



OPEN ACCESS

EDITED BY

Dusan Gordic,
University of Kragujevac, Serbia

REVIEWED BY

David Tyfield,
Lancaster University, United Kingdom
Boban Pavlovic,
University of Belgrade, Serbia

*CORRESPONDENCE

Jian Dong,
✉ dongjian232323@sdust.edu.cn

RECEIVED 23 March 2024

ACCEPTED 04 July 2024

PUBLISHED 25 July 2024

CITATION

Tian H, Cui Y and Dong J (2024), Research on policy instruments for promoting green lifestyle in China—a multi-dimensional analysis based on current policy texts.
Front. Environ. Sci. 12:1405537.
doi: 10.3389/fenvs.2024.1405537

COPYRIGHT

© 2024 Tian, Cui and Dong. This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Research on policy instruments for promoting green lifestyle in China—a multi-dimensional analysis based on current policy texts

Huawen Tian¹, Yan Cui² and Jian Dong^{1*}

¹School of Grammar and Law, Shandong University of Science and Technology, Qingdao, China,

²Tourism School, Qingdao Technical College, Qingdao, China

Introduction: In the past decade, the construction of ecological civilization has been a major national strategy in China. Since 2020, the Chinese government has officially proposed the goals of achieving peak carbon emissions by 2030 and carbon neutrality by 2060. As one of the key issues, promoting a green lifestyle is the fundamental means of achieving ecological civilization construction. It is an inevitable path to achieve the “carbon peak and carbon neutrality” goals. The current status of China’s efforts in this area is undoubtedly worth paying attention to. The purpose of this study is to analyze this issue.

Method: This study uses text analysis methods. From 92 policy documents issued by the Chinese government, we extracted effective text totaling 100,122 characters for analysis. Perform three-level coding on the above text, and analyze the policy tools of the Chinese government to promote green lifestyles from three dimensions: the categories of policy tools, the target groups targeted by policy tools, and the implementing entities of policy tools.

Conclusion: The study found that the current promotion of a green lifestyle in China primarily relies on information-based policy tools and market-based policy tools, with mandatory tools as a supplement. Information-based policy tools are mainly used for the public, while a combination of market-based policy tools, information-based policy tools, and mandatory policy tools is used for enterprises. Local governments’ attention to this issue is insufficient, manifested in the limited number of policy tools adopted, the single composition of these tools, and the lack of necessary constraints on enterprises.

Discussion: Overall, the current policy tool selection is reasonable, but there are also problems such as over-reliance on information-based policy tools, overly simplistic market-based policy tools, insufficient market-based policy tools for the public, and the underuse of voluntary policy tools.

KEYWORDS

green lifestyle, policy instrument, policy texts, multi-dimensional analysis, China

Introduction

As early as 15 December 2011, the State Council issued the *National Environmental Protection “12th Five-Year Plan,”* which for the first time included the requirement of “promoting green creation activities and advocating green production and lifestyles,” incorporating the concept of “green lifestyle” into China’s policy documents. Green lifestyle refers to a simple, moderate, frugal and low-carbon way of life, including the use and promotion of green products, green consumption, green travel, green living, etc. There is no doubt that promoting green lifestyles has become an important task for the governments at all levels in China. Perhaps a glimpse of how this work is progressing can be gleaned from these promulgated policy documents.

2 Literature review and question raised

Research on green lifestyles has been a topic of discussion in academic circles since the 1930s. However, research on this subject has continued to evolve, with significant changes occurring in terms of research levels, perspectives, and core concepts. Research on green lifestyles shows the following development trend: from initial intuitive conceptual explanations (Gregg, 1936) to in-depth discussions from philosophical and ethical perspectives (Xia and Guimei, 2013); from focusing only on material aspects of clothing, food, housing, and transportation (Mitchrll and Elgin, 1981; Black and Cherrirr, 2010) to broader discussions including values, social responsibility and other spiritual elements (Hagbert and Bradley, 2017; Yang et al., 2017; Huang et al., 2020; KIM, 2016); at the same time, the scope of discussion has also expanded from the environmental field (George-ufot et al., 2017) to non-environmental areas such as health, civilization and morality (Fan, 2007; Binder and Blankenberg, 2017; Zhang, 2017; Zhao and Zhu, 2017). After entering the new century, the “low-carbon lifestyle” first became popular in the Western world and quickly spread to the East. Relevant academic research was mainly concentrated in the period from 2005 to 2008 in Western countries, while in China, it reached its climax from 2010 to 2014. These research topics cover many fields, such as residential carbon emission measurement, low-carbon communities, low-carbon cities, low-carbon education, and low-carbon behavioral choices, with the last one being the most active research area. Scholars have proposed explanatory frameworks to explain green lifestyles from different disciplinary perspectives and research interests. Sociologists point out that social factors such as income, family size (Sardianou, 2007), social class (Druckman and Jackson, 2008), and intergenerational impact (Grønhjǿ and Thøgersen, 2009) are related to green lifestyle choices. Researchers in the fields of psychology and behavioral science believe that values such as altruism and environmental friendliness (Mostafa, 2009; Whitmarsh and O’Neill, 2010), environmental awareness (Ek, 2005), and the mastery of related knowledge (Jaber et al., 2005) are closely related to the choice of green behaviors. Economists widely concur that the consideration of costs and benefits plays a decisive role in the decision-making process regarding green behavior (Homburg and Stolberg, 2006) and so on. It should be noted that the above studies all focus on specific green behaviors, including but not limited to the utilization of green energy, waste recycling, waste sorting, and

