Journal of Language, Culture and Education；Vol.3, No.3; 2026
E-ISSN: 3006-3213 P-ISSN：3006-3205
DOI: https://doi.org/10.70267/jlce.2026.v3n3.133139
Published by: Zeus Press

A Study on the Translation of Energy Science and Technology Texts from the Perspective of Semantic Translation and Communicative Translation

Tongxin Zhang*

China University of Petroleum (East China), Qingdao, Shandong, China

**Corresponding author: Tongxin Zhang.*

Abstract

From the perspective of Peter Newmark's semantic translation and communicative translation theories, this paper selects excerpts from *Navigating the Energy Maze: The Transition to a Sustainable Future* as the research object and conducts a case analysis combined with the stylistic features of energy science and technology texts. Through comparative analysis of translated versions, the study concludes that semantic translation can maximally retain the meanings of energy-specific terminologies and the syntactic structures of the original text, ensuring the professionalism and rigor of translations. Communicative translation, by contrast, complies with the reading habits of Chinese readers and adopts localized lexical conversion to produce more fluent translations. For texts concerning energy transition, translators may flexibly combine these two translation approaches.

Keywords

semantic translation, communicative translation, energy science and technology texts, translation strategies

1. Introduction

The global energy industry is currently undergoing a transitional period. As traditional energy sources expose numerous drawbacks, public attention toward the development and application of renewable and clean energy continues to grow. Against this backdrop, cross-lingual communication of professional content in the energy sector has become increasingly frequent, and high-quality translation serves as the fundamental guarantee for information exchange. The book *Navigating the Energy Maze: The Transition to a Sustainable Future* focuses on core issues of energy development, analyzes the practical conditions for energy exploitation, and systematically elaborates on local energy management models. Featuring prominent professionalism, standardized and rigorous wording, this book imposes stringent requirements on the accuracy and readability of information transmission. During translation, translators need to fully preserve the original meaning while adapting to the cognition of target-language readers.

At present, domestic research on the translation of professional energy works remains insufficient. Most translation practices rely on translators' personal experience, lacking mature and systematic theoretical support. Peter Newmark's theories of semantic translation and communicative translation provide scientific guidance for addressing such problems. Centered on faithfulness to the original text, semantic translation requires

translations to retain the professional connotations and sentence structures of the source text to the greatest extent. Oriented toward communicative effects on readers, communicative translation emphasizes conformity to target-language conventions to ensure the smooth delivery of professional information.

This paper takes excerpts from *Navigating the Energy Maze: The Transition to a Sustainable Future* as the research object and carries out translation practice and analysis under the guidance of Newmark's semantic and communicative translation theories. Through analyzing specific cases, this paper summarizes the application modes of the two translation methods in energy transition texts. This research can offer referential approaches for the translation of similar energy texts and explore ways to realize more stable dissemination of professional energy knowledge across languages.

2. Literature Review

2.1 Review on Semantic Translation and Communicative Translation Theories

2.1.1 Theoretical Origins

Peter Newmark put forward semantic translation and communicative translation theories to revise the mainstream translation paradigms in the mid-to-late 20th century. At that time, Eugene A. Nida's functional equivalence theory often abandoned unique cultural elements of the original text [1]. The linguistic school represented by J.C. Catford confined research to equivalence transformation [2]. Furthermore, the traditional dichotomy of literal translation and free translation failed to cope with diverse translation materials.

To address the above problems, Newmark classified texts into expressive texts, informative texts and vocative texts in his monographs *Approaches to Translation* and *A Textbook of Translation*. Expressive texts are mostly rendered with semantic translation, while informative and vocative texts tend to adopt communicative translation or a combination of the two. He also clarified the connotations of the two translation approaches. Semantic translation is not word-for-word translation; instead, it strives to reproduce the contextual meaning of the original text within the constraints of target-language semantics and syntax. Communicative translation focuses on target readers' reading experience and allows translators to appropriately adjust expressions to restore the communicative effect of the original text on source-language readers [3] [4]. He particularly pointed out that the two translation methods are not mutually exclusive, and translators may make flexible choices in practice.

2.1.2 Overseas Research Status

International academic circles hold both positive comments and critical views on these theories. In comparative studies, Jeremy Munday found that Newmark did not overemphasize readers' experience. While recognizing its value, he maintained the formal and stylistic features of the source text. Munday also noticed the obvious normative tendency in the theories reflected by evaluative words such as "should", which differs greatly from later diversified research ideas [5]. Werner Koller, who devoted himself to equivalence research, clearly distinguished the research focuses of Nida, Katharina Reiss and Newmark.

