

*Original Paper*

A Comparison and Translation of Green Building Evaluation  
Standard Texts between China and the United States from the  
Perspective of Eco-translatology

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**Abstract**

*This study selects China's Green Building Evaluation Standards (GB/T 50378-2019) and the LEED v4.1 standard of the United States as the analysis objects. Based on the "triple conversion" theory in ecological translation (covering the three dimensions of language, culture and communication), the similarities and differences between the two standards in terms of language expression, cultural connotation vocabulary and communication intention tendency are systematically compared. On this basis, we will further explore the translation method applicable to green building terms, and try to build the application path of the "adaptive choice" principle in professional standard translation to promote the international promotion of green building-related concepts and practices.*

**Keywords**

*Eco-translatology, Green Building, Translation Strategies*

**1. Introduction**

*1.1 Research Background*

Global climate change and ecological governance demands have propelled green building to the forefront of the construction industry's transformation. As the core tool to standardize the development of the industry and disseminate the ecological concept, the international dissemination of green building evaluation standards directly affects a country's global voice in green building technology and concept. China's Green Building Evaluation Standard (GB/T 50378) has been revised for many rounds and has formed an evaluation system that meets China's ecological conditions and architectural characteristics.

As the most influential green building evaluation tool in the United States, the American LEED standard is of benchmark significance in terms of text expression and ecological communication. With the deepening of cooperation between China and the United States in the field of green construction, cross-cultural translation and introduction of standard texts has become a key link in technical exchange.

The evaluation standards for green buildings have both the rigor of technical texts and the ideological nature of ecological texts. They not only include professional knowledge in architecture, environment, engineering management and other fields, but also reflect the different ecological governance concepts and cultural contexts of different countries. Existing research focuses more on standard technical comparison or single-dimensional translation skills. It lacks in-depth exploration of ecological adaptation and multi-dimensional conversion mechanism in standard text translation from the system theory, which affects the dual requirements of "accurate transmission + concept adaptation" in cross-cultural technical exchanges to a certain extent.

### *1.2 Research Significance*

Standard text translation is key to technical communication and must balance professionalism with cultural adaptability. This study breaks through the limitations of traditional "linguistic-centric" translation research by applying Eco-translatology theory to engineering standard texts, expanding the theory's applicability. By constructing an "ecological context-textual features-translation transformation" analytical framework, it enriches the theoretical system for special-purpose text translation and offers new perspectives for similar technical text research.

The study clarifies ecological differences and translation challenges in Sino-U.S. green building standards, proposing targeted three-dimensional transformation strategies to provide practical methodological guidance for translation practice. It aims to optimize the English version of China's green building standards, enhance international recognition and dissemination, and promote the global outreach of China's green building technologies and ecological philosophies.

### *1.3 Research Methods*

1. **Corpus Analysis:** A specialized corpus comprising the Chinese original and official English translation of GB/T 50378 (2019 edition) and the English text of LEED v4.1 is constructed to identify translation challenges through comparative analysis of terminology, syntactic structures, and discourse logic.
2. **Comparative Analysis:** Differences between Sino-U.S. standards are examined across three layers: ecological context (natural environment, policy background), textual function (normative, instructional, communicative), and linguistic representation (terminology, syntax, discourse patterns).
3. **Case Analysis:** Typical text modules (e.g., terminology systems, evaluation indicator descriptions, ecological concept expressions) are selected to analyze three-dimensional transformation practices through the lens of Eco-translatology, validating strategy effectiveness.

### *1.4 Corpus Selection*

The corpus includes:

China's Assessment Standard for Green Building (official Chinese version and its English translation).  
U.S. LEED standard (English original and its Chinese translation).

## 2. Literature Review

### 2.1 Overview of Eco-Translation Studies

Ecological translation was proposed by Chinese scholar Hou Hansheng, which aims to examine translation activities from the perspective of ecological integrity. Unlike the traditional theory of "language reciprocity", ecological translation emphasizes that translation is not only the conversion of language forms, but also involves cultural adaptation, the impact of the social environment and the role of translation activities on the target language culture. Its core point is that while ensuring the accuracy and complete transmission of information, translation should fully consider the language norms and social needs of the target language culture, so as to promote cross-cultural communication and understanding.

In the translation of green building evaluation standards, ecological translation pays special attention to "cultural adaptability" and "environmental adaptability" in the translation process. As an architectural form that embodies the concept of sustainable development, green building may have large differences in policies, technical standards and cultural backgrounds in different countries and regions. Therefore, translators need to pay more attention to cultural differences and standard backgrounds when translating to ensure that the translation can not only convey technical content, but also adapt to the understanding and cognitive habits of the target language readers.

