recycling behaviors.

TIB attempts to explain the relationship between the willingness of a particular action and the actual performance of behavior, and holds that the occurrence of people's actual behavior is determined by the intentions, the habits and the facilitating conditions, in which behavioral intentions consist of three aspects: Attitude, social factors and emotions. The TIB model contains all the variables of Theory of Reasoned Action and Theory of Planned Behavior. Figure 2 briefly describes the framework of the TIB model [26].

Based on TIB, through the expansion of the TIB model, we conducted research mainly on the factors influencing college students' behaviors of ecological civilization. Besides the influencing factors of the TIB Model, demographic variables are usually referred to as influencing factors in behavior studies [27]. Therefore, gender, education, politics status, and other major factors were also taken into consideration in the TIB model.

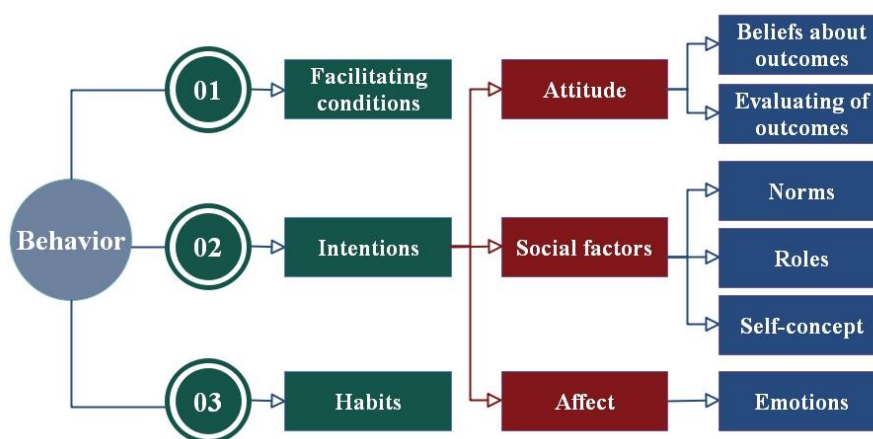


Figure 2. Triandis' Theory of Interpersonal Behavior (TIB).

According to the TIB model, facilitating conditions are external favorable environmental factors to have a significant impact on individual behaviors. It influences the behaviors of ecological civilization by changing the costs, convenience, and difficulty degree of individual behaviors [28]. When individuals practice the behaviors, they usually want to do it in a convenient and simple way. Namely, they seek to yield twice the result with half the effort. If the cost of the behavior is too high to bear or the benefit is too low, the individual will not choose the behaviors. Further, even if the individual has the will to practice the behaviors, it may be difficult to implement. Or even if the individual can do it occasionally, it's hard to stick to it for long.

Habits also play an important role in influencing of behaviors. Habits are those behaviors which are undertaken automatically and frequently, with little conscious thought, and usually in the same time or place [29]. As well, the difference between “facilitating conditions” and “habits” are as follows: first, habits influence individual behaviors from the inside, while facilitating conditions affect individual behaviors from the outside. Secondly, habits will lead to automatic performance of certain behaviors, but facilitating conditions convenience are not necessarily the case. In short, good habits can promote the behaviors while bad habits inhibit the behaviors.

In the TIB model, intention is the most important factor to affect behaviors which includes three features: attitudes, emotions and social factors. Intentions motivate behaviors by influencing their internal psychological factors and social factors. Emotions tend to affect the perceptual judgment, while attitudes tend to affect the rational judgment. In general, a positive attitude can lead to a positive behavior. Conversely, a negative attitude may have an adverse effect on behaviors. Social factors include social reference norms, roles and self-concept. Social reference norms exert influence on behaviors by making the individuals consciously accept and follow the social reference groups' psychological consciousness and value beliefs, so that their own behaviors can be consistent with the behaviors of the social reference groups. Roles mainly refer to the role of people. The more distinct the roles are, the more active the behaviors are. Self-concept shows the experience of own existence. It involves a person's deep understanding of himself through experience, reflection and feedback from others, which is generally regarded as our individual perceptions of our behavior, abilities, and unique characteristics. In psychology and behavioral economics, emotions tend to be grouped under “Affect”. It follows that practitioners should not only make rational appeals to people to change behaviors based on factual and logical arguments, but also try to provide emotional and empathetic messaging [30]. With the increase of emotional and empathetic messaging, the level of practice will also be strengthened.



## 2.2. Questionnaire Design and Data Collection

To explore the status quo of factors affecting ecological civilization behaviors, a questionnaire was designed based on the TIB Model to collect data from November to December 2017. Questionnaires are mainly an on-line survey, a small number of samples with face-to-face interviews and telephone counseling to ensure that the survey data is true and reliable. In this investigation, the total number of issued questionnaires is 483, and the number of returned questionnaires was 482, where the number of effective questionnaires was 476. The response rate was 99.79%, and the statistical validity was 98.56%.