Criticisms also exist in academic communities. Scholars influenced by post-structuralism, such as André Alphons Lefevere, argued that these theories are limited to linguistic and textual analysis and lack reflection on translators' subjectivity [6]. Recent overseas literature reviews indicate that Newmark's original theories have seen reduced applicability in emerging translation scenarios including multimodal texts and post-editing for machine translation. Many researchers therefore combine the theories with skopos theory and eco-translatology to expand their application scope.

2.1.3 Domestic Research Status

Domestic research on the two theories started early and has yielded solid research achievements over the years. As of June 2026, CNKI has recorded 5,562 papers with the keyword "communicative translation" and 3,010 papers with the keyword "semantic translation".

The theories were formally introduced to China in the 1980s. At that time, domestic translation evaluation was long constrained by the principle of "faithfulness, expressiveness and elegance". Wang Zongyan was the first to introduce the theories and highlighted their text-oriented perspective, stating that different texts should

not be judged by a single standard [7]. Tan Zaixi sorted out the development of Western translation studies and clarified the connections between these theories and contemporary academic schools [8]. Liu Junping explored the etymology of relevant terms and distinguished the essential differences between the two theories and traditional literal and free translation [9]. In the 1990s, domestic research shifted from theoretical introduction to practical reflection. Yang Shizhuo analyzed the advantages and disadvantages of the two translation methods with examples and reminded translators not to mechanically apply theories regardless of text types [10].

2.2 Review on the Translation of Energy Science and Technology Texts

2.2.1 Stylistic Features

As a branch of English for Science and Technology (EST), energy science and technology texts cover conventional fossil energy, unconventional oil and gas, new energy sources, as well as scientific, technological and policy discourses related to energy transition. According to Fang Mengzhi, energy EST aims to deliver verifiable professional information, characterized by dense terminology, frequent use of nominal structures and passive sentences, plain and objective narration, and rare application of literary rhetoric [11]. Yu Gaofeng further pointed out that long sentences in such texts not only compress information but also convey complex logical relations [12]. Hence, prioritizing the integrity of information and logical coherence is essential in translation.

2.2.2 Overseas Research Status

Overseas research on energy translation is mostly incorporated into the general framework of EST translation research. For instance, the paper *EC Translation Strategies of Long Sentences in Energy Science and Technology English* summarizes three strategies for restructuring long and complex sentences: inversion, segmentation and reorganization through abundant examples [13]. After long-term practice, overseas scholars have reached a consensus that rigid literal translation adhering to the original grammatical structures will lead to obscure translations and deviate from the core goal of information transmission for scientific and technological texts.

2.2.3 Domestic Research Status

Numerous domestic studies have explored the translation of energy science and technology texts. Pan Chenglong summarized the stylistic features of energy technical papers from lexical, syntactic and textual perspectives in *Stylistic Analysis of Technical Papers in Energy English* [14]. The paper *Chinese Translation of Complex Sentences in Energy Texts from the Perspective of Syntactic Iconicity* introduces iconicity theory, holding that translators should adjust syntactic structures based on cognitive differences between English and Chinese to better convey scientific and technological ideas in the energy field [15]. Aiming at the widely used nominal structures in such texts, Xiao Ran put forward four major translation strategies: literal translation, part-of-speech conversion, amplification and segmentation, and advocated that translators should strike a balance between professionalism and readability according to specific contexts and target readers [16]. Schema theory and post-editing for machine translation are also popular research directions in domestic academia.

Currently, rich case studies have been accumulated on the translation of news, external publicity materials, literary works and general scientific texts. However, specialized research on hybrid energy transition texts is still insufficient. Taking *Navigating the Energy Maze: The Transition to a Sustainable Future* as the research object can fill the gaps in existing studies and further verify the value of Newmark's theories in the communication of contemporary energy discourses.

3. Case Analysis

3.1 Cases of Semantic Translation

Case 1

Original Text: The transition from a carbon-energy economy to a sustainable renewable energy future necessitates not only technological innovation but also a fundamental reconfiguration of institutional frameworks, market mechanisms, and societal expectations.