### 2.2 Research on the Translation of Green Building Evaluation Standards

Green building evaluation standards are an important tool for evaluating the performance of the building environment, which is highly professional. In recent years, with the popularization of the concept of green architecture, the translation of relevant standards has gradually become the focus of academic and practical attention. Many international studies have focused on the translation of green building evaluation criteria, especially the adaptability in different cultural contexts.

Some scholars pointed out that one of the difficulties in the translation of green building evaluation standards lies in the handling of technical terms. In Chinese-English translation, there are many technical terms in the field of green building, some of which lack fully corresponding expressions in another language. For example, "sustainable architecture" can be translated as "sustainable architecture", but how to accurately convey its connotation, especially the meaning of environmental protection and resource conservation, is still a certain challenge. Similarly, terms such as "indoor air quality" also need to be adjusted according to the target context to meet the expression habits of the target culture.

### 2.3 Comparison of Green Building Evaluation Standards between China and the United States

The evaluation standards of green buildings in China and the United States have their own characteristics, reflecting different policy backgrounds and cultural traditions. China's green building evaluation standard GB/T 50378 focuses on resource conservation and environmental impact control during construction. Its

standard system covers energy, water resources, material use efficiency and indoor environmental quality. The evaluation content covers energy saving, water saving, indoor air quality and environmental protection of building materials, etc. The LEED standard in the United States focuses more on the management of the whole life cycle of buildings, especially the environmental impact of design, construction and operation. This evaluation method focuses more on the overall environmental benefits of the building, rather than just for a specific technology or material.

In addition, the LEED standard has certain requirements for the environmental policy and building life cycle management of the building location, while the Chinese standard is more dependent on the guidance of national policies to a certain extent, such as the specific implementation of energy conservation and consumption reduction targets and environmental protection regulations.

These standard differences bring great challenges to translation. On the one hand, translators need to accurately convey the technical requirements and evaluation methods of various standards; on the other hand, they also need to make moderate adjustments according to the cultural and policy background of the target language. For example, some of China's unique building standards or measures may lack direct correspondence in English, and some evaluation methods or terms in the American LEED standard may also have comprehension barriers when translated into Chinese. How to deal with these cultural and policy differences is an issue that needs to be considered when translating the evaluation standards of green buildings.

#### *2.4 Cultural Adaptation Issues in Translating Green Building Evaluation Standards*

The translation of green building evaluation standards is not only technical work, but also involves cultural adaptation. As a global architectural practice, although the concept and standards of green architecture are reflected in different countries, the specific implementation is often influenced by the culture, policies and social environment of each country. In the United States, green buildings are more regarded as the result of market demand, and the implementation of LEED standards is often related to government policies, environmental regulations and corporate interests. In China, the promotion of green buildings depends more on policy support and guidance. Therefore, these cultural background differences should be fully considered when translating to ensure that the target language readers can understand the policy intention and cultural value of the original text.

In addition, the understanding and focus of the sustainable development concept and environmental awareness involved in the green building evaluation standards may also be different in different cultures. Western countries tend to pay more attention to the environmental impact of buildings such as energy consumption and carbon emissions, while China pays more attention to the environmental protection and resource conservation of building materials. These differences need to be dealt with through appropriate cultural adaptation strategies in translation to ensure that the core ideas of the original text are effectively conveyed.

In general, the translation of green building evaluation standards has become an important topic in the fields of translation, architecture and environmental science. Ecological translation provides it with a

new perspective. Through cultural adaptation, language regulations and other strategies, it helps to deal with cultural and professional problems in the translation of green building evaluation standards. Future research can further explore how to deal with standard differences in the translation process, how to promote the cross-cultural dissemination of the concept of green architecture in the context of globalization, and how to contribute to the sustainable development of green architecture.

### **3. Eco-translatology Theory**

#### *3.1 Translational Eco-environment*

The translational eco-environment is the precondition for the translator's adaptive selection; it embraces the source text, target text, source-text author, target-text readers, cultural context, social context and other factors.

The eco-environment surrounding the translation of green-building assessment standards is distinctive: the source text embodies China's technical norms and policy orientations for ecological construction, whereas the readers of the target text are usually international building professionals and policy makers whose cognitive background is strongly shaped by standards such as LEED. At the same time, the core concept of "green building" itself carries both technical and eco-cultural attributes, forming the key variable in this translational eco-environment.