electricity conservation. Scholars engaged in policy research believe that specific policy instruments, such as taxes and subsidies (Fan et al., 2007; Eliasson and Proost, 2015; Huang and Ge, 2019), can effectively guide people’s green consumption. Of course, there are some scholars who hold completely opposite views (Wu, 2014; Wang et al., 2018). After the 18th National Congress of the Communist Party of China, ecological civilization construction and environmental protection have received unprecedented attention. The concept of “green lifestyle” is prominently featured in various policy documents and leaders’ speeches. At the same time, the domestic academic discourse is gradually shifting from “low-carbon life” to “green life.” In recent years, there has been an increased focus on research pertaining to the construction of green lifestyles. In terms of research methods, current studies can be broadly categorized into two groups. The first category is speculative research, which often originates from a philosophical standpoint. For instance, Zhang Sanyuan proposed that the essence of lifestyle change lies in human development and that the construction of a green lifestyle is fundamentally built upon the comprehensive development of individuals (Zhang, 2017). Other scholars, such as Zhou Yang and Fang Shinan, have also done similar research (Yang, 2019; Fang, 2020). The second category is empirical research, which entails conducting micro-level analyses of factors that influence green lifestyles from psychological or economic perspectives. For example, Gao Jian and Wei Sheng constructed an interaction model of green lifestyle formation based on the theory of planned behavior (Gao et al., 2018). Sheng Guanghua and Gao Jian conducted an analysis of the internal transformation mechanism of green lifestyles from the perspective of green consumption (Sheng and Gao, 2016). They aimed to construct a theoretical model that can effectively explain the formation mechanism of green lifestyles (Gao et al., 2022; Zheng et al., 2023). Others such as Deng Cuihua, Zhang Weijuan (Deng and Zhang, 2017), Luo Xueyan (Luo, 2014) and Zhou Hongchun (Zhou, 2015) have all discussed this issue from different angles.

The academic community has extensively researched the meaning, influencing factors, formation mechanisms, and other aspects of green lifestyles from various disciplinary perspectives. Moreover, discussions on the construction of green lifestyles have also taken place. Currently, the promotion of green lifestyles has become a significant priority for the Chinese government. It is worth exploring the government’s approach and the characteristics and patterns reflected in their efforts.

3 Data sources and coding

3.1 Data sources

A textual analysis methodology was adopted in this research. Policy documents on green lifestyles¹ officially promulgated by

¹ Policy documents have been clearly defined as normative documents, which are publicly issued by the government, including laws, administrative regulations, local regulations and other normative documents.

Chinese governments at all levels were selected as the research samples. Using the database of LAWYEE and search engines like Baidu, 92 valid policy documents have been obtained after screening. Of these, 37 policy documents were found at the central level, while 55 were at the local level. The promulgation of these documents spans from 2013 to 2023. The principle of screening is that the document must have a particular discussion on “how to promote a green lifestyle” rather than simply mentioning basic concepts such as “green living” or “green lifestyle.” From these documents, a total of 100,122 characters of content describing or directly related to the promotion of green lifestyles were selected as the objects of analysis for this research.

3.2 Coding process

A three-level coding approach was employed to code and analyze the selected text. First-level coding involved dividing the text into various valid data units to create “concepts.” Given that this research focused on “policy instruments for promoting green lifestyles,” the concepts were “specific policy instruments.” Second-level coding involved grouping concepts together to form “categories.” This step necessitated generalizing and abstracting specific policy instruments to create “abstract policy instruments.” Three-level coding further categorized the categories to form “main categories,” which were the “categories of policy instrument.”

3.2.1 First-level coding

The rule of first-level coding is to regard a piece of text that can completely express a concept as a data cell. This piece of text can be one or several connected words, phrases, sentences or even paragraphs. Through the coding process, a total of 581 data cells were generated from the above texts, indicating the presence of 581 expressed “concepts” related to policy instruments for promoting green lifestyles. Each policy instrument has a transparent implementing entity (i.e., the issuer of the document) and target audience (i.e., target group), as shown in the following table.

3.2.2 Second-level coding

581 data cells express a total of 94 different “concepts.” It is now explained using the theoretical discourse of policy instruments. Policy instruments are specific actions or methods taken by the government to solve a specific public problem or achieve certain policy goals. Based on the theory mentioned, the 94 concepts identified can be considered as 94 specific policy instruments. Analyzing the frequency of occurrence of each policy instrument makes it possible to determine the relative importance or emphasis placed on different tools within the analyzed texts. To further classify the concepts or specific policy instruments identified in the analysis, similar or related policy instruments can be grouped together to form “abstract policy instruments” or “categories.” For example, there are special publicity activities, publicizing environmental knowledge, publicizing positive models, formulating behavioral guidance and norms, publicizing negative models, vigorously promoting green lifestyles, incorporating green lifestyles into school education and various types of training, and cultivating green culture. These concepts are grouped together to form the “publicity and education” category. In addition, the four concepts of promoting

green products, increasing the supply of green products, reducing the supply of non-green products, and providing convenient conditions for green travel for residents are grouped together to form the category of “changing the structure of supply chains,” and so on. After repeated comparison, 16 abstract policy instrument categories were finally determined. The frequency of a category can be calculated by simple addition, that is, the frequency of a category is equal to the sum of the frequencies of the concepts that make up the category. The 16 categories, that is, abstract policy instruments, and their frequencies are shown in the table below.

