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A Pilot Assessment of New Energy Usage Behaviors: The Impacts of Environmental Accident, Cognitions, and New Energy Policies

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Literature reviews and interviews with experts showed that new energy would be the future way of life instead of traditional energy. In this study, a questionnaire survey and SPSS model are used to examine the impacts on people's new energy usage behavior (NEUB) by its cognitions of energy-related environmental accidents (CEREA) and new energy policies (CNEP), as well as other important factors affecting this behavior. The new energy usage behavior examines people's new energy usage behavior of product usage ($NEUB_{PU}$) and forecasted payment ($NEUB_{FP}$). Among the influencing factors, people's cognitions of energy-related environmental accidents (CEREA), people's cognitions of new energy policies (CNEP), new energy characteristics (CNEC), new energy advantages (CNEA), and new energy disadvantages (CNED) are examined, and the influence of personal factors on NEUB is also examined. People's new energy usage behavior of new energy stove ($NEUB_{NES}$), new energy car ($NEUB_{NEC}$), and $NEUB_{FP}$ are significantly positively correlated with CNEP; $NEUB_{NEC}$ is significantly positively correlated with CNEA, and $NEUB_{FP}$ is significantly positively correlated with CNEP and CNED. CNEC and CNEP significantly influence people's new energy usage behavior of household photovoltaic system ($NEUB_{HPS}$); CNEP significantly influences $NEUB_{NES}$; age, monthly income, CNEA, and CNEP significantly influence $NEUB_{NEC}$; age, monthly income, and CNEP significantly influence $NEUB_{FP}$.

Keywords: environmental accidents, new energy usage, cognitive behavior, policymaking, China

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1 INTRODUCTION

The world is undergoing a transformation for a low-carbon future (Chishti et al., 2021; Oryani et al., 2021; Oryani et al., 2022). The United Nations Development Program (UNDP) classifies new energy into the following three categories: large and medium-sized hydropower; new renewable energy, including small hydropower, solar energy, wind energy, modern biomass energy, geothermal energy, and ocean energy (tidal energy); and penetrate biomass energy. More specifically, the transfer process of new energy includes primary and secondary energy, which is energy directly from nature and processed into electric energy. Among them, it is worth noting that although nuclear energy is one of the new energies, after the accident of the Fukushima Daiichi nuclear power plant, the government's initiative in the direction of nuclear energy research and development still plays an important role. The advantages and disadvantages of nuclear energy policies are correctly evaluated to gain the public's understanding and trust. Given a series of environmental accidents caused by

over-exploitation of traditional energy sources and the disastrous effects such as disease spread, in January 2006, China began to implement the *Renewable Energy Law of the People's Republic of China*, which showed the great significance of renewable energy for future social life, and pointed out a more precise direction for the future development of renewable energy and promoted the need of high-quality energy development. Most of the literature suggests that the new energy industry benefits the national economy by helping the development of the digital energy economy, improving environmental quality, and realizing sustainable energy development (Wang et al., 2021). In addition, the new energy industry has many characteristics of low carbon and environmental protection, which plays a positive role in the competitiveness, profitability, and enterprise performance of manufacturing enterprises. More specifically, the new energy industry can alleviate or even eliminate the tension between human behavior and the ecological environment by improving the utilization rate of energy resources, using low-carbon technology innovation, implementing green products, and controlling the cost of industrial waste treatment (Alvarado et al., 2018; Khan et al., 2021). With the green innovation characteristics of the new energy industry, it is helpful to help and consolidate the expectations of related enterprises in the overall competitiveness while improving profits and environmental performance (Bai et al., 2021). Not only that, but the new energy industry can also realize no pollutant discharge, which brings the energy social cost (health cost and climate cost) to zero, and at the same time reduces the demand for energy. In addition, creating long-term full-time jobs, realizing coordinated development of ecology and economy in power generation, and optimizing life cycle costs meet the needs of enterprises.