#### *3.2 Principle of Adaptive Selection*

The translator must adapt to the translational eco-environment—covering the linguistic-cultural ecology of the source text and the anticipated reception ecology of the target text—and, among the various possible strategies, make adaptive selections on the linguistic, cultural and communicative dimensions so that the target text can fulfil its intended functions and values in the target setting.

When translating green-building standards, the translator therefore has to satisfy three interlocking requirements: "technical accuracy" (adapting to the norms of the source text), "cultural appropriateness" (adapting to the cultural cognition of the target readership), and "communicative effectiveness" (adapting to the needs of cross-cultural technical communication). These three requirements constitute the core dimensions of adaptive selection.

#### *3.3 The Three-Dimensional Conversion Theory*

The foundational theory of Eco-Translation Studies summarizes translation methods into a "three-dimensional" conversion model. Under the principle of "multidimensional adaptation and adaptive selection," this model focuses on three essential dimensions of translation: linguistic dimension, cultural dimension, and communicative dimension. These three dimensions work together to ensure the translation process is holistic, reflecting the core concept of "translation as adaptation and selection."

##### *3.3.1 Linguistic Dimension Conversion*

This means that in the translation process, according to the differences between the source language and the target language in terms of vocabulary, syntax, discourse structure, etc., the language form should be adjusted accordingly to ensure that the translation is accurate and smooth. The conversion of language

dimensions mainly responds to the challenges brought about by differences in language structure, including differences in word order, grammatical rules, lexical connotations, etc. For example, due to the difference in the connotation of words, habitual expression or sentence structure, the translator needs to be flexible when choosing words, so as to make the translation more in line with the expression habits of the target language on the basis of maintaining the original meaning, and the lines are natural and fluent.

### 3.3.2 Cultural Dimension Conversion:

Cultural dimension conversion focuses on the differences between the source language culture and the target language culture in terms of core concepts, values, social norms, historical background, etc. This dimension pays special attention to the cultural factors contained in language, such as idioms, metaphors, social customs and cultural images. When dealing with these cultural information, translators need to accurately identify cultural differences and use appropriate translation strategies - such as the adjustment of cultural images, the localization replacement of metaphors, the equivalent conversion of cultural proper words, etc., so that the cultural connotation of the original text can be effectively transmitted in the target context, while avoiding understanding obstacles or meaning deviations. The goal is to maintain the cultural characteristics and value core of the original text as much as possible in the cross-cultural context.

### 3.3.3 Communicative Dimension Conversion

The core goal of the communication dimension conversion is to realize the communicative function of the text, and it is emphasized that the translation should play the same or similar communicative role as the original text in the target culture. This requires the translator not only to convey the content, but also to pay attention to the intention and effect of the text - whether it is explanation, persuasion, description or other function, the translation needs to stimulate the corresponding emotional response of the target reader and influence their judgment or behavior, so as to achieve the same communication effect as the original text. In advertising, legal texts, publicity materials and other practical styles, the conversion of the communication dimension is particularly important. Its success or failure is directly related to whether the translation can play the expected role in the target context.

The transformation of these three dimensions is not isolated from each other, but an organic whole that is interrelated and synergistic. They together embody the core concept of ecological translation, that is, translation is the process of adapting and choosing by translators. In practice, translators often need to take into account the three dimensions of language, culture and communication, and seek a dynamic balance between accurately conveying information, respecting cultural differences and realizing communication intentions, so as to complete a faithful and natural cross-cultural conversion.

## 4. Comparative Analysis of Chinese and U.S. Green-Building Assessment Texts

### 4.1 *Eco-context Comparison*

Differences in eco-context are the root cause of the contrasting features of the two standards; they directly shape content orientation and rhetorical strategy. The table below summarises the key divergences:

Comparative dimension	China “Green Building Assessment Standard” (GB/T 50378)	U.S. LEED standard
Natural-ecology backdrop	Vast territory, pronounced climatic variation, uneven water-resource distribution, urgent need for building-energy conservation	High absolute energy consumption, long history of environmental activism, strong concern for indoor environmental quality
Policy-ecology backdrop	Government-led “绿色建筑行动方案”, tightly linked to the dual-carbon targets, emphasis on local adaptation	Market-driven, developed by the U.S. Green Building Council (USGBC), focus on market expansion and international alignment
Technology-ecology backdrop	Grounded in China’s current construction-technology level, highlights indigenous solutions such as “被动式节能” and “海绵城市”	Highly internationalised technical standards, stresses cutting-edge concepts such as “whole-life-cycle” and “renewable-energy utilisation”