Based on the characteristics of contemporary college students, this survey considers the life and consumption habits of college students, focusing on the current hot issues such as online shopping, takeout, and shared bikes to reflect the status quo of college students' ecological civilization. In summary, there are four parts of the questionnaire, basic information of the respondents (the demographic variables), facilitating conditions of ecological civilization, habits of ecological civilization, and intentions of ecological civilization, to include 20 questions, as shown in Figure 3 and Appendix A. The first part contains the basic personal information, that is, demographic variables, including gender, education, politics status, and major, so as to expediently analyze whether demographic variables will have an influence on college students' behaviors and intentions of ecological civilization. In addition, all personal information collected were kept confidential and only used for scientific research [31]. The second part includes facilitating conditions, such as willingness to sacrifice personal interests to protect the environment, aspiration to choose "no disposable tableware" when you order takeout, the idea to use foreign waste metering charge system, as well as the main channels for obtaining information about ecological civilization. The third part focuses on habits of college students' ecological civilization, mainly based on the daily behavior, which contained behaviors of water saving, green purchase (takeout, online shopping), green travel, waste batteries disposal, and express packages disposal. The fourth part is concentrating on intentions of college students' ecological civilization, including importance of ecological civilization, initiative to talk about the ecological environment with friends, concerning about current environment situation, response to destroy ecological environment, formation of atmosphere for promoting ecological civilization, the responsibility subject of ecological civilization construction, and influence of the individual's consciousness of ecological civilization.

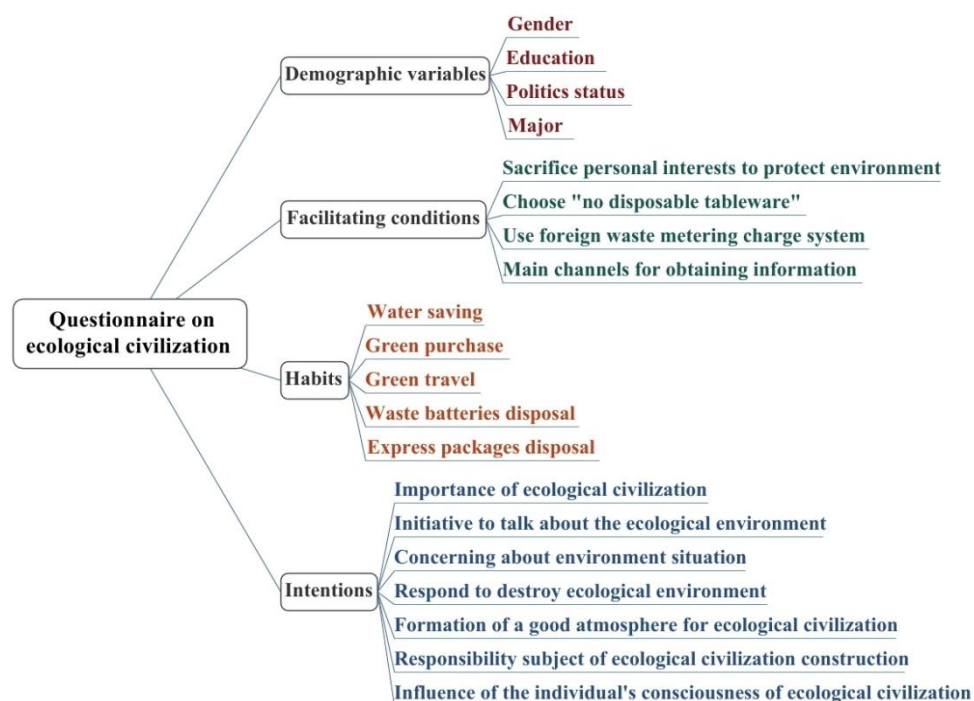


Figure 3. Questionnaire on Ecological Civilization.

### 3. Results and Discussions

#### 3.1. Demographic Variables

The descriptive statistics for demographic variables were acquired through thorough analysis on the 476 samples, as shown in Table 1. Results showed that among 476 respondents, 231 are male (48.53%), and 245 are female (51.47%). For education, 254 are undergraduate students accounting for 53.36%, 175 are graduate students to account for 36.76%. As for the politics status, the largest proportion is the league member to account for 71.22% (339), and followed by party members of CPC (25.21%). For major, liberal arts (30.67%), science (34.45%) and engineering (31.30%) account for the vast majority.

