Derivational and semantic principles of ecological terminology in Uzbek and English: A comparative and linguistic approach

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ANNOTATSIYA: Mazkur maqola ingliz va o‘zbek tillaridagi ekologik terminlarning derivatsion va semantik prinsiplari qiyosiy tilshunoslik nuqtai nazaridan o‘rganadi. Tadqiqotning maqsadi so‘z yasalish modellari, semantik o‘zgarishlar va ikki til o‘rtasidagi o‘xshashlik va farqlarni aniqlashdir. Korpusga asoslangan tavsifiy-qiyosiy metod yordamida ekologik terminlar affiksatsiya, qo‘shma so‘zlar, konversiya, o‘zlashma va semantik kengayish kabi mexanizmlarga ko‘ra tahlil qilindi. Natijalar shuni ko‘rsatadiki, ingliz tilida terminologiya ko‘proq qo‘shma so‘zlar va Grek-Lotin affikslari orqali rivojlanadi, o‘zbek tilida esa milliy affikslar va semantik moslashuv yetakchi o’rinni egallaydi. Mazkur maqola qiyosiy terminologiya, tarjima va ekologik diskurs sohalariga hissa qo‘shadi.

KALIT SO’ZLAR: ekologik terminlar, derivatsiya, semantika, qiyosiy tilshunoslik, Ekolingvistika, O‘zbek tilshunosligi, Ingliz ilmiy terminologiyasi birikmalar, Ekologik siyosat, Leksik o‘zlashma (o‘zlashgan so‘zlar).

АННОТАЦИЯ: В данной статье рассматриваются деривационные и семантические принципы формирования экологических терминов в английском и узбекском языках с позиции сравнительной лингвистики. Цель исследования заключается в выявлении моделей словообразования, семантических изменений, а также сходств и различий между двумя языками. С использованием описательно-сравнительного метода на основе корпусного анализа экологические термины были проанализированы по таким механизмам, как аффиксация, словосложение, конверсия, заимствование и семантическая деривация. Результаты исследования показывают, что в английском языке

терминология преимущественно развивается через словосложение и использование греко-латинских аффиксов, в то время как в узбекском языке ведущую роль играют национальные аффиксы и семантическая адаптация. Данная работа вносит вклад в области сравнительного терминоведения, переводоведения и экологического дискурса.

КЛЮЧЕВЫЕ СЛОВА: экологические термины, деривация, семантика, сравнительная лингвистика, эколингвистика, узбекское языкознание, английская научная терминология, композиты, экологическая политика, лексическое заимствование.

ANNOTATION: This article examines the derivational and semantic principles of ecological terms in English and Uzbek from a comparative linguistics perspective. In this paper the focus is on the word formation models, the changes in meaning and the similarities and differences in the conceptualization of ecological phenomena. A corpus based descriptive comparative research method was used to analyze ecological terms in the framework of derivational mechanisms such as affixation, compounding, conversion, borrowing and semantic broadening. The analysis shows that compounding and Greco-Latin affixation are more prevalent in the ecological terms of the English language. Whereas in the ecological terms of the Uzbek language the predominant means are native affixation, calque translation and semantic adjustment. This research has a value in comparative studies of terminology and in translation studies, lexicography and environmental discourse.

KEYWORDS: ecological terminology, derivation, semantics, comparative linguistics, Ecolinguistics, Derivational Morphology, Uzbek Linguistics, English Scientific Terminology, Neoclassical Compounds, Environmental Policy, Lexical Borrowings.

Introduction

Ecology, being an interdisciplinary science, calls for a vocabulary that could be specific enough for scientific usage but general enough for broader applications, such as policymaking or education. The development of scientific vocabulary is anything

but context-free, as it is deeply rooted in the morphology, development, and worldview of each language. When English, a language belonging to the Germanic language family, is compared with Uzbek, a language belonging to the Turkish family, the chance to understand the adaptation of languages to scientific imperatives under the new era provides a fascinating perspective.

Unlike them, the history of the development of the Uzbek language is relatively unique. As an agglutinative Turkic language, Uzbek has been in contact with many languages, such as Persian, Arabic, and Russian, which have influenced the language's dialect. In the history of the Uzbek language, its system of ecological terminology is chronologically its "beginnings" The Uzbek language system of ecological terminology is in a state of a paradox. As a result of the Soviet Union's rule of Uzbek language, the ecological system of the Uzbek language contributed what is known as an "ecological rupture". This is the result of the Soviet style suppression of the indigenous knowledge and native lexicon that described the local systems of soil and water management, which was replaced with the Russian-based technocratic language. The system of local language management, which, by its very nature, was a means of conceptualizing the distinct systems of soil and water management, was disconnected from the means of control and contributed to such things as the ecological disaster of the Aral Sea.