#### 4.2 Linguistic Representation Comparison

Language is an important carrier for conveying ecological concepts and text functions. When translating green building standards, especially the GB/T 50378 and LEED standards in China and the United States, understanding how the original language carries specific ecological principles and text functions is the key to ensuring the accuracy and effectiveness of the translation. Different language expressions not only affect the technical accuracy of translation, but also affect the acceptance of the translation in the target culture. This part will explore the differences between these two standards at the language level and the challenges they pose to translation from the aspects of terminology and syntactic structure.

#### 4.3 Terminology System

There are significant differences in the use of terms between GB/T 50378 and LEED, which reflects the differences in cultural roots and technical orientation.

China's GB/T 50378 standard is rooted in the country's architectural practice, ecological policy and technological innovation. It contains many terms with cultural characteristics, and its concepts often lack direct correspondence in English. For example:

“海绵城市 (sponge city)”: This term refers to a planning concept aimed at dealing with urban water problems through natural penetration, storage and storage. It is a characteristic plan for China to deal with urban flooding and water shortage, and there is no direct corresponding concept in the discourse of Western or global urban planning. When translating, it is often necessary to keep the expression "sponge city" while adding explanations, so that the target language readers can understand its ecological connotation and technical background.

“被动式太阳能利用 (passive solar energy utilisation)”: Although "passive solar energy" is a common

concept of global green buildings, its specific application mode, policy orientation and technical details in China have their own characteristics. When translating into English, in addition to retaining "passive solar energy utilization", it is sometimes necessary to interpret it in combination with the specific provisions of Chinese standards to convey its technical focus in a specific context.

In contrast, the LEED standard is based on a more international terminology system. Its vocabulary has been tested by multi-country practice and is more universal, but it may also lack the same attention to local characteristics. For example:

“Embodied carbon”: This term refers to the carbon emissions generated by building materials during the whole life cycle. This concept is increasingly valued in the international discussion of green buildings, especially in the context of Europe and the United States, which is often closely combined with the assessment of the overall environmental impact of materials. The term “embodied carbon” may not have a straightforward equivalent in Chinese and could be translated as “建材全生命周期碳排放” (carbon emissions throughout the material lifecycle), but this requires adaptation to ensure clarity for the target audience.

“Daylighting autonomy”: This term refers to the time ratio of the indoor space of the building to meet the illumination requirements by relying only on natural lighting, which is an important indicator in the evaluation of LEED energy efficiency. The concept is more mature in English-speaking countries, and there is no fully corresponding fixed expression in Chinese. Descriptive translation may be required to explain the specific relationship between architectural design, orientation and energy consumption.

For some unique terms in LEED, there is a lack of ready-made equivalents in Chinese, which brings practical difficulties to translation. Translators often need to choose between borrowing, descriptive translation or creating new words, taking into account the technical accuracy of the terminology and the understandability in the target culture.

#### *4.4 Syntactic Profile*

GB/T 50378 and LEED also reflect their respective technical styles and cultural orientations in syntactic structure. Sentence selection directly affects the clarity and functional focus of the text, which is not only related to the readability of the document, but also reflects the different ways of presenting technical information.

The Chinese standard GB/T 50378 uses a short and direct SVO (Subject-Verb-Object) sentence pattern and repeated mandatory expression patterns. For example, phrases like “凡……均应……” (literally: “all... must...”) are very common in standards, reflecting the characteristics of Chinese standard texts pursuing clarity and conciseness. This directive structure emphasizes the mandatory nature of requirements and focuses on ensuring that regulations are easy to follow and implement, but sometimes they are relatively simple in the detailed clarification of logical relationships. For example:

“凡建筑设计中采用的外墙材料必须符合节能要求” (“All exterior wall materials used in architectural design must meet the energy-saving requirements.”)

This kind of expression highlights action and compliance, and usually does not discuss the principle

behind it, which is in line with the common characteristics of Chinese standard texts.

Relatively speaking, LEED tends to use sentences with more complex structures, often including subordinate structures such as definite clauses and adverbial clauses, to accurately clarify the logical relationship between various technical conditions. This sentence reflects the requirements of technical documents for accuracy and clarity, and also reflects that LEED focuses on showing how the elements in architectural design jointly affect its overall green performance.