**Table 1.** Demographic variables: gender, education, politics status, and major.

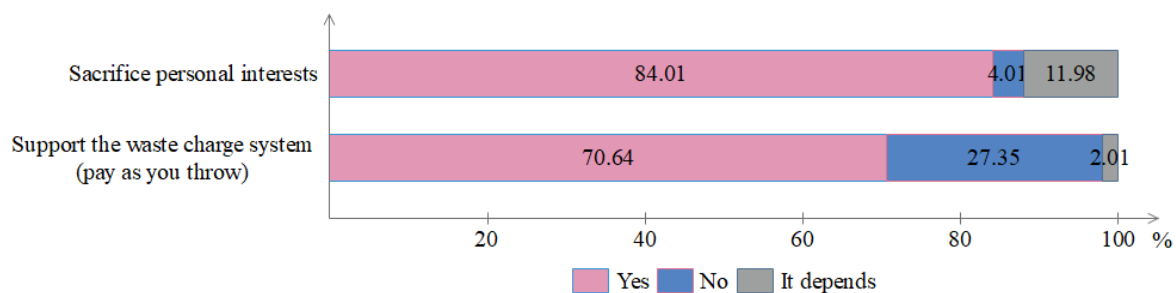
Demographic Variables	N	Percentage (%)
Gender		
Female	245	51.47
Male	231	48.53
Education		
Specialty education	47	9.87
Undergraduate education	254	53.36
Graduate education or above	175	36.76
Politics status		
Public people	12	2.52
League member	339	71.22
Party member of the CPC	120	25.21
Other party members	5	1.05
Major		
Liberal arts	146	30.67
Science	164	34.45
Engineering	149	31.30
Other	17	3.57

The results of this survey are to explore the influence of different gender, education, politics status, and major on college students' behaviors of ecological civilization was further analyzed to show that there were no significant differences on college students' behaviors of ecological civilization in relation to gender and major. However, different educational background and politics status can lead to different college students' behaviors of ecological civilization. Specifically, the higher the education level of the respondent is, the higher degree of practice will be. This finding is consistent with previous studies indicating that though education is not the main factor affecting college students' behavior, those with lower levels of education are less environmentally sensitive [27,32]. This may be because that the higher the education level, the stronger the binding force on oneself. Thus, it is easier to compel oneself to be in line with the requirements of ecological civilization construction. Nevertheless, it is noteworthy that according to an investigation report on national awareness of ecological civilization in 2013, although the awareness of highly educated groups was much higher than that of other groups, the degree of practice was much lower than that of other groups, indicating that the highly educated groups "knew" but do not necessarily "did it". This conclusion is inconsistent with the outcome of this research which might be explained by the following reasons: First, the investigation in 2013 was in the initial stage of ecological civilization, and when this research was carried out, ecological civilization has been advocated, promoted and trialed for several years, so the degree of practice is higher; second, the scale of the investigation in 2013 is much larger than that of this study. In addition, as for politics status, the CPC members are more positive than other non-communist party members on their behaviors of ecological civilization. Attempting to trace the reason of this phenomenon, the telephone interviews were conducted. Interviewees who are the CPC members mentioned that they would participate in

the relevant regular training related to ecological civilization because ecological civilization is a major decision of the CPC. Therefore, in the construction of ecological civilization, they had more sense of mission and responsibility than other college students.

### 3.2. Facilitating Conditions

There are four questions included in the category of facilitating conditions, such as “sacrifice personal interests to protect the environment”, “choose ‘no disposable tableware’”, “the willingness to use waste charge system”, and “the main channels to obtain information about ecological civilization”. For “sacrifice personal interests to protect the environment”, over 84.00% of the respondents believed that they could protect the environment at the expense of their own interests. Hence, the majority of college students have higher environmental responsibility. However, when it comes to specific issue such as supporting the waste charge system (pay as you throw), only 70.64% of the college students agree that the more rubbish you throw, the more you should pay for it, while 27.35% of college students are against the waste charge system, as shown in Figure 4. The possible reasons might be that: Some people still think that economic development takes precedence over environmental protection in China, currently. When it comes to money expenditure in deed, ecological civilization is no longer the first in the minds of a small piece of people.



**Figure 4.** The willingness to sacrifice personal interests and use waste metering charge system.

As shown in the Appendix A, in terms of “no disposable tableware”, 65% of the respondents thought that they wouldn’t choose “no disposable tableware” when they order takeout. Meanwhile, 31% of the respondents admitted that they never noticed this option. The option of “no disposable tableware” is an added option for the takeout platform to promote ecological civilization behavior. However, most college students choose the number of disposable tableware subconsciously according to the actual number of diners, and even worry about the quantity is not enough. They were unaware of the intention to set this option, and do not take into account the factors of environment protection.

In addition, according to Appendix A, the channels for college students to obtain information about ecological civilization are mainly based on the internet. In 2013, the relevant study showed that 59.0% of the respondents aged 19 to 29 acquired knowledge of ecological civilization from the Internet [13]. Surprisingly, 91.32% of college students obtain information from the internet in this research. This number has increased by more than 30% compared with 2013, which indicated that network promoted ecological civilization. The second one is by watching television and listening to broadcast to make up 75.46%. It indicated that college students are also affected by the traditional media, such as television, radio and newspapers, but the most influential channel is the internet. However, in this survey, there was no one obtaining information of ecological civilization from university education, traditional press, or government propaganda to reflect that there is lack of university education and inadequate propaganda in traditional media to promote ecological civilization.

Above all, the survey showed that facilitating conditions did influence ecological civilization behaviors of college students. When personal interests conflicted with the environmental interests, some college students would not carry out ecological civilization practice very well. At the meantime,



society also did not provide suitable facilities for ecological civilization. Overall, these two reasons have led to the low degree of ecological civilization practice for college students.