Our work collated the existing literature in China and found that there are a total of 577 articles on the new energy industry, and the research topics mainly belong to development research (or social research). The interests focused on the application and development of new energy. Among the articles published, 53% were on the new energy industry as the main theme. The second most frequent field is new energy, with 104 articles published, accounting for 19%. The main theme with the least publications is overcapacity, photovoltaic estate, and government subsidies, all accounting for 1.92%. Nonetheless, among these themes, few empirical studies have been conducted on the impact of environmental issues and policies on Chinese people's behavior toward new energy use, which shows that this theme is researchable. Wang et al. (2020) believed that the new energy policies implemented by the Chinese government have a significant positive impact on the "30–60" strategy based on the "five in one" perspective. Markard and Truffer (2006) indicated earlier that green power products involve many product fields, such as household photovoltaic systems and new energy cars. People can choose green power products voluntarily according to their preference for new energy. They can not only guide people to pay more attention to green consumption demand but also positively impact the promotion of new energy as one of the supplements of government energy policies (Chen and Zhang, 2021; Zhang et al., 2022). The present study found that the number of studies focusing on new energy policy increases over time. However, most studies focus on the relationship between new energy and low-carbon development (Xu et al., 2019; Chou et al., 2020; Su et al., 2022). Few studies focused on Chinese people's new energy usage behavior (NEUB) and not many studies discussed the impacts on Chinese NEUB by its cognitions of energy-related environmental accidents (CEREA) and people's cognitions of new energy policies (CNEP). For example, Caineng et al. (2021) pointed out that climate warming has become a global concern. Moving toward carbon neutrality is the consensus of human beings for green development, and new energy, as the main force of energy transformation, can effectively help low-carbon emissions. By using the financial statements of Chinese listed hydrogen-related companies from 2011 to 2019, Huang et al. (2021) analyzed the input-output relationship and found that location, equity owner, and equity concentration are significant factors can generate moderating effects on energy development Sun and Ren, (2021) discussed the relationship between energy consumption structure and carbon emissions by the SWI index and studied using the ARDL method that reducing coal consumption and expanding new energy investment can reduce carbon emissions. Sattler et al. (2018) analyzed the *Future Energy Employment Act of Illinois*, which showed that coal-fired power plants had a tremendous negative impact on public health. It was wise to accelerate the transition to clean energy resources. Although these studies acknowledged the importance of new energy but do not discuss the impact of existing renewable energy policies and environmental issues on Chinese people's new energy use behavior.

As a pilot study, the present study proposes the following research purposes:

1) Exploring the relationship between environmental accident cognition and people's new energy use behavior;
2) Exploring the relationship between new energy-related cognition and new energy use behavior;
3) Exploring the correlation between people's personal factors and people's new energy use behavior.

Based on the aforementioned research purposes, this study will achieve a preliminary understanding of which factors will promote and hinder people's new energy use behavior. First, based on the current energy situation, this study examines the driving factors of Chinese NEUB through the econometric model and provides targeted suggestions on energy policies and strategic ideas for future energy issues for the Chinese government in terms of industrial development. In addition, this study will help related enterprises to improve their management, speed up the adjustment of industrial structure, and then improve the level of new energy consumption. Second, although this study is based on the Chinese people's perspective, it has become a common challenge for humanity to cope with global climate change, and no one can be immune to the climate crisis. Therefore, from another angle, we try to help more people realize the significance of developing new energy in today's era, encourage and guide people to participate in the use of new

energy, and form green consumption to increase the promotion of new energy products.

2 METHODOLOGY

2.1 Descriptive Statistics

A questionnaire was designed to assess the impact of environmental accidents and new energy policies on people's new energy use behavior. The survey was carried out from 10 December 2021 to 12 February 2022 through a Chinese survey platform "Wenjuanxing". The final valid questionnaires were 373. The demographic description of respondents is as follows: (Alvarado et al., 2018): Gender: 54.69% male and 45.31% female (Bai et al., 2021); Age: the average is 40.07, the standard deviation is 10.51 (Caineng et al., 2021); Education: junior college or above accounted for 71%, senior high school or below accounted for 29% (Chen and Zhang, 2021); Region: 59% respondents were from urban area and 41% from non-urban; and Income: the average monthly income is RMB 8445.04, the standard deviation is 4,618.69.