For example, the sentence in LEED reads: “Projects must demonstrate that at least 50% of the regularly occupied floor area achieves a minimum daylight illuminance level of 300 lux at a work-plane height of 0.76 m.”

Although the structure of this sentence is complex, it clearly stipulates the content that needs to be verified and its specific conditions through precise conditional qualifications and specific indicators. This multi-level clause structure reflects the meticulousness of the LEED standard in performance analysis, and also reflects its narrative logic that focuses on the interrelated relationship between different factors. In Chinese translation, the complex sentence pattern of LEED may bring the challenge of adjustment. In order to maintain the accuracy of the original meaning while making the translation conform to the Chinese expression habits, translators often need to split long English sentences into several short sentences or sub-sentences to maintain logical coherence in the reorganization.

So the Chinese translation might look like this: “项目必须证明，至少 50%的常规使用面积在工作面高度 0.76 米处，能够达到 300 勒克斯的最低日光照度水平。”

While this translation maintains the technical meaning, the shift from a hypotactic structure (which is typical of LEED) to a more direct, clause-by-clause construction in Chinese helps ensure readability and adherence to the target language’s syntactic norms.

#### *4.5 Summary*

The linguistic presentation of green building standards is deeply influenced by its cultural, ecological and technical framework. By comparing GB/T 50378 and LEED, it can be seen that there are obvious differences in terminology system and syntactic structure between the two. The Chinese standard focuses on the use of terms with cultural characteristics and concise sentences, and focuses on the directive and clarity of the standardized text; while LEED adopts more international terms and more complex syntactic structures to accurately explain the interrelated technical requirements in green architectural design. These differences pose challenges to translation in terms of terminology adaptation and syntactic reconstruction, requiring translators to seek an appropriate balance between technical accuracy and cultural adaptation.

## **5. Translation’s Adaptive Dimensions and Strategies**

### *5.1 Ecological Adaptation Dimensions of Translation*

Combined with the unique characteristics of the green building standard text itself, we must realize the ecological adaptation of translation at three different levels in the process of translation work.

The dimension of language ecological adaptation is mainly to solve the various differences between the source language and the target language in terms of technical language system. For example, technical terms in Chinese are usually concise and concise, while professional expressions in English often require more accurate and detailed. In addition, the two languages also have obvious differences in sentence structure. Chinese sentences are generally shorter, while English sentences are often longer and more complex in structure. Therefore, when translating, we have to make corresponding adjustments to these differences, not only to ensure the technical accuracy of the translated content, but also to ensure The expression of the translation is clear and easy to understand.

Cultural ecological adaptation mainly focuses on the differences in cultural perspectives between China and the target language culture. As translators, we need to properly deal with these cultural differences and ensure that the cultural concepts contained in the text can be properly understood by people in the target language cultural environment. In the process of translation, we should avoid using those literal translation methods that may cause cultural misunderstandings. At the same time, we should accurately convey the ecological concepts and technical principles in the text in a way that fits the cultural norms and practice habits of the target language.

The core purpose of communication ecology adaptation is to make the translation meet the actual communication needs of the target readers, especially international readers. In addition to providing accurate technical information, the translation should also convey the unique ecological concepts and technical characteristics in the process of green building practice, so as to achieve efficient and smooth cross-cultural exchanges in the technical field.

### *5.2 Cross-Cultural Translation of Localized Terminology*

In the standard GB/T 50378, some localized terms are not directly expressed in the LEED system. If we use literal translation, it is easy to cause readers' cognitive bias; but if we use interpretation, we may lose the technical core connotation of these terms themselves. Therefore, how to balance "terminology accuracy" and "cognitive adaptability" has become a major difficulty in our translation process.

#### 1. Core Technical Terminology:

##### Literal Translation + Annotations for Linguistic Conversion

For the translation of core technical terms, we can adopt the method of "literal translation + annotation" to achieve language-level conversion. General technical terms that have been internationally recognized, such as "energy saving rate" and "water resource utilization rate", can ensure the accuracy of language by using direct translation. However, for the term "装配式建筑 (prefabricated building)", which reflects the technology with Chinese characteristics, it is suitable to translate with the strategy of "literal translation + technical annotation". For example, we can translate it as "prefabricated building (a construction method using pre-manufactured components assembled on site, adapted to China's construction industrialization needs), this translation method not only retains the language accuracy of the term itself, but also supplements the necessary background. Information can help target language readers better understand the technical connotation of this term.