### 3.3. Habits

According to the survey, when asked “Do you insist on saving water?”, the proportion of college students who choose “Yes, always” and “Yes, sometimes” accounted for 31.75% and 60.74% respectively, while the proportion who choose “No, I don’t” only accounted for 7.51%, which meant most college students had the consciousness of saving water and had formed the habit. Compared to the habit of water saving, the habit of green purchase had not yet been developed. Only 4.32% of college students had preference to buy goods with green logo, while 43.24% of them expressed that with fair price, it would be given priority to purchase. Another finding is that 12.21% of the respondents had no idea about green logo, not to mention considering it when shopping. It can be seen that less than half of college students choose green purchase to imply that green purchase had not filtered into people’s minds. Therefore, it was necessary for us to focus on promoting green purchase in the subsequent propaganda.

With the booming development of online shopping, the problems of excessive packaging and packaging pollution are becoming more and more serious. Most of the plastic packaging used for commodities is non-degradable and inferior plastic products with composition and quantity to have a serious impact on environment. Meanwhile, more and more attention has been paid to the pollution caused by waste batteries. Therefore, we investigated the habits of waste batteries and express packages disposal, and the results are quite different, as shown in Figure 5. Regarding “How do you deal with waste batteries?”, 55.28% selected “Use rechargeable batteries”, followed by “Throw it into the waste battery recycle box” (24.16%), and “Just throw it into the trash” (20.56%). Compared to waste batteries disposal, the habit of dealing with abandoned express packaging was less environmentally friendly, where 34.64% of interviewed college students would discard it casually and no one sent the express packaging to the recycling shed. It should be noted that as a new waste pollutant, express packaging had not attracted public attention as much as that of waste batteries.

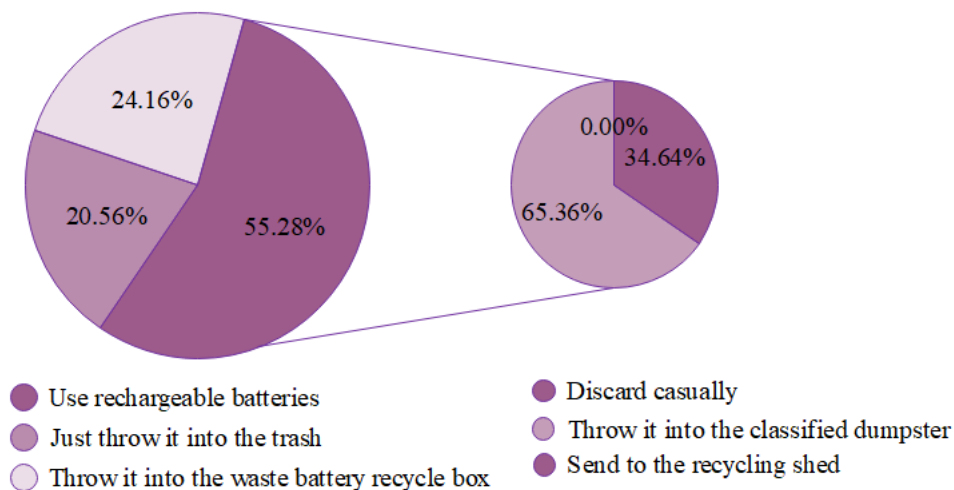


Figure 5. The habits of waste batteries and express packages disposal.

With regard to transportation, over 80% of college students choose “public transport” as their primary choice of transportation. With the advent of “shared economy”, shared bikes have entered our modern life increasingly. Shared bikes facilitate environmental protection by changing people’s travel and ease the city’s congestion to some extent. Under such circumstance, 76.54% of college students choose “shared bikes”. Figure 6. showed that college students have formed the habit of ecological civilization on the choice of transportation. However, due to the limitation of objective conditions, it

was almost impossible for college students to go out by means of private cars in the university, which in turn increased the proportion of choosing public transportation.

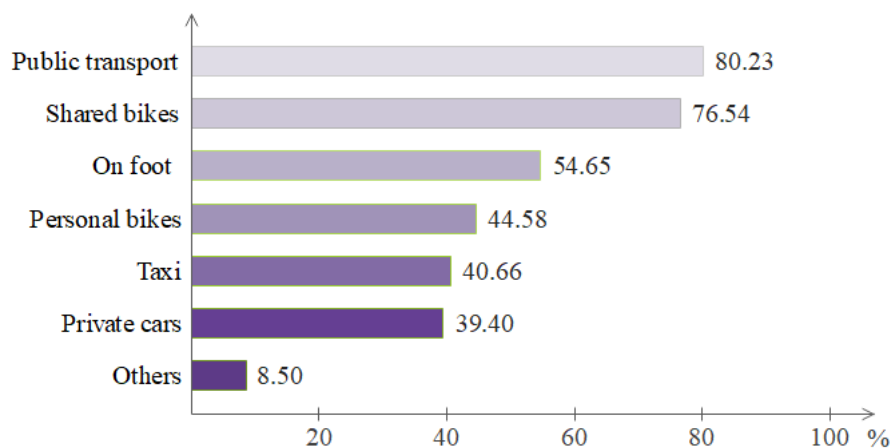


Figure 6. Respondents' primary choice of transportation.