The specific NEUBs surveyed were about people's new energy usage behavior of new energy stove ($NEUB_{NES}$), new energy car ($NEUB_{NEC}$), and household photovoltaic system ($NEUB_{HPS}$), the product usage ($NEUB_{PU}$), and forecasted payment ($NEUB_{FP}$) of these behaviors.

$NEUB_{PU}$ stands for people's new energy usage behavior of product usage, that is, respondents' preference for renewable energy products. The selected dimensions used to represent $NEUB_{PU}$ are as follows:

(1) $NEUB_{NES}$: $NEUB_{NES}$ refers to people's new energy usage behavior of new energy stove. It is expected that by 2050, domestic solar power generation will meet about 11% of global energy demand. This can address the energy access gap for those who are geographically restricted and have no or unreliable electrical service. However, among the types of green energy, the potential of solar energy in China is still unclear, which hinders the overall layout of energy planning to a certain extent, so it is worth further exploration. The public acceptance of household solar power generation was measured by asking participants whether they used solar water heaters, solar household lighting, and heating lamps.

(2) $NEUB_{NEC}$: $NEUB_{NEC}$ refers to people's new energy usage behavior of new energy car, that is, the acceptance of new energy vehicles under the new energy vehicle policy cognition. It was selected as the item to be measured because $NEUB_{NEC}$ shows great potential in reducing carbon emissions and pollution. Therefore, understanding the factors that affect the public's perception of $NEUB_{NEC}$ is crucial for the popularization of new energy vehicles. During the measurement, participants were asked whether the public would use new energy vehicles instead of traditional gasoline vehicles under the current preferential policies and tax incentives for new energy vehicles in China.

(3) $NEUB_{HPS}$: $NEUB_{HPS}$ is people's new energy usage behavior of household photovoltaic system, which means that people convert households to new combustion technologies with higher combustion efficiency and lower pollutant emissions, thereby replacing the use of traditional fuels. It was chosen as the item of measurement because the promotion of $NEUB_{HPS}$ offers a possible solution to achieve clean burning of residential solid fuels. During the measurement, participants were asked whether new energy fuel stoves were used as a substitute under the high emissions caused by traditional solid fuels.

$NEUB_{FP}$ represents people's new energy usage behavior of forecasted payment. It was selected as the measured item because when the public showed a positive attitude toward $NEUB_{FP}$, they were more concerned about the environment and more accepting of the low-carbon transformation of the energy structure. This can predict people's willingness to use renewable energy. The measurement was performed by asking participants how much they planned to pay for green energy products under the willingness-to-pay structure.

Based on causal logics, the NEUB is assumed here to be influenced by the CEREA, CNEP, CNEC, CNEA, and CNED. The items comprising these influencing factors which let participants show agreements were as follows: (Alvarado et al., 2018): CEREA agreed in the following order: the negative impact of climate change; increasing the demand for new energy (95.71%); China's "power cuts"; forming a low-carbon emission reduction consumption pattern (86.60%); and Japan's Fukushima nuclear accident, which affects the choice of new energy (49.59%) (Bai et al., 2021). CNEP agreed in the following order: providing preferential policies for new energy to the Chinese government, expanding the demand for new energy (92.23%), new energy policies promoted by the Chinese government (92.22%), and new energy promoted by the Chinese government (89%). CNEC agreed in the following order: technical level of products (65.68%), standards and specifications (65.68%), infrastructure construction (61.66%), and product pricing (45.58%). CNEA agreed in the following order: restoring environmental balance (67.02%), solving energy shortage (63.54%), lower cost (46.65%), and expanding employment (42.36%). CNED agreed in the following order: lack of core technology (44.50%), regional restriction (43.97%), immediacy (37.80%), and intermittence (37%).

2.2 Data Analysis

As the development of new energy is China's long-term development goal, the Chinese government and related enterprises need to understand the influencing factors of the NEUB. Therefore, this study uses a structural equation model to analyze the data and discusses the Chinese NEUB and the influence of various factors. Previous studies used the Tobit model, DID method, and panel data technology to explore the relationship between new energy and low-carbon development. However, no study used the binary Logistic model in SPSS to study Chinese NEUB by CEREA and CNEP. However, CNEP, CEREA, and social economy may influence NEUB. For example, Dagher and Harajli, (2015) used the Tobit model to analyze the relationship between Lebanese people's willingness-to-pay for new energy electricity and the social economy. Hossain et al. (2022) used the ARDL boundary test method to study the relationship between severe environmental problems caused by

TABLE 1 | Correlation between NEUB and its influencing factors.