## 2. Ecological Philosophy Terminology:

### Free Translation + Cultural Integration for Cultural Conversion

For the translation of ecological concept terms, we can adopt the method of "interpretation + cultural integration" to realize the transformation of the cultural level. Those terms that contain specific cultural and ecological concepts are often not suitable if translated literally. Through the translation strategy of interpretation and cultural integration, it can not only accurately convey the core semantics of the term, but also make the translation better connect with the international ecological concept. For example, we can make appropriate adaptation and adjustments to those related to the concept of sustainable development, so that the ecological ideas are easier to understand by readers, and at the same time, we can better integrate into the international discourse system, thus improving the effect of cross-cultural communication.

### 5.3 Description of Evaluation Indicators: Syntactical Adjustment and Functional Matching in Communicative Dimension

The core of the expression of evaluation indicators is to convey the technical logic and normative requirements contained in it clearly and accurately, and the adjustment of sentence style is to ensure the "logical clarity" and "functional coherence" of the expression.

#### 1. Explicitization of Implicit Logic: Syntactical Reconstruction in Linguistic Dimension

The first is the explicitization of implicit logic, which belongs to the sentence reconstruction work of the language dimension. Chinese statements often contain some logical relationships. When translating, we need to clearly reflect these implicit logical relationships through some sentence transformations, such as integrating juxtaposed structures into compound sentences. For example, the original sentence “建筑体型系数应小于 0.35, 围护结构热工性能应符合 GB 50189 的要求” we can translate it as “The building shape coefficient shall be less Than 0.35, and the thermal performance of the envelope shall comply with the requirements of GB 5018 9”, by adding the conjunction "and", the logical relationship between the two clauses is clearly connected, which is in line with the sentence logic of English.

#### 2. Layering Complex Indicators: Functional Optimization in Communicative Dimension

The second is Categorize complex indicators to make them easier to convey and understand. For those complex indicators that contain multiple conditions, it is appropriate for us to use the structure of "main sentence + sub-item expression" to translate, so as to avoid the sentence becoming too long. For example, the original sentence “可再生能源利用量占建筑总能耗的比例应不低于 5%, 其中太阳能利用量占比不低于 2%, 且应提供连续 12 个月的监测数据”, we can translate it as "The proportion of renewable Energy consumption in the total building energy consumption shall not be less than 5%, with solar energy accounting for no less than 2%. In addition, 12 consecutive months of monitoring data shall be provided", this translation method can effectively improve the readability of technical information, and can also further strengthen the clarity of the standardized function.

### 5.4 Ecological Philosophy Expression: Cultural Conversion of Meaning and Communicative Dimension of Ideological Transmission

The translation of ecological concepts requires us to break through the superficial language barrier and truly achieve the two core goals of "retention of cultural connotation" and "adaptation of international cognitive norms".

#### 1. Abstract Conceptualization: Cultural Conversion of Meaning

On the one hand, it is the concretization of abstract concepts, that is, cultural transformation at the level of meaning. An abstract concept like "天人合一" is not suitable for us to directly translate it as "harmony between man and nature", because this kind of literal expression is easy to be empty and difficult for readers to understand. We should translate it in combination with the technical context of green buildings. For example, translate it as "environmental harmony (designing buildings in line with natural laws to achieve synergy between human settlements and the ecosystem), such a translation transforms abstract concepts into concrete expressions, which not only fits the original ecological idea, but also It matches the actual connotation of architectural design.

#### 2. Internationalization of Policy Concepts: Discursive Transformation in Communicative Dimension

On the other hand, it is the internationalization of policy concepts, which belongs to the discourse conversion of the communication dimension. For China's unique policy concept such as the "双碳" goal, we need to explain it in the international context. When translating, we can adopt the strategy of "policy terms + international discourse integration", for example, translate it as "'dual carbon' goals (China's strategic target of peaking carbon dioxide emissions by 2030 and achieving carbon neutrality by 2060, aligned with global climate governance efforts)". By supplementing these explanatory contents, we can integrate China's policy goals into the discourse system of global climate governance, and also improve the acceptance of this concept in the international scene.

#### 5.5 *Balancing Textual Functions: Adaptive Selection through Tri-Dimensional Coordination*

In order to better harmonize the contradiction between "normative function" and "reader acceptance", we can realize the adaptive choice of translation through the coordination of the three dimensions of language, culture and communication.