3.2.3 Third-level coding

In the previous step of coding, the category of abstract policy instruments was formed (as shown in Table 1). In this coding step, it is necessary to conduct further comparisons and analyses of the categories in order to establish the main categories. Within the research field of policy instruments, the classification of policy instruments is a crucial aspect. Building upon this, main categories are defined as “policy instrument categories.” Next, comparative analyses were undertaken on the 16 abstract policy instruments identified in the previous section to identify shared characteristics. Abstract policy instruments exhibiting similar or identical attributes were then classified into relevant categories. The primary criterion for conducting comparative analyses is to assess the connotation of policy instruments in order to ascertain common attributes. For example, through observation and analyses, it was found that nine abstract policy instruments, including publicity and education, advocacy and encouragement, exhortation, public sector demonstrations, and formulation of behavioral guidelines and norms, all “transmit certain information to the administrative counterpart to change their behaviors and achieve policy goals.” That is, “information” is the common attribute of this group of policy instruments, which can be defined as the category of “information-based instruments.” Although policy instruments such as changing the structure of supply chains, guiding and stimulating the market, issuing financial subsidies and deposit refunds have different connotations, they ultimately achieve policy goals through market mechanisms. Their common attribute is undoubtedly “market,” so they can be defined as “market-based instruments.” Legislation and standardization, inspection and supervision, and rules and regulations use administrative or judicial means to restrain target groups forcefully. “Coercive power” is their common attribute, so they are defined as “coercive instruments.” Instruments like families and communities, volunteers and social organizations rely on volunteer power to function and are defined as “voluntary instruments.” From this, there are four main categories, that is, four major categories of policy instruments, namely, information-based instruments, market-based instruments, coercive instruments, and voluntary instruments. For ease of expression, the four main categories, namely, “policy instrument categories,” can be represented by capital letters in the following order: I, M, F and V. The names, categories, frequency and proportions of occurrences in policy texts of the 16 policy instruments are shown in the table below.

3.3 Reliability and validity testing

In terms of reliability, the two authors of this article independently coded twice according to the above-mentioned

TABLE 1 Names and frequency of policy instruments.

Serial number	Name of categories (abstract policy instruments)	Frequency
1	Publicity and education	161
2	Changing the structure of supply chains	103
3	Advocacy and encouragement	77
4	Demonstrations and pilots of public sectors	32
5	Organizing and mobilizing	32
6	Technology research and development, experience summary, learning and promotion	24
7	Exhortation	23
8	Setting examples and giving rewards	22
9	Developing behavioral guidelines and norms	18
10	Rules and regulations	17
11	Volunteers and social organizations	13
12	Guiding and stimulating the market	15
13	Legislation and standardization	14
14	Inspection and supervision	11
15	Financial subsidies and deposit refunds	10
16	Families and communities	9

coding process, with an interval of more than 3 months between the two codings. After four codings, the results were basically consistent, with only a few discrepancies, which were later jointly determined by the two authors after discussion. Hence, the coding results mentioned above demonstrate high stability and repeatability, indicating a reliable level of reliability.

In terms of validity, hypothesis validity can be used to test. The coding results mentioned above are in line with the theoretical analysis results, thereby ensuring their validity. The detailed process of theoretical analysis can be found in the second paragraph of the [Section 5](#) below.

4 Analysis of coding results

4.1 Analysis dimension construction

Given that this research focuses on policy instruments for promoting green lifestyles, it is essential to initially identify the main analytical dimensions directly from the policy instruments themselves. Referring to the research on policy instruments in relevant domestic and foreign literature, it can be found that the classification of policy instruments has always been the focus of research. Therefore, categorizing policy instruments undoubtedly serves as the primary analysis dimension. It is designated as the X dimension here. Upon reviewing [Table 2](#), it becomes apparent that, in addition to “specific policy instruments,” other crucial information such as “target groups” and “implementation entities” are closely related to

policy instruments and can serve as secondary analysis dimensions. These dimensions are labelled as the Y dimension and Z dimension, respectively. These two dimensions are slightly less important than the policy instrument category. The following is a detailed introduction to the two secondary analysis dimensions.

- (1) X dimension: Category of policy instruments. Through the three-level coding process, a significant issue has been addressed, namely, the classification of policy instruments utilized in promoting green lifestyles in our country into four main categories. These categories encompass information-based, market-based, coercive, and voluntary instruments. These classifications offer specific connotations for the X dimension.
- (2) Y dimension: target groups of policy instruments. Within the 581 data cells of [Table 2](#), it is observed that there are 24 distinct “target groups,” including various entities such as governments, public institutions, schools, the general public, catering companies, and more. In order to simplify the analysis, the 24 “target groups” can be integrated according to the principle of having the same or similar meaning. For example, governments, public institutions, schools, legislative bodies and state organs can be integrated into the “public sectors (PS)”; catering companies, sales companies, logistics companies and other types of enterprises can form the category of “production enterprises (PE)”; unclear target groups can be considered to be “the whole society (WS)”; while “the public (P)” constitutes an independent category. Through the above integration, four categories can be formed for the Y analysis dimension: “public sectors,” “manufacturing enterprises,” “the whole society” and “the public.”
- (3) Z dimension: implementation entities of policy instruments. In [Table 2](#), the implementing entities include the Central Committee of the Communist Party of China, the Standing Committee of the National People’s Congress, the State Council, various ministries or directly affiliated agencies, local party committees, local people’s congresses, local people’s governments, and local government functional departments. These entities can be divided into two broad categories: national and local party and government organs. To maintain simplicity, this article adopts the concept of the general government, referring to them as the central government (CG) and local government (LG), respectively, thereby forming the Z dimension.

4.2 Combination analysis of policy instruments

In the X dimension, the 16 policy instruments currently being utilized are clearly presented based on the information provided in [Table 3](#). These policy instruments span across the four main categories. Information-based instruments are currently the most relied upon policy instruments. First of all, information-based instruments account for the absolute majority in quantity, accounting for 66.95%. Secondly, information-based instruments

TABLE 2 Results of first-level coding.