		NEUB			
		$NEUB_{PU}$			$NEUB_{FP}$
		$NEUB_{HPS}$	$NEUB_{NES}$	$NEUB_{NEC}$	
Influencing factors	CEREA	0.00	–0.01	0.03	–0.09
	CNEP	0.10	0.12*	0.19***	0.20***
	CNEC	–0.06	–0.02	0.10	0.06
	CNEA	0.06	0.06	0.22***	–0.03
	CNED	0.02	0.03	0.09	–0.08

*, **, ***. The correlations are significant at 0.05, 0.01, and 0.001 levels (two-tailed).

TABLE 2 | ANOVA analysis of NEUB on CEREA, CNEP, CNEC, CNEC, and CNED.

		NEUB			
		$NEUB_{PU}$			$NEUB_{FP}$
		$NEUB_{HPS}$	$NEUB_{NES}$	$NEUB_{NEC}$	
Influencing factors	CEREA	0.01	0.05	0.36	1.18
	CNEP	3.55	5.46*	13.31***	5.73***
	CNEC	1.15	0.15	3.50	1.64
	CNEA	1.23	1.50	18.08***	0.45
	CNED	0.130	0.26	3.18	3.33

*, **, ***. The correlations are significant at the 0.05, 0.01, and 0.001 levels (two-tailed).

TABLE 3 | Independent sample *t*-test and ANOVA-check of gender, education, and region on NEUB.

		Gender (F(T))	Education (F(T))	Region (F(T))	Age (F)	Income (F)
NEUB	$NEUB_{HPS}$	4.27*(1.06)	3.77*(–1.36)	0.54 (–0.38)	0.52	0.43
	$NEUB_{NES}$	0.24 (0.24)	0.42 (–0.32)	0.02 (–0.07)	2.22	1.07
	$NEUB_{NEC}$	10.64***(–1.62)	1.37 (–0.56)	7.75**(–1.37)	1.57	2.30
	$NEUB_{FP}$	6.56**(–1.23)	4.76*(–0.97)	3.15 (–1.40)	2.53*	0.53
Influencing factors	CEREA	1.31 (3.68***)	0.00 (–0.07)	0.09 (–0.11**)	4.55**	1.46
	CNEP	0.77 (–1.32)	3.57*(–2.79**)	0.15 (–2.55**)	3.80**	1.07
	CNEC	2.06 (1.88)	4.39*(–1.37)	0.03 (–0.64)	1.44	1.07
	CNEA	0.30 (0.81)	4.05*(–0.86)	0.54 (–0.61)	0.85	4.66**
	CNED	0.59 (0.77)	6.37**(–2.14*)	0.00 (–0.93)	1.94	10.68***

*, **, ***. The correlations are significant at 0.05, 0.01, and 0.001 levels (two-tailed).

chemical energy and the necessity of using new energy. Masrahi et al. (2021) used the research model of TPB to find the sensitivity of CNEP to the willingness to use new energy was significantly positively correlated. In a word, previous studies often used the ARDL method to explore the relationship between variables. To sum up, we used the likelihood ratio test, the most commonly used binary logistic regression model, to evaluate Chinese NEUB. The form of binary Logistic regression is as follows: $p = \frac{e^{\beta_0+\beta_1 x_1+\ldots\ldots+\beta_k x_k}}{1+e^{\beta_0+\beta_1 x_1+\ldots\ldots+\beta_k x}}$.