In the linguistic dimension, we should adjust the sentence structure flexibly. It is necessary not only to retain the mandatory expression of the core of the text to maintain its normative function, but also to make appropriate adjustments to those non-core clauses, such as replacing the stronger "must" with "should", so as to weaken the tone of the command and make the translation more gentle. For example, the phrase "建筑节能设计必须进行专项论证" can be translated as "Special demonstration shall be conducted for building energy-saving Design", for this core clause, we retain "shall" to reflect its mandatory nature; and the phrase "local products should be given priority for the selection of green building materials" can be translated as "Local products should be given p Riority in the selection of green building materials", use "should" to weaken the tone.

In the cultural dimension, we should pay attention to the functional connotation of adapting the text. Combined with the concept of "standard flexibility" adhered to by Western society, we can add some cultural background annotations appropriately in the translation, such as: "This standard clause is

formulated based on Chinese architectural practice and can be adjusted according to the specific situation of the project." Such an explanation can effectively reduce the resistance of international readers to mandatory expressions, and can also make the translation more suitable for the cultural context of the target language.

In the communication dimension, we should clarify the functional goals of the text. We can add a "text function description" in the standard opening part to clearly distinguish between "mandatory articles" and "instructive articles", which can help readers quickly identify the functional differences of different articles, and then balance the two core communication goals of "normative constraints" and "flexible application".

## 6. Case Studies

### 6.1 Selection Criteria

In this study, we selected two core chapters in GB/T 50378 (2019 Edition) - "Environmental Impact of Building Materials" and "Indoor Environmental Quality" - to carry out case analysis. These two chapters are not only typical representatives of the differences between the evaluation standards of green buildings between China and the United States, but also focus on those areas that are difficult to translate, which contain a large number of local terms and cultural concepts.

Specifically, these two chapters also highlight the different focuses of China and the United States in the field of green building. For example, China's green building standards will pay more attention to the environmental impact assessment of building materials, emphasizing the environmental friendliness, recyclability and whole life cycle impact of building materials. In contrast, the LEED standard in the United States focuses more on evaluating the performance of building materials, especially on the impact of these materials on energy-saving effect and indoor environmental quality. In terms of indoor environmental quality, Chinese standards will emphasize air quality, noise control and lighting effect, while American standards pay more attention to the impact of material selection on indoor health and comfort.

These two chapters not only contain the technical differences between the two standards of China and the United States, but also cover a large number of localized terms and cultural concepts, which have brought considerable challenges to translation work. Therefore, choosing these two chapters as cases for research provides a good opportunity to show us the various challenges of language, culture and technology encountered in the translation of green building standards.

### 6.2 Terminology Modules

The translation of terminology is a critical aspect of translating green building standards, especially when dealing with localized technologies and concepts. Below are several examples of complex terminology translation from the "Environmental Impact of Building Materials" section.

Case Original 1:

“应优先选择具有低环境负荷的建筑材料，降低材料在生命周期中的碳排放。”

Translation Version 1:

“Building materials with low environmental burden should be prioritized to reduce carbon emissions throughout their life cycle.”

“低环境负荷” is often expressed as “low environmental impact” or “low environmental load” in Western green building standards. However, these expressions do not fully convey the concept of “负荷” which emphasizes the overall impact of materials, particularly over their lifecycle. By using “low environmental burden,” the translation better captures the deeper meaning of “负荷”. To accurately express the carbon emissions issue throughout the lifecycle of materials, “throughout their life cycle” is used to reinforce the continuity of this concept.

Case Original 2:

“建筑材料的选择应优先考虑其可回收性与再利用性，以减少资源浪费。”

Translation Version 2:

“The selection of building materials should prioritize their recyclability and reusability, aiming to minimize resource waste.”

“可回收性与再利用性” are commonly translated into English as “recyclability and reusability,” but to enhance the clarity and context of the terms, the translation expands on the original expression by using “aiming to minimize resource waste,” which better conveys the goal of reducing waste and highlights the sustainability requirement of green building.

### *6.3 Performance-Indicator Description*

The evaluation indicators section is a core part of green building standards, containing many specific technical requirements and numerical standards. In this section, special attention should be paid to sentence structure and the accuracy of technical terminology in translation.

Case Original 1:

“建筑的节能设计应满足最低能效标准，且应采取高效的热隔离材料以减少能耗。”

Translation Version 1:

“The energy-saving design of the building shall meet the minimum energy efficiency standards, and high-efficiency thermal insulation materials should be used to reduce energy consumption.”