Above all, the survey showed that habits did have an impact on college students' practice of ecological civilization. As revealed in this research, college students exhibit good habits of water saving and waste batteries disposal. This was consistent with the conclusion of other relevant studies that citizens did better in traditional energy-saving and environmental protection habits, such as not littering, saving water and electricity [13]. Under the new situation, college students had become the main consumer group of the takeout and online shopping platform. However, due to lack of adequate ecological civilization education, the guidance of the habits of takeout and online shopping, based on the concept of ecological civilization, had not been formed. As well, the initiative of environmental protection, ecological civilization awareness and ecological civilization behaviors in these two aspects need to be strengthened.

### 3.4. Intentions

Regarding the attitudes of ecological civilization construction, almost all of college students indicated that ecological civilization construction is more important than economic development. However, when mentioned the initiative to talk about the ecological environment, only 13.72% of college students choose "Yes, always". On the contrary, the proportion of college students who choose "No, I don't" accounts for 38.94%. It can be seen that college students lack interest and initiative in discussing the topic of ecological civilization. Although college students regard ecological civilization construction as an important task, they couldn't actively promote ecological civilization.

According to the survey, 95.98% of college students are concern about current situation of ecological environment in China, while only 4.02% of the respondents are indifferent to the environment. However, when referring to the importance of individual's awareness, the proportion of "Yes" had declined to 80.2%. In other words, 19.8% of the respondents thought that the individual's awareness of ecological civilization has little influence on the construction of ecological civilization. This implies that though some college students are worried about the environment, but they don't think their awareness of ecological civilization will affect the environment. This also explained why some students still carried out the actions would cause damage to the ecological environment in modern society, even though they are clearly aware of that. We must make it clear that the idea that our role is insignificant in ecological civilization is wrong. Only when everyone participates in ecological civilization construction will the ecological civilization be realized.

According to the survey to the question "the response to destroy ecological environment", most of college students ignore the behaviors of destroying environment, as illustrated in Figure 7. They hold the view that it was none of their business of ecological civilization construction. Only 2.3% of them

will step forward to stop the behaviors. However, as contemporary college students, we should not only abide by the principles of ecological civilization construction, but also be brave to fight against the behaviors of destroying the ecological environment.

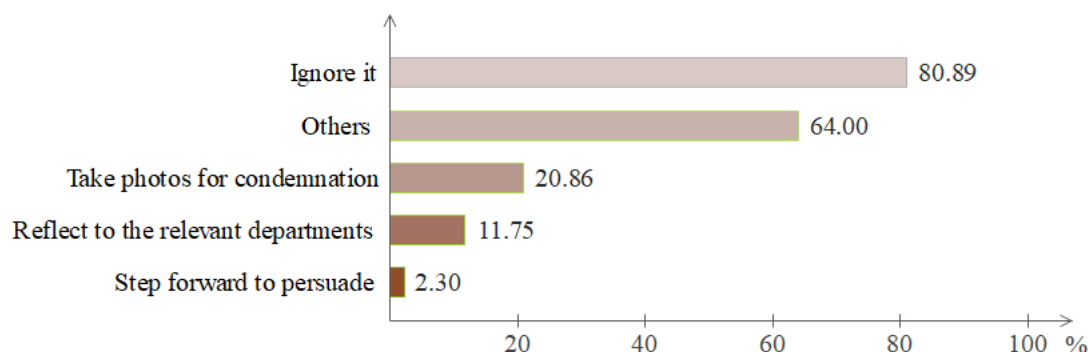


Figure 7. The respond to destroy ecological environment.

In this study, college students' awareness of ecological civilization has a strong characteristic of "government dependency", which is consistent with previous studies [13]. Regarding "the responsible subject of ecological civilization construction", 95.34% of college students consider it is the responsibility of governments and environmental protection departments, followed by enterprises (20.46%), citizens (17.53%), and the media (15.82%). We might conclude that college students believed that ecological civilization construction is the responsibility of the upper and middle levels and ecological civilization had a relatively small relationship with themselves as individuals. In order to solve this problem, it is necessary to strengthen awareness-raising and education, and to organize various forms of publicity activities, through joint efforts of society, government and universities. Only by doing this, the concept of ecological civilization will really root into the awareness of college students.

Finally, concerning "the formation of atmosphere for promoting ecological civilization", only 5.2% of the respondents believe that the society has formed a good atmosphere of ecological civilization. More than half think that although the society has formed an atmosphere, the effect is not obvious. In addition, 38.56% of college students express that there is no effect, which indicates that there is still much more to be done to achieve ecological civilization.

According to the survey, intentions, including attitudes, social factors and emotions, do influence ecological civilization behaviors of college students, which can be seen that most of college students exhibit the right attitude toward ecological civilization and gradually transform awareness into actions. However, there are some contradictions between attitude and behaviors of ecological civilization. Although inclined to a more environmentally friendly attitude, some actual actions are inconsistent with the attitude and do not effectively implement the principles of environmental protection. At the same time, college students are not actively involved in ecological civilization construction, which might be improved through strengthening their sense of ownership in the future.