Original document name	Data cell	Coding	Concept expressed (specific policy instrument)	Target audience (target group)	Implementing entity (issuing authority)
Guidance on Promoting Green Consumption	Properly controlling indoor air-conditioning temperatures and promoting casual attire for official events in summer	C1-1	Demonstrations of public sectors	State organs and public institutions	Ten departments including the National Development and Reform Commission
	Improving the used clothing recycling system	C1-2	Providing facilities	Unclear	Same as above
	Boycotting rare animal fur products	C1-3	Advocating to reduce consumption of non-green products	The public	Same as above
	Promoting water and electricity conservation	C1-4	Advocacy of thriftiness	The public	Same as above

Report of the State Council on Energy Conservation and Emission Reduction	Publishing work guidelines to strengthen environmental information and mobilize public opinion	C2-1	Lawmaking	Governments at all levels	State Council
	Carrying out National Action for Energy Saving and Emission Reduction	C2-2	Mobilizing the whole society	Unclear	Same as above
	Organizing activities such as National Energy Conservation Awareness Week, Low Carbon Day and World Environment Day every year	C2-3	Launching special publicity activities	The public	Same as above
...
Implementation Opinions of the Chongqing Municipal People's Government on Accelerating the Establishment and Improvement of a Green, Low-carbon and Circular Economic System	Mandating sectors to practice green procurement	L55-1	Mandatory restrictions on government departments	Government departments	Chongqing Municipal People's Government
	Promotion of green consumption	L55-2	Promotion of green consumption	The public	Same as above
	Promoting automobile recycling consumption	L55-3	Developing circular economy	Manufacturing companies	Same as above
	Strengthening certification management of green products and service	L55-4	Developing green standards	Manufacturing and service companies	Same as above
	In-depth promotion of "empty plate" campaign	L55-5	Advocacy of thriftiness	The public	Same as above
	Promotion of modern public transportation	L55-6	Providing public goods	Government departments	Same as above
	Limiting excessive packaging by express delivery companies	L55-7	Supervision and inspection	Service enterprises	Same as above

encompass a diverse range of categories. These types span from the commonly observed "publicity and education" to the distinctively Chinese approach of "organizing and mobilizing," totalling eight categories in total. Market-based instruments are the second largest category, accounting for 22.03%. Therefore, it can be seen that China currently relies mainly on information-based and market-based instruments to promote green lifestyles. Coercive instruments account for a low proportion in the X dimension, only 7.23%. These instruments serve as auxiliary policy instruments and are typically implemented in limited

areas. On the other hand, voluntary instruments have the lowest proportion, accounting for only 3.79%, making their contribution almost negligible. Further observation of the usage of specific policy instruments reveals that five are commonly employed, accounting for more than 5% of the total. These tools include "publicity and education," "changing the structure of supply chains," "proposing and encouraging," "public sector demonstrations and pilots," and "organizing and mobilizing" (as shown in Figure 1). Among them, "publicity and education" aim to alter public perception, and "changing the structure of supply

TABLE 3 Names, categories, frequency and proportions of policy instruments.

Category	Name of specific policy instrument	Frequency	Proportion (%)	Category total	Category share (%)
Voluntary instruments (V)	Families and communities	9	1.55	22	3.79
	Volunteers and social organizations	13	2.24		
Information-based instruments (I)	Publicity and education	161	27.71	389	66.95
	Technology research and development, experience summary, learning and promotion	23	3.96		
	Proposing and encouraging	77	13.25		
	Setting examples and giving rewards	22	3.79		
	Organizing and mobilizing	32	5.51		
	Exhortation	24	4.13		
	Demonstrations and pilots of public sectors	32	5.51		
	Developing behavioral guidelines and norms	18	3.10		
Market-based instruments (M)	Changing the structure of supply chains	103	17.73	128	22.03
	Guiding and stimulating the market	15	2.58		
	Financial subsidies and deposit refunds	10	1.72		
Coercive instruments (F)	Legislation or standardization	14	2.41	42	7.23
	Inspection and supervision	11	1.89		
	Rules and regulations	17	2.93		
Total		581			

chains” facilitates convenient green lifestyle choices for the public, while the other three tools engage in non-coercive interventions in shaping public behaviors. It can be seen that this combination of tools also achieves a good match. On the basis of the above analysis, it is possible to draw up the first theoretical proposition.

Proposition 1: China’s current approach to promoting green lifestyles heavily relies on information-based instruments. The primary focus is to transform public perception through publicity, education, and similar means, as well as to facilitate the public’s adoption of green lifestyles by reshaping the market supply structure. Non-compulsory interventions are extremely limited in scope.

At the same time, in the Y dimension, statistics on policy instruments for the four major target groups show that policy instruments for the public and production enterprises account for the highest proportions, accounting for 38.32% and 36.92% respectively. The number of policy instruments for the whole society and the public sector is relatively small, accounting for 14.02% and 10.75% respectively (as shown in Table 4).

The promotion of green lifestyles requires the joint efforts of the whole society, in which the public and production enterprises play an essential role. Consumption is an integral part of people’s daily lives, encompassing various aspects such as food, clothing, housing, and transportation. The prerequisite for green consumption is the availability of an ample supply of green products in the market. This can only be achieved through the active cooperation of production enterprises. The current public demand for green consumption also

serves as a stimulus for enterprises’ production. Thus, green living and green production are two interrelated, mutually reinforcing, complementary and indispensable aspects.