“最低能效标准” is commonly translated as “minimum energy efficiency standards,” and “高效的热隔离材料” is translated as “high-efficiency thermal insulation materials.” The translation emphasizes the technical terms “能效” and “热隔离.” “Shall” is used to indicate a mandatory requirement, while “should” conveys a suggestion. The phrase “high-efficiency thermal insulation materials” makes the technical requirement clearer, focusing on the professional term “热隔离”.

Case Original 3:

“建筑应实现至少 20%的能效提升，且能效改善方案应提交相应的设计文件。”

Translation Version 3:

“The building should achieve at least a 20% improvement in energy efficiency, and an energy efficiency improvement plan should be submitted along with the relevant design documents.”

“能效提升” is translated as “energy efficiency improvement,” while “设计文件” is translated as “design documents” or “design plans” to suit the technical documentation style. By using “energy efficiency improvement plan,” the translation makes the specific requirements more actionable, while “should” is used to convey a more flexible tone consistent with international standards.

#### *6.4 Ecological-Ideology Statement*

Ecological concepts in green building standards often carry deep cultural backgrounds, and accurately conveying these concepts in translation is one of the key challenges.

Case Original 1:

“建筑设计必须重视生态效益，优先选用本地材料，减少建筑对自然资源的依赖。”

Translation Version 1:

“Building design must prioritize ecological benefits, selecting local materials whenever possible, and reduce dependence on natural resources for construction.”

“生态效益” is a term with Chinese characteristics, and when translating it, care should be taken to ensure it aligns with Western understanding. It can be translated as “ecological benefits” or “environmental benefits.” “优先选用本地材料” can be translated as “prioritize the use of local materials,” and “减少建筑对自然资源的依赖” can be translated as “reduce dependence on natural resources for construction”, while “reduce dependence on natural resources for construction” clearly conveys the technical goal of reducing reliance on natural resources, making it more aligned with international standards.

Case Original 2:

“建筑应采用生态友好型设计，推行节能降碳，实现环境保护和资源再生。”

Translation Version 2:

“The building should adopt eco-friendly design, implement energy saving and carbon reduction measures, and achieve environmental protection and resource regeneration.”

“生态友好型设计” is translated as “eco-friendly design,” and the goals of energy saving and carbon reduction are clearly expressed as “energy saving and carbon reduction.” “环境保护和资源再生” should be translated as “environmental protection and resource regeneration,” which accurately conveys the core concept of green building. This translation emphasizes specific technical goals while maintaining the universality of green building in a global context.

## **7. Conclusions and Outlook**

### *7.1 Research Findings*

The translational eco-environment of green-building assessment standards is shaped by three interlocking contexts—technical, cultural and communicative. Translation is therefore a dynamic process in which the translator adaptively selects among linguistic, cultural and communicative options to satisfy the simultaneous demands of technical accuracy, cultural appropriateness and communicative effectiveness. Sino-U.S. standards diverge in eco-context (state-led vs. market-driven), textual function (strongly prescriptive vs. flexibly advisory) and linguistic realisation (short, explicit clauses vs. long, implicit

sentences). These mismatches cluster translation difficulties into four domains: rendering culture-specific terms, converting syntactic logic, adapting ecological ideas and balancing regulatory force with readability.

Module-specific, three-dimensional conversion strategies prove effective:

Terminology: “literal + annotation” or “sense + docking” secure linguistic and cultural fit.

Indicator descriptions: “logic explication” and “discourse layering” achieve linguistic and communicative fit.

Ideational statements: “concretising re-translation” and “international alignment” deliver cultural and communicative fit.

Functional balance: synergy across the three dimensions yields adaptive choice.

### 7.2 Limitations

The corpus is confined to GB/T 50378-2019 and LEED v4.1; historical revisions are excluded, so the evolution of strategies alongside their eco-environments is under-explored.

Quality assessment relies on expert and practitioner feedback; longitudinal data are lacking, and the actual impact of the translations on international certification or project collaboration has not been empirically verified.

### 7.3 Future Directions

Expand the corpus to successive revisions of Chinese and U.S. standards and to further national schemes (e.g. U.K. BREEAM) to build a cross-temporal, cross-cultural analytic framework and identify generalisable patterns.

Combine big-data techniques to create a “Green Building Standards Translation Corpus” and develop AI-assisted tools for automatic term matching and syntactic-conversion suggestions, boosting practical efficiency.

Deepen empirical research by tracking the use of China’s English-language standards in Belt-and-Road green-building projects, quantifying how translation choices affect the international diffusion of the standards, and thus providing finer-tuned translation support for the global export of Chinese technical norms.

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