THE STRUCTURAL-SEMANTIC FEATURES OF RENEWABLE ENERGY RESOURCES TERMINOLOGY IN ENGLISH

Mahmadaminov Mirqosim

Assistant teacher at the department of "Humanities" of Qarshi institute of irrigation and agrotechnology

+998888240444

mirqosim.17171@gmail.com

Abstract. Renewable energy has become a cornerstone of global efforts to combat climate change and achieve sustainable development. With its rise, a specialized terminology has emerged, reflecting technological advancements, environmental priorities, and societal impacts within the field. This article analyzes the structural development, semantic evolution, and practical applications of renewable energy resources terminology in English. By examining word-formation processes, semantic relationships, and cross-disciplinary influences, the study offers insights into how this terminology facilitates effective communication and knowledge dissemination in the renewable energy sector.

Key words: *Structural semantics, compounding, derivation, abbreviation, borrowing, polysemy, synonymy, hyponymy and hypernymy, metaphor and metonymy, cross-disciplinary, influences, environmental linguistics, terminological standardization, linguistic innovation.*

INRODUCTION

Renewable energy terminology evolves rapidly due to continuous innovations in science, policy frameworks, and public discourse. This specialized vocabulary plays a pivotal role in fostering communication among scientists, policymakers, educators, and the general public. However, its linguistic underpinnings remain underexplored. This article addresses how renewable energy terminology in English is shaped by predominant word-formation processes, semantic relationships, and cross-disciplinary influences. By analysing its structural-semantic features, the study aims to enhance understanding of this vital subset of the English lexicon.

DATA COLLECTION AND ANALYSIS

There are different ways of analysing the structural and semantic features of terminology on renewable energy resources from word-formation to polysemy or origin of words. Having considered the complexity and high number of analgising methods, it is decided to separate the analysing processes into smaller parts. They are as followings:

Word-Formation Processes

Word-formation processes significantly contribute to the growth of renewable energy terminology, employing mechanisms such as compounding, derivation, abbreviation, and borrowing.

Compounding

Compounding is a key method of term creation, combining two or more root words to form new concepts. Examples include:

- Solar panel: Combines “solar” (relating to the sun) and “panel” (a flat structure) to denote a device for capturing solar energy.
- Wind turbine: Merges “wind” (air in motion) and “turbine” (a device for converting energy).
- Hydropower plant: Integrates “hydro” (water), “power” (energy), and “plant” (facility).

These compounds often exhibit endocentric structures, where the final element determines the category, as seen in “solar panel” (a type of panel).

Derivation

Affixation is another common process, involving the addition of prefixes or suffixes to base words. Examples include:

- Renewable: Derived from “renew” with the suffix “-able,” indicating capability.
- Sustainability: Formed from “sustain” with the suffix “-ability,” denoting a quality.
- Decarbonization: Combines the prefix “de-” (removal) with “carbon” and the suffix “-ization” (process).

Derivation enhances the precision and adaptability of technical language.

Abbreviation

Abbreviations streamline complex concepts, enhancing usability in technical and academic contexts. Examples include:

- PV: Photovoltaic.
- RE: Renewable Energy.
- LEED: Leadership in Energy and Environmental Design.

Borrowing

Borrowing enriches the terminology by incorporating Greek and Latin roots, ensuring consistency across languages. Examples include:

- Biomass: Derived from Greek “bio” (life) and “mass” (bulk).
- Geothermal: Combines Greek “geo” (earth) and “therme” (heat).

Polysemy, synonymy, hyponymy and hypernymy, metaphor and metonymy features of the words are selected to indicate the semantic structure of renewable energy terminology. Polysemy is common, with single terms carrying multiple related meanings. For instance:

- Grid: Refers to both the physical network of power lines and the conceptual system of energy distribution.
- Storage: Denotes the act of storing energy as well as the technologies used, such as batteries.

Synonymy

Synonymy offers multiple terms for similar concepts, aiding comprehension among diverse audiences. Examples include:

- Renewable energy and sustainable energy.
- Solar farm and photovoltaic power station.

While synonymy enhances accessibility, it may introduce redundancy or ambiguity in technical communication. Hyponymy and Hypernymy

Hierarchical relationships organize knowledge systematically:

- Renewable energy (hypernym) encompasses solar energy, wind energy, and biomass energy (hyponyms).
- Turbine (hypernym) includes wind turbines and hydroelectric turbines (hyponyms).