#### 4. Policy Implications

According to discussions, there are four deficiencies in the ecological civilization practice of college students. First, there are still defects in the facilitating conditions for the implementation of ecological civilization behaviors. Second, college students do not have good habits, especially in green consumption. Third, college students' perception of their roles and self-concept are not enough. Finally, the society has not formed a good reference standard. To improve these deficiencies requires the joint efforts of individuals, government, families, universities and social organizations. Thus, in order to facilitate and consolidate ecological civilization construction, the following recommendations are proposed.

#### 4.1. To Create Facilitating Conditions

Undoubtedly, the government is the primary force to actively promote the implementation and development of ecological civilization. Thus, the government should reduce the cost of individual ecological civilization practice to promote the development of ecological civilization. Several measures could be taken by the government, such as instituting the law to promote ecological civilization preferential policies, economic incentives, or other advantages, and so on. Taking waste classification as an example, the government should actively explore a series of policy guarantee mechanisms, such as providing necessary sites, subsidy for garbage reduction, and special franchise, extending and expanding producer responsibilities, implementing green procurement, and so forth. Specifically speaking, government agencies can provide feedback and incentives to green consumption behaviors by providing financial subsidy, such as the promulgation of energy-saving appliances subsidy policy and waste classification incentives. The government should also reduce the inconvenience of recycling by increasing investment, such as improving infrastructure construction and increasing waste recycling sites. For example, the artificial intelligence garbage bins are very popular in Shanghai at present.

Besides, in order to make it easier for college students to access information about ecological civilization, social organizations should vigorously promote the application of new media by providing various incentives. The propaganda of environmental protection, energy saving and green consumption should be closer to college students, so as to achieve an effective communication. As the driving force to promote college students' behaviors of ecological civilization, social organizations could make full use of modern technologies and available channels, such as WeChat and micro-blog, to generate effective impetus to ecological civilization construction.

Moreover, regarding the behavior of choosing "no disposable tableware", it will be helpful to use the "Nudge" theory to influence college students' choices in the field of green consumption. "Nudge" means choice architecture that can change people's behaviors to make it work as expected [33]. Through situational creation and material arrangement, the user is encouraged to make the decision which the designer prefers to produce. The platforms of takeout and online shopping can use "Nudge" tool to promote college students' behaviors of ecological civilization. For example, the platforms of takeout and online shopping could set environmentally friendly options as the default options. The platforms could also analyze college students' consumption habits by statistical analysis, and then send personalized tips to individuals timely, informing them of their behavioral consequences and possible losses. These "Nudge" measures can help to facilitate college students' ecological civilization behaviors.

#### 4.2. To Form Good Habits

The practice of ecological civilization is the inescapable responsibility for every college student. To this end, college students should try to develop good habits of ecological civilization by making their motives clearly to fulfill ecological civilization behaviors, obtaining good feelings in the practice of ecological civilization, and sticking on these behaviors, so as to form good habits of ecological civilization.

Family members' habits also have profound impact on college students' ecological civilization behaviors. Family habits can imperceptibly change college students' awareness, and can be reflected on individual behaviors [34]. Thus, it is important to improve the environment, both hardware and software, so as to facilitate the family members in carrying out the behaviors of ecological civilization. The hardware includes the utilizations of energy-saving and environmentally friendly domestic appliances. The software mainly includes the formation of a good ecological civilization family atmosphere.

Furthermore, universities should also develop appropriate ecological civilization education to help college students form good habits. In the process of ecological civilization education, not only should we offer courses related to ecological civilization, but also, we should organize and carry out activities to abide by ecological civilization. If college students lack practical experience, they will lack emotion in the perception of ecological civilization, so that can't put awareness into action.

Lastly, as ecological civilization construction covering a wide range and lasting a long time, government should pay attention to the coordination and long-term effect of ecological civilization activities. It means that ecological civilization construction needs powerful organizational structure and suitable allocation of social resources to attain significant effectiveness. Therefore, through the initiation and institution of the ecological civilization promotion law mentioned earlier, the ecological civilization behaviors of individuals, families and universities can be greatly stipulated and elevated so as to ensure the formation and continuity of good ecological civilization habits.

#### *4.3. To Enhance Roles and Self-Concept*

In terms of roles and self-concept, college students should cultivate their own concept of ecological civilization and set up goals to promote ecological civilization construction. By setting goals, college students could realize their roles in ecological civilization construction, and have a good perception of their own ecological civilization behaviors.

Certainly, universities should also take a series of measures to promote college students to identify their roles and self-concept in ecological civilization. According to our survey, 16% of the 43 universities surveyed do not offer courses related to ecological civilization, 44% of universities only offered 1–3 courses, as shown in Appendix B. Therefore, universities should integrate ecological civilization into the teaching plans for all students to form a concrete ecological civilization education system. Meanwhile, through the indoctrination of the courses related to ecological civilization, college students will have a better understanding of their roles in ecological civilization construction.

To promote the formation of accurate roles and self-concept, the government should also establish and improve the institutional mechanism of ecological civilization education. The government could further perfect the competent department of ecological civilization education, organize the guiding committee of ecological civilization education for college students, and formulate the long-term planning of ecological civilization education.