In the Z dimension, the implementing entities of policy instruments are simplified into the central government and local governments. The data shows that the proportion of specific policy instruments implemented by the central government is 64.33%, while the proportion implemented by local governments is 35.67%. The difference between the two is nearly twice. It can be observed that local governments have not paid enough attention to the policy area of “promoting green lifestyles.” As usual policy implementers, local governments are numerous and should be associated with more policy instruments. However, when it comes to promoting green lifestyles, the number of policy instruments attributed to local governments is less than half that of the central government. This discrepancy reflects the insufficient attention paid by local governments to this issue.

Through the three-dimensional analysis of the previous coding results, some regular patterns in the use of current policy instruments were discovered. Such a comprehensive analysis will facilitate a comprehensive understanding of the overall landscape of green lifestyle promotion policies.

By combining the X and Y dimensions, important characteristics such as the composition and directionality of policy instruments for different target groups can be observed. Among the policy instruments for the public and the whole society, information-based instruments occupy an absolute advantage, accounting for 85.46% and 86.79% respectively. In the realm of policy instruments for production

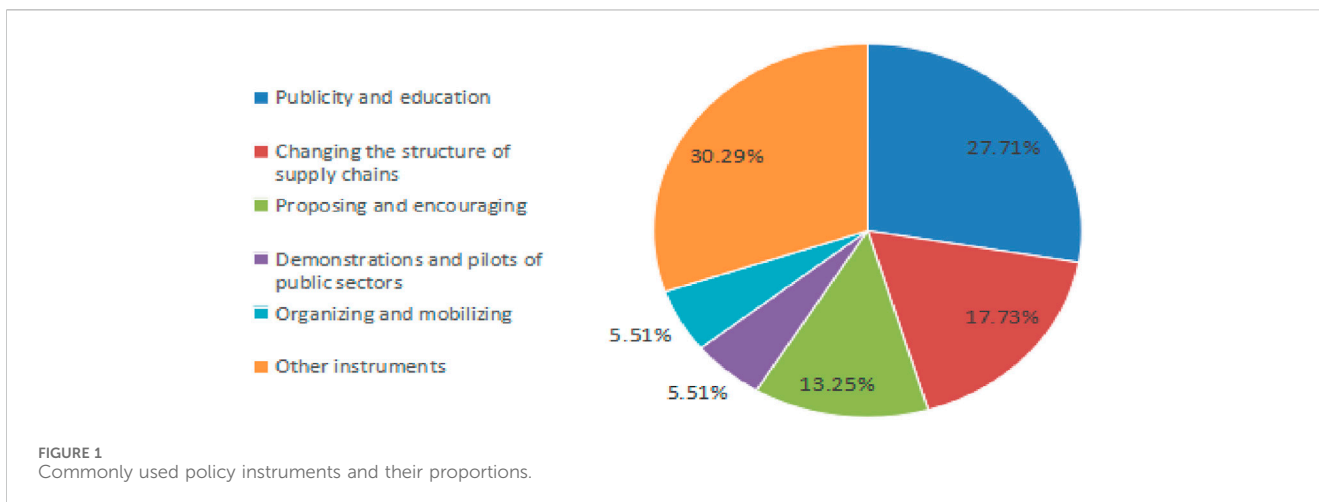


FIGURE 1 Commonly used policy instruments and their proportions.

TABLE 4 Proportion of policy instruments targeted at different groups.

The target audience of policy instruments	P (%)	PE (%)	WS (%)	PC (%)
Proportion of policy instruments	37.53	38.14	12.16	12.17

enterprises, market-based instruments hold a predominant position, while compulsory measures also maintain a certain share. It is worth noting that among all market-based instruments and coercive instruments, the vast majority are targeted at production enterprises, accounting for 76.14% and 75.98% respectively. Refer to Figure 2.

Figure 3 shows that although the proportion of public-oriented instruments in central government is not the highest, the total quantity is greater than that of local governments. As stated earlier, information-based instruments are primarily public-oriented (see Proposition 2), and local governments rely more on information-based instruments compared to central governments, therefore, it is not surprising that the proportion of public-oriented instruments in local government is the highest. Information-based instruments are characterized by low cost, easy manipulation, and low risk, and the widespread use of such instruments by local governments is also a manifestation of insufficient focus.

Therefore, the second theoretical proposition can be presented.

Proposition 2: Market-based instruments and coercive instruments are mainly used in enterprises and public sectors, while information-based instruments are mainly used for the public.

Second, by incorporating the Z dimension into the analytical framework, differences in the use of policy instruments between central and local governments become apparent. In terms of composition, both the central government and local governments exhibit a significant reliance on information tools. However, local governments display a higher level of dependence, with information tools accounting for 75.75% of their overall policy instruments, compared to 63.54% for the central government. Coercive instruments are primarily employed by the central government. Of the 42 · coercive instruments mentioned in all texts, 37 · are attributed to the central government, whereas local governments utilize only 5 · of such tools. This set of data can indicate that local

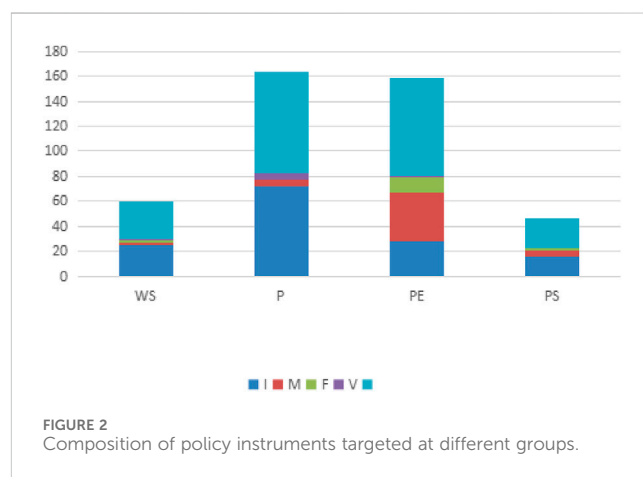


FIGURE 2 Composition of policy instruments targeted at different groups.