Translated Text: 从碳基能源经济向可持续可再生能源未来的转型，不仅需要技术创新，还需要对制度框架、市场机制和社会预期进行根本性重构。

Analysis: This case mainly adopts literal translation. On the premise of ensuring basic fluency in Chinese, the translation reproduces the original concepts and stylistic features to a large extent. Syntactically, it retains the original correlative structure "not only… but also…", rendered as the commonly used Chinese structure "不仅…… 还……", and adds the verb "需要" in line with Chinese expression norms. Lexically, professional energy terminology is standardized: carbon-energy economy is translated as "碳基能源经济", and fundamental reconfiguration is rendered as "根本性重构" instead of the diluted version "调整". The phrase sustainable renewable energy future is translated word by word. Though the collocation appears compact in Chinese, it retains both the concepts of "sustainable" and "renewable". Compliant with the core of semantic translation, this version faithfully conveys the original information and meets the translation requirements for scientific and technological texts.

Case 2

Original Text: Decarbonization pathways, as delineated in the latest IPCC reports, involve a complex interplay of renewable energy penetration, energy efficiency gains, and behavioral shifts across multiple sectors.

Translated Text: 正如最新 IPCC 报告所阐明的，脱碳路径涉及可再生能源渗透率、能效提升以及多部门行为转变之间的复杂相互作用。

Analysis: The translation preserves the nominal structure of the original sentence, rendering involve a complex interplay of A, B and C as "涉及 A、B 和 C 之间的复杂相互作用" without sentence segmentation. The parenthetical structure as delineated in the latest IPCC reports is also fully retained and translated as "正如…… 所阐明的". For professional terms, priority is given to accuracy: renewable energy penetration adopts the standard fixed translation"渗透率", a specialized term in energy economics referring to the market penetration rate of relevant technologies. Guided by semantic translation, the translator prioritizes terminological accuracy rather than pursuing popularized expressions.

Case 3

Original Text: The integration of intermittent renewables, such as solar and wind, into grid infrastructure requires sophisticated forecasting algorithms, flexible demand-response mechanisms, and robust storage solutions to maintain grid stability.

Translated Text: 将间歇性可再生能源（如太阳能和风能）并入电网基础设施，需要复杂的预测算法、灵活的需求响应机制以及强健的储能解决方案，以维持电网稳定性。

Analysis: This translation is mainly guided by semantic translation with minor adjustments adapted to Chinese expressions. It reproduces the original logical sequence of "means first, purpose second", listing three technical measures in parallel and stating the ultimate goal at the end of the sentence with the phrase "以维持电网稳定性". Segmenting the sentence would make the wording simpler but weaken the integrity of the combined technical solutions. The core meaning of the integration of is retained and slightly adjusted to "将…… 并入……". Terminologies are used consistently: intermittent is translated as "间歇性" to maintain professionalism of scientific texts, and demand-response mechanisms follows the industry standard translation.

3.2 Cases of Communicative Translation

Case 1

Original Text: Policy incentives, including feed-in tariffs and tax credits, have been instrumental in accelerating the deployment of renewable energy technologies, yet their effectiveness varies significantly across jurisdictions due to differing regulatory environments.

Translated Text: 政策激励措施，如上网电价补贴和税收抵免，在加快可再生能源技术推广方面发挥了重要作用，但由于各地监管环境不同，其效果存在明显差异。

Analysis: The application of communicative translation makes the target text conform to local linguistic conventions and facilitates readers' comprehension. The original sentence contains both adversative and causal relations via the structure yet…due to…. The translation integrates the two logical relations and uses the cohesive structure "但由于……" to streamline expressions. Instead of the literal and obscure legal term "各个司法管辖区", across jurisdictions is simplified to the plain expression "各地" to reduce reading barriers. In accordance with official domestic policy documents, feed-in tariffs is translated as "上网电价补贴" rather than the rigid literal version. Deployment is rendered as "推广" instead of "部署" to highlight the popularization of technologies driven by policies. With a reasonable word order, the translation first illustrates the positive effects of policies and then explains the uneven performance caused by regional regulatory differences, presenting clear logic.

Case 2

Original Text: The concept of a "just transition" emphasizes that the shift to low-carbon energy systems must be equitable, ensuring that vulnerable communities are not disproportionately burdened by economic dislocation.

Translated Text: 所谓 "公正转型"，强调向低碳能源体系的转变必须体现公平性，确保弱势群体不会因经济结构调整而承受过重负担。

Analysis: This version adopts domestication under the guidance of communicative translation to narrow the distance between the text and domestic readers. English passive structures sound unnatural if translated literally into Chinese, so the sentence pattern is reconstructed into the conventional Chinese expression "因…… 而承受过重负担". Economic dislocation is not translated literally as "错位" but adapted to "经济结构调整" in line with domestic industrial realities. The functional amplification of the phrase "所谓" at the beginning indicates that the following content is a plain interpretation of a professional concept. Vulnerable communities adopts the standard translation "弱势群体" widely used in domestic social science research, instead of the literal translation "脆弱社区". The adverb disproportionately is implicitly conveyed by the phrase "过重负担", making the sentence fluent and natural.