#### *4.4. To Develop Good Reference Standards*

To develop good social reference standards, it is not enough to rely solely on society. Thus, college students should actively share their experiences of ecological civilization with others, spread positive energy among student groups, and encourage more people to participate in. By sharing with others, college students can also learn more approaches to practice ecological civilization.

As the demonstration center of ecological civilization education, university should be responsible to form good reference standard of ecological civilization. Teachers should play a leading role in sharing with students the knowledge of ecological civilization. Teachers' thinking mode, behavior patterns, lifestyles and consumption patterns play an important role in affecting students' behaviors. Hence, teachers should improve their awareness of ecological civilization, establish the concept of equality between human being and nature, and respect life to preserve biodiversity, so as so effectively form a good reference standard for college students.

Family plays an important role in nurturing and educating next generation. Of Course, it is the foundation of inheriting ecological civilization values and spreading ecological civilization culture. In order to provide good reference to next generation, the family should consciously undertake the responsibility of ecological civilization education from their young age. In particular, parents should develop good habits to influence next generation by their own actions.

### **5. Conclusions**

In order to facilitate ecological civilization practice in China, this study reviews the history of ecological civilization, elaborates the role and function of ecological civilization, and discusses relevant researches and studies on ecological civilization. Then, a questionnaire survey was conducted to examine the status quo of factors influencing ecological civilization practice of college students. Based



on the Triandis' Theory of Interpersonal Behavior (TIB) Model, it included the demographic variables, facilitating conditions, habits, and intentions.

The results show that different educational background and politics status could influence ecological civilization practice of college students. Society does not provide enough facilities for ecological civilization. When personal interests are in conflict with environmental interests, personal interests will prevail. As well, due to inactive environmental protection awareness, college students have not formed ecological civilization habits, while surfing on the platform of takeout and online shopping. Similarly, with regard to intentions, some actual behaviors are inconsistent with the attitude. Hence, according to the investigation, from the aspects of facilitating conditions, habits, and intentions, some policies to promote ecological civilization are urgently needed, which require the joint efforts of individuals, governments at all levels, families, universities, and social organizations.

Moreover, findings from this research may contribute to better understand the situation of various factors affecting the practice of ecological civilization. Furthermore, suggestions not only give opinions from the dimensions of different social groups, but also from the factors influencing practice. However, as the content of ecological civilization is very large but vague, the topics designed cannot clearly cover all aspects. The units and objects of the survey also have limitations and cannot fully cover all types of college students groups. In addition, the attitudes of respondents directly affect the accuracy of results and analysis on investigation. If the respondents are not aware of the meaning and purpose of the investigation and take a perfunctory attitude to answer, the results of the investigation will be inaccurate. Also, participants in the study may have been more pro-ecological to have taken part in the study. These have led to a certain impact on the objectivity and universality of the survey. For further research, in order to make the results more credible, the platform of the Alliance of Ecological Civilization Education would be a reliable channel to expand the scope of the survey, based on revised and improved TIB model, if applicable. In addition, the purpose and significance of the survey should be made clear to college students by pre-questionnaire before the formal investigation in the subsequent research.

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## Appendix A

**Table A1.** Questionnaire of College students' Ecological Civilization.

Part One—Demographic Variables		
Q1-1 What is your gender?	<input type="radio"/> Male	48.53%
	<input type="radio"/> Female	51.47%
Q1-2 What is your highest education qualification?	<input type="radio"/> Specialty education	9.87%
	<input type="radio"/> Undergraduate education	53.36%
	<input type="radio"/> Graduate education or above	36.76%
Q1-3 What is your politics status?	<input type="radio"/> Public people	2.52%
	<input type="radio"/> League member	71.22%
	<input type="radio"/> Party member of the CPC	25.21%
	<input type="radio"/> Other party members	1.05%
Q1-4 What is your major?	<input type="radio"/> Liberal arts	30.67%
	<input type="radio"/> Science	34.45%
	<input type="radio"/> Engineering	31.30%
	<input type="radio"/> Other	3.57%

Table A1. Cont.