Metaphor and Metonymy

Metaphor and metonymy enrich the terminology by connecting abstract concepts to tangible experiences. Examples include:

- Energy footprint: Metaphorically represents the impact of energy consumption.
- Smart grid: Suggests intelligence and efficiency through metaphorical language.

As for cross-disciplinary influences of renewable energy terminology draws from various disciplines, reflecting its interdisciplinary nature: Environmental Science-Terms such as "carbon offset" and "emissions trading" originate from ecological discourse. Engineering-Concepts like "efficiency ratio" and "load capacity" derive from engineering principles. Economics-Vocabulary such as "cost-benefit analysis" and "market penetration" stems from economic theory. Policy and Law-Phrases like "renewable portfolio standard" and "feed-in tariff" are rooted in regulatory frameworks.

Because the field is very new to research it is natural there are challenges and future directions to investigate. The lack of uniformity and policy implementations might make this field difficult to research and there is the detailed information about them. Terminological Standardization-the lack of uniformity in terminology can hinder communication and policy implementation. International efforts, such as those by the International Renewable Energy Agency (IRENA), are crucial for standardization. Linguistic Innovation-As technology evolves, new terms emerge, necessitating ongoing linguistic analysis. Recent innovations, such as "green hydrogen" and "agrivoltaics" exemplify this dynamic process. Cross-Linguistic Comparisons-Comparative studies across languages reveal universal patterns and cultural specificities, offering valuable insights into linguistic adaptation and innovation.

CONCLUSION

The structural-semantic features of renewable energy resources terminology in English highlight its complexity and interdisciplinarity. Word-formation processes, such as compounding, derivation, abbreviation, and borrowing, contribute to its growth, while semantic relationships like polysemy, synonymy, and hyponymy enhance its functionality. Cross-disciplinary influences further shape its development, making it a vital tool for global sustainability efforts. By analyzing this terminology through a linguistic lens, researchers can contribute to its clarity, accessibility, and effectiveness in advancing renewable energy initiatives.

REFERENCES

1. "The Carbon Trust & DTI Renewables Network Impacts Study" Carbon Trust and UK Department of Trade and Industry. January 2004 [commissioned June 2003].
2. "*All Island Grid Study*". Department of Communications, Energy and Natural Resources. January 2008. pp. *3*–5, 15.
3. "Flexible Power Plant Operation to Enable High Renewable Energy Penetration". IESR. 2022-06-15. *Retrieved 2022-11-21*.
4. 1."Renewable Energy: The Clean Facts" by the Natural Resources Defense Council (NRDC).
5. 2. "Renewable Energy Terminology" by NES Fircroft.
6. 3. "The Glossary of Sustainable Energy" by Enel Green Power.
7. 4. "Renewable Energy Glossary of Terms" by Wattstor.
8. 5. "Energy Terms & Renewable Energy Glossary" by Inspire Clean Energy.
9. Anvar, K. G. K. K. K. (2023). METHODOLOGIES AND CONCEPTS OF TEACHING A FOREIGN LANGUAGE. *Confrencea*, *11*(1), 144-148.
10. Cartlidge, Edwin (2011-11-18). "Saving for a Rainy Day". Science. **334** (6058): *922* 924. *ISSN 0036-8075*. *PMID 22096185*.
11. Czisch, Gregor; Gregor Giebel. "Realisable Scenarios for a Future Electricity Supply based 100% on Renewable Energies" on 2014-07-01. *Retrieved 2008-10-15*.
12. Riesz, Jenny; Milligan, Michael (May 2015). "Designing electricity markets for a high penetration of variable renewables". WIREs Energy and Environment. **4** (3): *279*–289.
13. Sinsel, Simon R.; Riemke, Rhea L.; Hoffmann, Volker H. (2020-01-01). "Challenges and solution technologies for the integration of variable renewable energy sources-a review". Renewable Energy. **145**: *2271*-2285.

14. Suchet, Daniel; Jeantet, Adrien; Elghozi, Thomas; Jehl, Zacharie (2020). "Defining and Quantifying Intermittency in the Power Sector". Energies. **13** (13): 3366.
15. Surmanov, S. (2024). A COMPARATIVE ANALYSIS OF READING SKILLDEVELOPMENT THROUGH GRADED READERS. *SCIENTIFIC AND TECHNICAL JOURNAL "SUSTAINABLE AGRICULTURE"*, *22*(2), 92-94.
16. Yaqubov, O. (2024). IMPLEMENTING INTERACTIVE LEARNING METHODS REQUIREMENTS OF TIME. *SCIENTIFIC AND TECHNICAL JOURNAL "SUSTAINABLE AGRICULTURE"*, *22*(2), 95-