Among them, p is the probability of Chinese NEUB; x_1, x_2,. . ., x_k are the influencing factors; β_0, β_1,. . ., β_k are the regression coefficients; k is the number of samples; and β_0, β_1,. . ., β_k indicates x_1, x_2,. . ., x_k influence on Chinese NEUB. This can be regarded as the linear regression of p to k variables, and $0 \leqslant p \leqslant 1$. We can establish binary logistic regression models according to the differences between independent and dependent variables. The dependent variable replaces the value of p, the value of x_k (k = 1, 2, . . . m) is replaced by the independent variable, and the regression coefficient β_k (k = 0, 1, 2, . . . m) can be calculated the linear regression function through statistical software. This study collates CEREA, CNEP, CNEC, CNEA, and CNED. As shown in **Table 1**, the $NEUB_{NEC}$, and $NEUB_{FP}$ are significantly positively correlated with CNEP and $NEUB_{NEC}$ is significantly positively correlated with CNEA.

ANOVA analysis results of $NEUB_{PU}$ and $NEUB_{FP}$ of Chinese on CEREA, CNEP, CNEC, CNEA and CNED are shown in **Table 2**. $NEUB_{NES}$, $NEUB_{NEC}$ and $NEUB_{FP}$ are significantly positively correlated with CNEP, $NEUB_{NEC}$ is significantly positively correlated with CNEA and $NEUB_{FP}$ is only significantly positively correlated with CNEP.

In order to analyze the results of the questionnaire more profoundly, this article explores the impact of gender, age, education, region, and monthly income on CEREA, CNEP, CNEC, CNEA, and CNED. As shown from **Table 3**, gender

has a significant impact on the $NEUB_{HPS}$, $NEUB_{NEC}$, $NEUB_{FP}$, and CEREA; education has a significant impact on the $NEUB_{HPS}$, $NEUB_{FP}$, CNEP, CNEC, CNEA, and CNED; and the region has a significant impact on the $NEUB_{NEC}$, CEREA, and CNEP. As shown from **Table 3**, age has a significant impact on the CNEA, $NEUB_{HPS}$, and CNED and income has a significant impact on the $NEUB_{NEC}$ and $NEUB_{FP}$.

According to the regression analysis results of the $NEUB_{FP}$, the multiple of R is the correlation coefficient R between the independent variable X and the explanatory variable Y, which is 0.38, which is a low correlation. The R-squared indicates that the correlation coefficient R^2 between the independent variable X and the explanatory variable Y, which is 0.14, indicating a low degree of fit. The adjusted R^2 is 0.12, indicating a low fit. The standard error is 2,676.60, indicating a high degree of it. The ANOVA focuses on the p-value of Significance F, p = 0.000. Therefore, this statistical test is considered significant.

A binary logistic regression analysis of $NEUB_{HPS}$ was conducted. In the case handling summary, 373 cases are selected, and 0 cases are not selected. This result is obtained according to the set validate = 1. In the dependent variable coding, it can be seen that the values of "yes" or "no" of "$NEUB_{HPS}$" are 1 and 0, respectively. In the "Classification Table", it is predicted that there are 159 "No" (not $NEUB_{HPS}$) and 214 "Yes" ($NEUB_{HPS}$); In "Variables in the equation", the memory of "constant term" was initially assigned, with B being 0.297 and standard error being 0.105, then Wald = (B/S.E) = (0.297/0.105) = 8.0008, which is almost close to "8.0505" in the table because B and Exp(B) are logarithmic relations. After the logarithmic transformation of B, we can get Exp (B) = e + 0.297 = 1.346, in which the degree of freedom is one and sig is 0.005, which is very significant.

A binary logistic regression analysis of $NEUB_{NES}$ was conducted. In the case handling summary, 373 cases were selected, and 0 cases were not selected. This result was obtained according to the set validate = 1. In the dependent variable coding, it can be seen that the values of "yes" or "no" of "$NEUB_{NES}$" are 1 and 0, respectively. In the "Classification Table", it is predicted that there are 265 "No" (not $NEUB_{NES}$) and 108 "Yes" ($NEUB_{NES}$); In "Variables in Equation", the memory of "constant term" is initially assigned, with B being −0.898 and standard error being 0.114, then Wald = (B/S.E) = (−0.898/0.114) = 62.0502, which is the same as "61.8194" in table. B and Exp(B) are logarithmic relations. After the logarithmic transformation of B, we can get Exp (B) = e −0.898 = 0.408, in which the degree of freedom is one and sig is 0.000, which is very significant.