Part Two—Facilitating conditions		
Q2-1 Could you sacrifice personal interests to protect the environment?	<input type="radio"/> Yes, I could	84.01%
	<input type="radio"/> No, I couldn't	4.01%
	<input type="radio"/> It depends	11.98%
Q2-2 Do you choose “no disposable tableware” when you order takeout?	<input type="radio"/> Never notice this option	31.00%
	<input type="radio"/> Yes, always	1.00%
	<input type="radio"/> Yes, sometimes	3.00%
	<input type="radio"/> No, I don't	65.00%
Q2-3 Do you support the waste charge system that the more rubbish you throw, the more you pay for it?	<input type="radio"/> Yes, I do	70.64%
	<input type="radio"/> No, I don't	27.35%
	<input type="radio"/> It depends	2.01%
Q2-4 What are the main channels for you to obtain information about ecological civilization?	<input type="checkbox"/> Radio and television	75.46%
	<input type="checkbox"/> University education	0.00%
	<input type="checkbox"/> Newspapers and magazines	0.00%
	<input type="checkbox"/> Government propaganda	0.00%
	<input type="checkbox"/> Network platform	91.32%
	<input type="checkbox"/> Some others	0.00%
Part Three—Habits		
Q3-1 Do you insist on saving water?	<input type="radio"/> Yes, always	31.75%
	<input type="radio"/> Yes, sometimes	60.74%
	<input type="radio"/> No, I don't	7.51%
Q3-2 Do you prefer products with green logo when you buy goods?	<input type="radio"/> Yes, I do	4.32%
	<input type="radio"/> It depends on the price	43.24%
	<input type="radio"/> Green logo is not important factor	40.23%
	<input type="radio"/> Have no idea about green logo	12.21%
Q3-3 How do you deal with waste batteries?	<input type="radio"/> Use rechargeable batteries to avoid the production of waste batteries	55.28%
	<input type="radio"/> Just throw it into the trash	20.56%
	<input type="radio"/> Throw it into the waste battery recycle box	24.16%
Q3-4 How do you deal with abandoned express packages?	<input type="radio"/> Discard casually	34.64%
	<input type="radio"/> Throw it into the classified dumpster	65.36%
	<input type="radio"/> Send to the recycling shed	0.00%
Q3-5 What is your primary choice of transportation?	<input type="checkbox"/> Public transport	80.23%
	<input type="checkbox"/> Private cars	39.40%
	<input type="checkbox"/> Taxi	40.66%
	<input type="checkbox"/> On foot	54.65%
	<input type="checkbox"/> Personal bikes	44.58%
	<input type="checkbox"/> Shared bikes	76.54%
	<input type="checkbox"/> Some others	8.50%
Part Four—Intentions		
Q4-1 Which one is more important at the present stage in China, ecological civilization construction or economic development?	<input type="radio"/> Ecological civilization construction	91.29%
	<input type="radio"/> Economic development	2.35%
	<input type="radio"/> Equally important	6.36%
Q4-2 Do you take the initiative to talk about the ecological environment with your friends?	<input type="radio"/> Yes, always	13.72%
	<input type="radio"/> Yes, sometimes	47.34%
	<input type="radio"/> No, I don't	38.94%
Q4-3 Are you concerned about current environment situation?	<input type="radio"/> Yes, I am	95.98%
	<input type="radio"/> No, I am not	4.02%

Table A1. Cont.

Q4-4 What would you do if you found that someone destroyed ecological environment around you?	<input type="checkbox"/> Step forward to persuade	2.30%
	<input type="checkbox"/> Reflect to the relevant departments	11.75%
	<input type="checkbox"/> Take photos and upload them to the internet for condemnation.	20.86%
	<input type="checkbox"/> Ignore it	80.89%
	<input type="checkbox"/> Some others	64.00%
Q4-5 Do you think that society has formed atmosphere for promoting ecological civilization?	<input type="radio"/> Yes, the effect is remarkable	5.20%
	<input type="radio"/> Yes, but the effect is not significant	53.88%
	<input type="radio"/> No, there is no effect	38.56%
	<input type="radio"/> It is unable to make it clear	2.36%
Q4-6 Who do you think is the responsibility subject of ecological civilization construction?	<input type="checkbox"/> Government and relevant departments	95.34%
	<input type="checkbox"/> Environmental protection departments	90.86%
	<input type="checkbox"/> Enterprises	80.54%
	<input type="checkbox"/> Media	66.54%
	<input type="checkbox"/> Citizens	25.23%
	<input type="checkbox"/> Social organizations	60.32%
Q4-7 Does the individual's consciousness of ecological civilization have an important influence on the construction of ecological civilization?	<input type="radio"/> Yes, it does	80.20%
	<input type="radio"/> No, it doesn't	19.80%

## Appendix B

Table A2. Questionnaire of Ecological Civilization Courses in Universities.

University Name: _____	
1. Are there any courses related to ecological civilization education in your school?	<input type="radio"/> Yes, there are (Please turn to the fourth question) <input type="radio"/> No, there are not (Please turn to the second question)
2. Will your school plan to offer courses related to ecological civilization education in next academic year?	<input type="radio"/> Yes, it will (Please turn to the third question) <input type="radio"/> No, it won't (Please turn to the sixth question)
3. What is the target group that your school intends to aim at?	<input type="radio"/> Undergraduate <input type="radio"/> Postgraduate <input type="radio"/> Other _____
4. What is the target group that your university aims at?	<input type="radio"/> Undergraduate <input type="radio"/> Postgraduate <input type="radio"/> Other _____
5. What is the nature of ecological civilization education courses?	<input type="checkbox"/> Public elective course <input type="checkbox"/> Professional elective course <input type="checkbox"/> Compulsory courses <input type="checkbox"/> Other _____
6. Does your school offer MOOC online courses to promote ecological civilization education?	<input type="radio"/> Yes, it does <input type="radio"/> No, it doesn't
7. In addition to the courses, what are the activities of ecological civilization education carried out by your university?	

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