governments, which may not place sufficient emphasis on promoting green lifestyles, tend to select cost-effective and user-friendly information-based instruments. They may deliberately avoid utilizing coercive instruments, which tend to be more costly, challenging to implement, and entail certain risks and hidden drawbacks. Even in the case of production enterprises, where the target groups are relatively limited and well-defined, the adoption of coercive instruments is relatively rare. Finally, there are differences in the targets of policy instruments adopted by the central and local governments. The central government pays more attention to production enterprises and the policy instruments it adopts account for 46.23% of all policy instruments, while the proportion of local governments in this regard is 27.76%. In contrast, local governments pay more attention to the public and use the most policy instruments for the public, accounting for 45.82%. The proportion of policy instruments used by the central government for the public is 33.26%, see Figure 3 for details. As mentioned earlier, green lifestyles and green production are mutually reinforcing. The promotion of green lifestyles requires the support of green production by enterprises. It is incumbent upon enterprises, as part of their social responsibilities, to make necessary sacrifices in this pursuit. Therefore, it is reasonable for the central government to focus its policy instruments on production

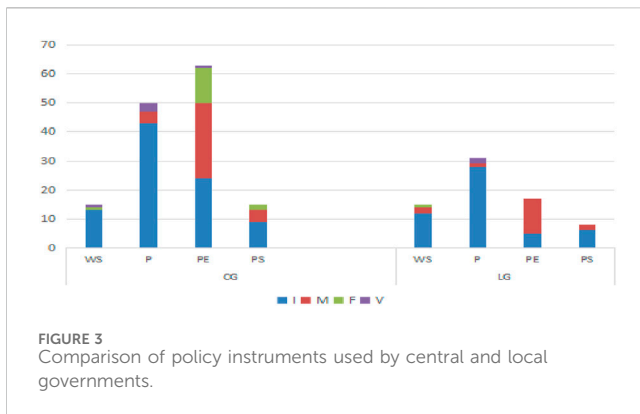


FIGURE 3 Comparison of policy instruments used by central and local governments.

enterprises and use a certain number of coercive instruments. In contrast, local governments have seemingly chosen to overlook this aspect, as they neither prioritize production enterprises nor employ coercive instruments. This suggests that local governments may prioritize benefits over promoting green lifestyles.

On the basis of the above analysis, it is possible to draw up the third theoretical proposition.

Proposition 3: The policy of “promoting green lifestyles” is primarily implemented by the central government and does not receive adequate attention from local governments.

5 Conclusion and discussion

Through three-level coding of current policy texts and multi-dimensional analysis of the coding results, several valuable findings can be gained in this research:

1) It provides an in-depth understanding of China’s policy instruments currently used to promote green lifestyles. Upon examination, it is observed that the current policy instruments can be categorized into four distinct groups, namely, information instruments, market-based instruments, coercive instruments, and voluntary instruments. Among them, information-based instruments have the highest proportion of use, reaching the level of “dependence,” followed by market-based and coercive instruments, while voluntary instruments have the least use. Specifically, the five most widely used policy instruments are publicity and education, changing the structure of supply chains, advocacy and encouragement, demonstrations and pilots of public sectors, and organizing and mobilizing. The above combination of tools has its deeper considerations, which could be understood from three aspects. First of all, from the perspective of policy content and goals, “promoting green lifestyles” is aimed at the general public and has a huge target group. The policy content involves all aspects of the public, including every detail of daily life such as food, clothing, housing and transportation. The goal of the policy is not just to ask the public to make changes or give up on certain specific matters but, more importantly, to fundamentally change their life patterns, abandon existing habits, accept new life concepts and ways, and realize social and cultural reshaping. Certainly, this transformation cannot occur instantaneously and necessitates long-term persistence and ongoing refinement to attain sustainable outcomes in the long

run. Therefore, lasting outcomes can only be achieved by initiating efforts at the cognitive, conscious, and even ideological levels. Secondly, it is important to consider safety factors. The implementation of new policies will trigger a “vibration effect” (Xie, 2022). Within a certain period of time, the target group may not be able to adapt to the psychological and behavioral requirements of the policy, resulting in resistance. “Promoting green lifestyle” initiatives have a far-reaching impact on the general public, encompassing diverse target groups. The extensive impact of the policy and the elevated expectations associated with it can potentially ignite significant societal shocks. In light of this, it is crucial to exercise great care when utilizing policy instruments, with safety serving as the foremost criterion. Thirdly, considering the characteristics of policy instruments, information-based instruments offer several advantages, including continuous improvement, low cost, and high fairness (Salamon, 2002). Market-based instruments also have the characteristics of continuous improvement and high fairness. Continuous improvement is necessary to solve this problem and is in line with objective laws. Given the vast target groups and the requirement for long-term persistence, high-cost policy tools may be challenging to sustain. Consequently, low-cost information-based instruments are naturally preferred. Moreover, high fairness can help mitigate political and social risks during policy implementation and serves as an essential prerequisite for ensuring stable execution. The validity of the previous coding results can be verified by analysing these characteristics.