A binary logistic regression analysis of $NEUB_{NEC}$ was conducted. In the case handling summary, 373 cases were selected, and 0 were not selected. This result is obtained according to the set validate = 1. In the dependent variable coding, it can be seen that the values of "yes" or "no" of "$NEUB_{NEC}$" are 1 and 0, respectively. In the "Classification Table", it is predicted that there are 251 "No" (not $NEUB_{NEC}$) and 122 "Yes" ($NEUB_{NEC}$); In "Variables in Equation", the memory of "constant term" is initially assigned, with B being −0.721 and standard error being 0.110, then Wald = (B/S.E) = (−0.721/0.110) = 42.9621, which is the same as "42.7282" in table. B and Exp(B) are logarithmic relations. After the logarithmic transformation of B, we can get Exp (b) = e −0.721 = 0.486, in which the degree of freedom is one, and the sig is 0.000, which is very significant.

TABLE 4 | Regression coefficients analysis of $NEUB_{HPS}$, $NEUB_{NES}$, $NEUB_{NEC}$, and $NEUB_{FP}$.

	$NEUB_{HPS}$	$NEUB_{NES}$	$NEUB_{NEC}$	$NEUB_{FP}$
Intercept	0.50	−2.49*	−5.04***	1780.89
Gender	−0.31	−0.13	0.32	13.28
Age	−0.02	0.02	−0.03*	26.50*
Education	0.31	0.06	−0.11	115.07
Region	0.09	−0.01	0.06	−115.00
Income	$3.50*10^{-5}$	$-1.77*10^{-5}$*	$6.64*10^{-5}$**	0.17***
CNEC	−0.12*	−0.10	−0.07	74.33
CNEA	0.10*	0.07	0.23***	−76.08
CNED	0.01	0.02	−0.02	−84.50
CEREA	−0.03	−0.05	0.12	−169.59
CNEP	0.16*	0.20*	0.30***	388.77***

*, **, ***. The correlations are significant at 0.05, 0.01, and 0.001 levels (two-tailed).

According to **Table 4**, the regression coefficients of $NEUB_{HPS}$, $NEUB_{NES}$, $NEUB_{NEC}$, and $NEUB_{FP}$. This means that the regression equation of $NEUB_{HPS}$ is

$$NEUB_{HPS} = -0.12 * \text{CNEC} + 0.10 * \text{CNEA} + 0.16 * \text{CNEP} + \mu. \quad (1)$$

According to Alvarado et al. (2018), people's $NEUB_{HPS}$ can be zero, and the significant factors of the people's $NEUB_{HPS}$ are its CNEC and CNEP.

$$NEUB_{NES} = -2.49 - * \text{Income} + 0.20 * \text{CNEP} + \mu. \quad (2)$$

According to Bai et al. (2021), people's $NEUB_{NES}$ is significantly greater than zero, and the significant factor of people's $NEUB_{NES}$ is its CNEP.

$$NEUB_{NEC} = -5.04 - 0.03 * \text{Age} + * \text{Income} + 0.23 * \text{CNEA} - + 0.30 * \text{CNEP} + \mu. \quad (3)$$

According to Caineng et al. (2021), people's $NEUB_{NEC}$ is significantly greater than zero., and the significant factor of people's $NEUB_{NEC}$ are its age, income, CNEA, and CNEP.

$$NEU_{BFP} = 26.50 * \text{Age} + 0.17 * \text{Income} + 388.77 * \text{CNEP} + \mu. \quad (4)$$

According to Chen and Zhang (2021), people's $NEUB_{FP}$ can be zero, and the significant factors of people's $NEUB_{FP}$ are its age, income, and CNEP.

3 CONCLUSION

Energy is a necessity for the survival and development of human society. In the era of high-quality growth, the new energy industry has become the commanding point of a new round of global economic development. Although the Chinese government has made fruitful work in the development of the new energy industry, the investment in domestic new energy needs to be strengthened. In addition, the Chinese people's cognitions of new energy are still partial, and related Chinese enterprises still lack key standard technologies in the "energy transformation". The purpose of this study is to explore the impacts on NEUB ($NEUB_{PU}$ and $NEUB_{FP}$) by its CEREA and CNEP, and other influencing factors (CNEC, CNEA, and CNED).