Case 3

Original Text: Energy storage technologies, particularly battery systems, serve as the linchpin for balancing supply and demand fluctuations, thereby enabling higher penetrations of variable renewables without compromising grid reliability.

Translated Text: 储能技术，尤其是电池系统，是平衡供需波动的关键，从而在不损害电网可靠性的前提下，使可再生能源能够以更高比例接入电网。

Analysis: The word linchpin originally refers to a mechanical part. A literal translation would sound stiff, so the rhetorical meaning is converted to the plain expression "是…… 的关键" while retaining the core semantics. The long compound sentence is reasonably split into short clauses to create a comfortable reading rhythm. Combined with practical scenarios, higher penetrations is translated as "以更高比例接入电网", which is more accessible than the professional term "渗透率". The word variable is omitted, as the fluctuating output of renewable energy is common knowledge and its retention would lead to redundancy. Such processing slightly deletes minor details of the original text but greatly improves fluency. It demonstrates that communicative translation downplays the formal features of the source text and takes information transmission as the ultimate goal.

4. Conclusion

Guided by Peter Newmark's semantic translation and communicative translation theories, this paper takes excerpts from *Navigating the Energy Maze: The Transition to a Sustainable Future* as the research object and discusses translation methods and strategies for energy texts.

The combination of semantic translation and communicative translation is applicable to the translation of energy science and technology texts. Semantic translation is suitable for processing professional concepts and

logically rigorous sentences. It guarantees consistent use of terminologies and facilitates text retrieval and verification. Communicative translation is more often applied to policy popularization texts and general readings. Translators can remove comprehension obstacles for readers through localized rewriting.

For hybrid energy transition texts with both scientific, technological and policy attributes, a feasible approach is to combine the two translation strategies: adopt communicative translation for overall text composition to enhance reading experience, and apply semantic translation to professional terminologies to ensure academic rigor.

References

[1] Shi X. E-C advertisement translation on communicative translation and semantic translation theory. Theory and Practice in Language Studies. 2014; 4(6): 1214-1218.

[2] Panou D. Equivalence in translation theories-some new approaches. Theory and Practice in Language Studies. 2013; 3(1): 1-6.

[3] Newmark P. A textbook of translation. Shanghai: Shanghai Foreign Language Education Press; 2001.

[4] Tinsley R L, Newmark P. Approaches to Translation. Modern Language Journal. 1984; 67(2): 210.

[5] Munday J. Introducing Translation Studies. London: Routledge; 2013.

[6] Budiman A, Wulandari Y, Rosyidah N. Revisiting Newmark's theory of translation: to what extent is it appropriate? Educalitra: English Education, Linguistics, and Literature Journal. 2023; 2(1): 37-49.

[7] Wang Z.Y. Newmark on translation theory and translation techniques. Chinese Translators Journal. 1982; (1): 7.

[8] Tan Z.X. A short history of Western translation theory (2nd ed.). Beijing: The Commercial Press; 2004.

[9] Liu J.P. A comprehensive history of Western translation theory. Wuhan: Wuhan University Press; 2009.

[10] Yang S.Z. A brief analysis of Newmark's semantic translation and communicative translation theory. Foreign Language and Literature Studies. 1989; (Z2): 4.

[11] Fang M.Z. EST: its paradigms & translation. Beijing: National Defense Industry Press; 2011.

[12] Yu G.F. Strategies for translating long sentences in technical English. Chinese Science & Technology Translators Journal. 2012.

[13] Wang J, Guo Y. EC translation strategies of long sentences in energy science and technology English from the perspective of communicative translation theory. Frontiers. 2022; 3(3).

[14] Pan C.L. Stylistic analysis of technical papers in energy English. Modern Linguistics. 2025; 13(9): 90-98.

[15] Pan C.L. Chinese translation of complex sentences in energy texts from the perspective of syntactic iconicity. Modern Linguistics. 2024; 12(9): 265-271.

[16] Xiao R. Translation strategies of nominalization structures in energy texts. Modern Linguistics. 2025; 13.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

Acknowledgment

This paper is an output of the science project.