2) Building upon the presentation of policy instruments, this article further examines certain characteristics related to the utilization of policy instruments for promoting green lifestyles. First, it is noted that there are differences in policy instruments for different target groups. Policy instruments for the general public rely almost entirely on information-based instruments, while policy instruments for production enterprises rely mainly on market-based instruments, with information-based instruments and coercive instruments also playing an important supporting role. The public and production companies are the two main target groups with different characteristics. Consequently, there will naturally be significant differences in the application of policy instruments in these target groups. This article has already mentioned the characteristics of “the public” and considerations in the selection of policy instruments, and now focuses on the situation of manufacturing enterprises. As market entities, production enterprises are naturally compatible with market-based instruments. Hence, it is observable that when it comes to production enterprises, the selection of policy instruments predominantly revolves around market-based instruments. The number of production enterprises is relatively small, and their concentration is high, so the cost and risk of using coercive instruments are low. In fact, some coercive instruments have been used to intervene in enterprises. However, further observation reveals that the proportion of use of these coercive instruments is not high, and they are more limited to specific areas, such as catering, household appliances, and daily household items (such as faucets). This makes these instruments less binding on businesses. What is clear is that, at this stage at least, China is not ready to promote green lifestyles at the expense of too much economic development. A certain “trade-off” exists between

environmental protection and economic development. Over the past decade, China has been constantly adjusting and optimizing to find a more reasonable balance. There are differences between promoting green lifestyles and other environmental protection efforts, such as air and water pollution control. One key difference is that the urgency of green lifestyles may not be immediately apparent. The promotion of green lifestyles is a long-term project, just like our goal of achieving carbon neutrality. Green lifestyles and green production are complementary to each other. It is necessary to find a reasonable balance between the two, as new production and lifestyle concepts will inevitably impact economic development. Because of given the sufficient time available for debugging and practice, it is entirely reasonable to adopt a cautious approach to this process.

3) Another characteristic of the use of policy instruments is reflected in the implementing entities. Compared with the central government, local governments pay less attention to this issue. This is manifested in the selection of policy instruments as a small number and single composition, and the policy instruments targeting enterprises are also less binding. The selection of instruments by local governments involves their decision-making preferences. China's local governments exhibit behavioral preferences that are determined by the country's institutional environment and administrative culture. Two characteristics are particularly evident: a tendency towards risk aversion and a focus on short-term gains. Risk Averse can be understood as an extension of loss aversion and is a basic law of behavior economics. The assessment system in the public sector will further aggravate risk averse. Promoting green lifestyles may cause a vibration effect that makes local governments more risk-averse. As a result, when choosing policy tools, they tend to prefer information-based tools that are low in resistance, cost, and risk. Local governments' emphasis on short-term gains is related to the promotion mechanism. Due to the pressure induced by "political tournaments" (Zhou, 2017), local governments tend to prioritize projects that yield quick results within short timeframes. Consequently, long-term initiatives, such as the promotion of green lifestyles, are often neglected.

Finally, there are some limitations in this study. For example, there is no comparison with the general state of using policy instruments in China. Due to the lack of literature, we do not have information on the general state of using policy instruments in China, so this comparative study cannot be achieved. But this study is actually very meaningful, it can make the research conclusions more precise and may even lead to more interesting findings. In addition, Although nowadays many scholars use the method of

identifying policy instruments through policy text analysis, it is undeniable that many government documents are not effectively implemented after they are issued, so whether these unimplemented documents can represent the policy instruments? This is doubtful.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

Author contributions

HT: Writing—original draft, Writing—review and editing. YC: Writing—original draft, Writing—review and editing. JD: Writing—original draft, Writing—review and editing.

Funding

The author(s) declare that financial support was received for the research, authorship, and/or publication of this article. This article is funded by the Shandong Provincial Natural Science Foundation General Project "Research on the Self-organization Evolution of the Urban Social Governance Innovation Ecosystem and Its Tentative Governance Strategies" (ZR2022MG064).

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

- Binder, M., and Blankenberg, A. (2017). Green lifestyles and subjective well-being: more about self-image than actual behavior?. *J. Econ. Behav. Organ.* 137, 304–323. doi:10.1016/j.jebo.2017.03.009
- Black, I., and Cherrir, H. (2010). Anti-consumption as part of living a sustainable lifestyle: daily practices, contextual motivations and subjective values. *J. Consumer Behav.* 9 (6), 437–453. doi:10.1002/cb.337
- Deng, C., and Zhang, W. (2017). Analysis on green lifestyle and its promotion mechanism. *J. Fujian Normal Univ. Philosophy Soc. Sci. Ed.* (4), 65–71.
- Druckman, A., and Jackson, T. (2008). Household energy consumption in the UK: a highly geographically and socio-economically disaggregated model. *Energy Policy* 36 (8), 3177–3192. doi:10.1016/j.enpol.2008.03.021
- Ek, K. (2005). Public and private attitudes towards "green" electricity: the case of Swedish wind power. *Energy Policy* 33 (13), 1677–1689. doi:10.1016/j.enpol.2004.02.005
- Eliasson, J., and Proost, S. (2015). Is sustainable transport policy sustainable?. *Transp. Policy* 37, 92–100. doi:10.1016/j.tranpol.2014.09.010
- Fan, L., and Qi, G. (2007). Research on tax regulation of public energy-saving behavior. *Finance Trade Econ.* (7), 57–63.
- Fan, L. (2007). Guo Qi Research on tax regulation of public energy-saving behavior. *Finance Trade Econ.* (7), 57–63.
- Fang, S. (2020). *Practice a green lifestyle of harmonious coexistence and balance between human and Nature Studies on mao zedong and Deng xiaoping theories*, 37–39.