This study uses multiple regression models and ANOVA analysis to explore and analyses the impacts on NEUB by its CEREA and CNEP.

3.1 People's New Energy Usage Behaviors

According to the statistical results of the questionnaire analysis in this article, we found that the majority of people have some knowledge of the new energy industry, with male consumers dominating, accounting for 54.69%. In addition, 40% of people have a per capita monthly income below 5,000 yuan. In the $NEUB_{PU}$, $NEUB_{HPS}$ accounts for 57.37%, $NEUB_{NEC}$ accounts for 33.24%, and $NEUB_{NES}$ accounts for 28.69%, and 38.61% people are willing to spend less than RMB 2,500.

3.2 Factors Influencing the New Energy Usage Behavior

$NEUB_{NES}$, $NEUB_{NEC}$, and $NEUB_{FP}$ are significantly positively correlated with the CNEP, and $NEUB_{NEC}$ is significantly positively correlated with the CNEA. Furthermore, CNEC and CNEP significantly influence the $NEUB_{HPS}$; CNEP significantly influences the $NEUB_{NES}$; age, monthly income, CNEA, and CNEP significantly influence the $NEUB_{NEC}$; and age, monthly income, and CNEP significantly influence the $NEUB_{FP}$.

3.2.1 Optimize the Characteristics of New Energy Products

The government and related enterprises should provide targeted new energy products and services for people of different age groups and consumption needs, implement consumption subsidy measures, and find the combination point of comprehensively coping with the energy crisis and improving people's living standards. In terms of pricing, this study suggests that the government should implement the pricing in different wind resource areas in the on-grid tariff of wind power. The overall adjustment standard of photovoltaic power generation pricing is unreasonable. The pricing of biomass energy should be adjusted with time, market, and production conditions of enterprises so that supply and demand can play a full role.

3.2.2 Government has Increased the Support of New Energy Sources

Cultivating emerging industries is the key to coping with future competition and realize long-term development. Therefore, this study suggests that financial departments should innovate economic policies, further increase investment in new energy sources and emerging industries of energy conservation and environmental protection, especially the intensity of financial subsidies for new energy utilization enterprises, improve the implementation of preferential tax policies, and flexibly formulate different tax preferential forms, such as tax reduction and the exemption for critical materials used in manufacturing large-scale new energy resources, to support related enterprises to strengthen research and development and promote energy transformation.

3.2.3 Government Pays Special Attention to Publicity, Education, and Public Opinion Guidance

Environmental protection departments can use popular software, advertising, sending smart short messages, community propaganda, and other forms to popularize new energy culture knowledge to the public, actively guide people's behaviors of using new energy by policies, and establish people's concept of energy-saving life. In addition, teenagers are the main force of modern construction. While carrying out publicity and education on new energy culture for the whole people, we should focus on strengthening teenagers' education and jointly building the road of sustainable energy development in China.

3.2.4 Give Full Play to the Advantages of the New Energy Industry

Given the weak competitiveness of China's new energy market at present, relevant enterprises should make clear the critical strategic direction, take solving energy shortage and maintaining ecological balance as their responsibility, vigorously research and promote leading international technologies of new energy with the support of the government, and take the road of sustainable low-carbon development.

3.2.5 Strengthen the Environmental Awareness of the Government and People

There is a close relationship between environmental accidents and new energy use. According to our investigation, environmental accidents have not significantly affected Chinese people's new energy use behaviors. However, past research shows that environmental accidents are an unavoidable and important problem in the world, and the core of new energy is low carbon. Therefore, this study suggests that the government should intervene in environmental protection, focus on strengthening the control of environmental accidents, formulate energy development plans according to local conditions, guide and strengthen people's environmental awareness and energy awareness, and make environmental awareness universal.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethics review and approval/written informed consent were not required as per local legislation and institutional requirements.

AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by JZ. The first draft of the manuscript was written by WH, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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