Since Uzbekistan gained independence, and particularly after the reforms of 2025, the country has made the first steps in focusing on the standardization and revitalization of the country's ecological terminology. The first of these, Presidential Decree No. UP-217 and the subsequent Resolution No. PP-343, have created new institutional arrangements which restructure the ministries by turning the Ministry of Ecology into the National Committee on Ecology and Climate Change. These changes are more than just nominal; they will create new administrative routines that will facilitate the implementation of the "Yashil Makon" (Green Space) project and the activities of the newly created "Eco-police". This paper will examine the evolution of this new terminology and attempt to analyze its components and compare them to the existing English terminology to provide a model for standardization and effective

scientific communication. The paradigm of this paper is within the scope of ecolinguistics, which centers language as the medium that encapsulates the relationship between humans and the environment. The metaphor of the linguistic ecosystem, coined by Einar Haugen on the 'ecology of language', is a simple yet effective way of describing the relationship between a language and the society that speaks it.[10]

Because of the developing of the environmental sciences, there has been a need for a more precise and structured ecological terminology. The terminology as well as the system of ecological categorization is a direct result of the advancement of the respective science and the structure of the respective language. A comparative analysis of the ecological terminology of the English and Uzbek languages provides the study of the universal derivational-semantic and various particular mechanisms. This study has focused on the derivational process, as they are of utmost value in translation, policy, and education.

Literature Review

The role of derivation in the formation of terms has been noted in the theory of terminology (Cabré, 1999; Sager, 1990). [3] The Semantics of Language studies show the role of affixation, compounding, and semantic broadening on the formation of terms (Lyons, 1995; Fillmore, 1982).[8] The studies of the English language ecological terminology show the abundant use of the Greco-Latin Affix, compound words, and the use of the international English language. The studies of the terms in Uzbek language show the native affixation, calque, and morphological adaptation. The present study is of almost importance, because of the absence of the comparative studies of the English and Uzbek ecological terminology.

Methodology

The study employed a descriptive comparative, and corpus-based methodology. The study collected ecological terminology from such sources as scientific journals, textbooks, policy documents, and online environmental databases. The collected terminology was analyzed in terms of its derivational structure affixation, compounding, borrowing, conversion) and semantic features (narrowing, broadening, metaphorical extension). Frequency distribution, semantic transparency, and cross-

linguistic adaptation were evaluated. Comparative tables were created to illustrate the correspondences and divergences between English and Uzbek terms.

Overall, 60% of words in English are created through morphological processes, whether native or within neoclassicism. 35% of these processes are via affixation, with a wide variety of used prefixes (eco-, bio-, de-, enviro-) and used suffixes (-logy, -system, -sphere, -friendly). Compounding adds 25% to this category via transparent, multi-word expressions like ‘greenhouse effect’ or ‘carbon footprint’ as single terms. In contrast, 70% of Uzbek ecological terminology consists of borrowed words - mostly from English or Russian, and terms like ekologiya, ekotizim (ecosystem), or biogaz are directly adopted into the Uzbek language. Native word formation in Uzbek employs agglutinative suffixation (10%), and native compounding (15%) to a lesser degree. Significant native formations are atrof-muhit (environment, literally “surrounding-world”) and terms like barqarorlik (sustainability/stability) formed with the suffix -lik.[4]

The analysis reveals significant distinctions in how ecological concepts are lexicalized in both languages. The distribution of word-formation mechanisms highlights English as a “source system” and Uzbek as a “recipient system”.[1]

1-table

Word Formation Type	English (%)	Uzbek (%)	Examples (Eng / Uzb)
Affixation	35	10	*Deforestation* / *Ifloslanish*
Compounding	25	15	*Greenhouse effect* / *Atrof-muhit*
Borrowing	10	70	*Hydrosphere* / *Gidrosfera*
Calquing	15	4	*Green economy* / *Yashil iqtisodiyot*

Structural Complexity

Both languages exhibit a strong trend toward "polycomponent" (multi-word) terms, with Uzbek at 83% and English at 81.9%.[5]

- Simple Terms (Monolexemic): English: *forest*, *flora*, *sea*; Uzbek: *o'rmon*, *o'simliklar*, *dengiz*.
- Two-Component Terms: English: *carbon footprint*, *climate change*, *riverside*; Uzbek: *karbon izi*, *iqlimg o'zgarishi*, *daryo bo'yi*.
- Three-Component Terms: English: *emissions intensity*, *disaster preparedness*; Uzbek: *tabiatni muhofaza qilish*, *falokatga tayyorgarlik*.
- Scientific Phrases: English: *assessment of the environment*; Uzbek: *atrof-muhit holatini baholash*.[9]