- Gao, J., and Sheng, W. (2018). Research on the dual interactive effects of green lifestyle based on the theory of planned behavior. *Rev. Econ. Manag.* (2), 51–61. doi:10.13962/j.cnki.37-1486/f.2018.02.005
- Gao, J., Zhang, R., Li, K., Zhang, J., and Geng, X. (2022). Interrupt and carry-on: research on the mechanism of quantified-self construction influencing the green transformation of lifestyles. *Collect. Essays Finance Econ.* 28 (11), 92–111. doi:10.1007/s00894-022-05082-2
- George-ufot, G., Qu, Y., and Orji, I. (2022). Sustainable lifestyle factors influencing industries' electric consumption patterns using fuzzy logic and DEMATEL: the Nigerian perspective. *J. Clean. Prod.* 162, 624–634. doi:10.1016/j.jclepro.2017.05.188
- Gregg, R. (1936). Voluntary simplicity. *Coevol. Q.* 6, 20–25.
- Grønhaug, A., and Thøgersen, J. (2009). Like father, like son? Intergenerational transmission of values, attitudes, and behaviors in the environmental domain. *J. Environ. Psychol.* 29 (4), 414–421. doi:10.1016/j.jenvp.2009.05.002
- Hagbert, P., and Bradley, K. (2017). Transitions on the home front: a story of sustainable living beyond eco-efficiency. *Energy Res. Soc. Sci.* 31, 240–248. doi:10.1016/j.erss.2017.05.002
- Homburg, A., and Stolberg, A. (2006). Explaining pro-environmental behavior with a cognitive theory of stress. *J. Environ. Psychol.* 26 (1), 1–14. doi:10.1016/j.jenvp.2006.03.003
- Huang, X., and Ge, J. (2019). Electric vehicle development in Beijing: an analysis of consumer purchase intention. *J. Clean. Prod.* 216, 361–372. doi:10.1016/j.jclepro.2019.01.231
- Huang, Y., Luo, X., Yu, W., et al. (2020). Analysis of farmers' participation in green lifestyle and influencing factors. *J. Arid Land Resour. Environ.* (3), 49–55.
- Jaber, J. O., Mamlook, R., and We, A. (2020). Evaluation of energy conservation programs in residential sector using fuzzy logic methodology. *Energy Policy* 33 (10), 1329–1338. doi:10.1016/j.enpol.2003.12.009
- Kim, S. (2020). An empirical study of Chinese consumers' lifestyle by country of origin effect of mobile phone. *Data and Inf. Sci. Soc.* 27 (6), 1565–1571. doi:10.7465/jkdi.2016.27.6.1565
- Luo, X. (2014). Construction of green life consumption model from the perspective of ecological civilization. *J. Social. Theory Guide* (9), 81–83. doi:10.3969/j.issn.1002-7408.2014.09.020
- Mitchrill, A., and Elgin, D. (1981). Voluntary simplicity. *Coevol. Q.* 14 (6), 13–15. doi:10.1108/eb053820
- Mostafa, M. M. (2009). Shades of green: a psychographic segmentation of the green consumer in Kuwait using self-organizing maps. *Expert Syst. Appl.* 36 (8), 11030–11038. doi:10.1016/j.eswa.2009.02.088
- Salamon, L. (2002). *The tools of government: a guide to the new governance*[M]. Oxford, New York: Oxford University Press, 188–190.
- Sardianou, E. (2007). Estimating energy conservation patterns of Greek households. *Energy Policy* 35 (7), 3778–3791. doi:10.1016/j.enpol.2007.01.020
- Sheng, G., and Gao, J. (2016). Research on the transformation mechanism of green lifestyle: from the perspective green consumption. *J. Xi'an Jiaot. Univ. Sci.* (4), 8–16. doi:10.15896/j.xjtuskxb.201604002
- Wang, S., Wang, J., Li, J., and Liang, L. (2018). Policy implications for promoting the adoption of electric vehicles: do consumer's knowledge, perceived risk and financial incentive policy matter?. *Transp. Res. Part A Policy Pract.* 117, 58–69. doi:10.1016/j.tra.2018.08.014
- Whitmarsh, L., and O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviors. *J. Environ. Psychol.* 30 (3), 305–314. doi:10.1016/j.jenvp.2010.01.003
- Wu, B. (2014). A review on green consumption. *Bus. Manag. J.* (11), 178–189.
- Xia, F., and Guimei, Li (2013). Preliminary exploration of low-carbon life values. *Seeker* (7), 83–86.
- Xie, M. (2022). *Introduction to public policy*. Fifth Edition. Beijing: Renmin University of China Press, 68.
- Yang, C., Wu, M., and Geng, Y. (2002). On the comprehensive satisfaction of green life for human needs. *Commer. Res.* (10), 133–138.
- Yang, Z. (2019). Advocate green living from the perspective of happy life. *Stud. Social. Chin. Charact.* (1), 85–91.
- Zhang, S. (2002). The construction of green lifestyle and the all-round development of people. *Stud. Social. Chin. Charact.* (5), 86–92.
- Zhao, W., and Zhu, T. (2017). The metaphor of modernity in green lifestyle: an analysis based on the CGSS2010 data. *Jiangxi Soc. Sci.* 2017 (1), 195–256. doi:10.3969/j.issn.1000-114X.2017.01.021
- Zheng, Q., et al. (2023). Can environmental regulations induce residents to develop green lifestyles? Evidence from China. *Syst. Eng. - Theory and Pract.* 43 (04), 941–957. doi:10.12011/SETP2022-1210
- Zhou, H. (2015). Green consumption leads the way of green lifestyle. *Environ. Prot.* (24), 12–15. doi:10.14026/j.cnki.0253-9705.2015.24.001
- Zhou, L. (2017). *Local governments in transition: incentives and governance for officials*. Second Edition. Shanghai, China: Shanghai: Gezhi Publishing House, 162–165.