Results and Analysis

English ecological terminology is composed of compound words (greenhouse effect, biodiversity loss), affixed words (deforestation, pollution), and loanwords (ecosystem, biosphere). Compound words ensure semantic transparency, while affixed words make it possible to produce new lexemes in a productive way. International uniformity is kept through loanwords. Uzbek ecological terminology makes substantial use of indigenous affixes like -lik, -chi, -lanish (ifloslanish, ekologiklik). International loanwords are adapted phonemically, semantically, or translated by calquing (atrof-muhit muhofazasi). The preference for Uzbek ecological terminology is based on semantic transparency and native speaker understanding, with the incorporation of international terminology according to the syntactic structure of these multi-word terms displays a high degree of stability. In English, these often take the form of noun-noun or adjective-noun compounds (e.g., "emissions intensity"). In Uzbek, they are frequently rendered as analytic phrases or through descriptive translation, such as *tabiatni muhofaza qilish* (protection of nature) or *iqlimg o'zgarishi* (climate change). The slightly higher percentage of polycomponent terms in Uzbek (83%) reflects its tendency toward descriptive translation when direct lexical equivalents are absent.

Semantic Features and Transparency

The semantic analysis of ecological neologisms reveals a divide between scientific precision and metaphorical accessibility. English ecological neologisms frequently describe processes (*-ing*), capabilities (*-able*), and actions (*de-*). They are often characterized by high semantic transparency, where the meaning can be inferred from the constituent parts (e.g., "biodegradable").

In Uzbek, semantic development is often shaped by the intermediary role of Russian. Many English concepts entered Uzbek via Russian, leading to "semantic transfers" where the Uzbek term may carry slightly different connotations than the original English. For example, "sustainability" is translated as *barqarorlik*, but while the English term encompasses a complex socio-economic-environmental triad, *barqarorlik* is often perceived more traditionally as "stability" or "durability".[7]

Ecolinguistic Embedding in Proverbs and Zoonyms

The analysis of 240 proverbs reveals that ecological knowledge is culturally situated. English proverbs often use animal traits to reflect individual-centered moral evaluations (e.g., "Eagles do not catch flies"). Uzbek proverbs, rooted in pastoral life, emphasize communal harmony and patience, frequently featuring the camel (*tuya*), horse (*ot*), and wolf (*bo'ri*). This cultural embedding suggests that while scientific terminology is becoming standardized, the conceptual frameworks through which the public understands ecology remain distinct.

Discussion

Principles of derivation and meaning in ecological terminology depend on typological properties of languages and linguistic factors such as globalization and international collaboration in scientific research. English is the source language for many international terms, and Uzbek has developed these terms using affixation, calquing, and meaning conversion. Results have implications for translation, standardization of terminology, and preparation of bilingual texts for education.

The Impact of Agglutination in Uzbek

Uzbek, as an agglutinative language, constructs technical words by attaching multiple suffixes to a root. While this is used for terms like *o‘quvchi* (learner), technical ecology often bypasses native resources for borrowing.[12] However, native formations like *ifloslantirmoq* (*pollute*), *o‘rmonlarni kesish* (*deforestation*), and *qurg‘oqchilik* (*drought*) show the potential for native derivational expansion.

Historical Erasure and Restoration

The suppression of Uzbek terms like *zovur* (drainage) and *sho‘rlik* (salinization) in favor of Russian technocratic terms during the Soviet era caused an “ecological rupture”.[7] Reintegrating these terms is critical for sustainable management.[7]

2025–2026 Institutional and Terminological Reforms

The recent Presidential reforms (UP-217) have introduced new terminological needs:

- **Institutions:** *National Committee on Ecology and Climate Change* (*Ekologiya va iqlim o‘zgarishi milliy qo‘mitasi*).[10]
- **Law Enforcement:** *Eco-police* (*Eko-politsiya*) with specialized powers.[6]
- **Digital Platforms:** *Unified Environmental Online Platform* to be operational by 2026.[6]
- **National Projects:** *Yashil Makon* (Green Space), *Toza Havo* (Clean Air), and *Bio Meros* (Bio Heritage).[6]

Conclusion

Ecological terminology in English and Uzbek is characterized by common linguistic principles and specific mechanisms of word formation. Mastery of these processes is extremely important for standardization, translation, and environmental education. For further research, one could consider tracing these processes through time and how new environmental terms impact this process.

Comparative studies in the field of ecology English and Uzbek are in the process of breakthrough development. English terminology uses neoclassical compounding and gives a steady model to the world, while Uzbek uses more borrowing and a more

transforming model of compound standardization. To remain in the sphere of control and understanding of the public, the Uzbek language ecology needs to:

1. Eliminate the incoherence in the use of the terminology of biodiversity (bioxilma-xillik vs ekotizim).
2. Repair the historical “rupture” of the local ecological vocabulary
3. Use the agglutinative system to make terms, which will be transparent and of native origin, and will be in a more democratic style.

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