

RESEARCH ARTICLE

# Structural-Semantic Features of Irrigation and Land Reclamation Terms in English And Uzbek

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VOLUME: Vol.06 Issue06 2026

PAGE: 105-109

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## Abstract

This article investigates the structural-semantic features of irrigation and land reclamation terms in English and Uzbek. The relevance of the study is determined by the growing importance of precise bilingual terminology in water management, agricultural engineering, translation, technical education and international cooperation. Irrigation and land reclamation terminology forms a complex lexical system that includes names of processes, technologies, hydraulic structures, soil conditions, measurement units and management practices. The study applies comparative, structural, semantic and terminological methods to identify the main formation models and meaning relations of English and Uzbek terms. The analysis shows that English irrigation terminology is strongly characterized by compound nouns, attributive word combinations and international scientific units, while Uzbek terminology combines native Turkic lexical resources, Arabic-Persian elements, Russian-mediated borrowings and modern international terms. Semantically, the terms are grouped around the concepts of water supply, water distribution, drainage, soil salinity, moisture regulation, irrigation methods and reclamation measures. The findings indicate that equivalence between English and Uzbek terms is not always direct, because some English terms have descriptive Uzbek equivalents, while some Uzbek terms reflect local agricultural practice. The article concludes that structural-semantic analysis is essential for improving translation, bilingual glossaries and professional communication in irrigation and land reclamation discourse.

## KEY WORDS

Irrigation terminology, land reclamation, melioration, structural analysis, semantic features, English, Uzbek, comparative terminology, technical translation.

## INTRODUCTION

Irrigation and land reclamation occupy an important place in agricultural production, water resource management and environmental protection. In countries with arid and semi-arid climates, including Uzbekistan, the correct use of water, the regulation of soil moisture and the prevention of salinization are not only technical issues but also social and economic necessities. For this reason, the terminology of irrigation and land reclamation has become an important part of scientific, technical and professional communication. Terms such as

irrigation canal, drainage system, waterlogging, salinity control, drip irrigation, furrow irrigation, collector-drainage network, leaching, groundwater table and soil reclamation are widely used in academic literature, engineering documentation, agricultural manuals and international projects.

The comparative study of English and Uzbek irrigation terminology is especially relevant because English functions as

a major language of international scientific exchange, while Uzbek is the language of national agricultural practice, education and administration in Uzbekistan. Specialists, translators, students and researchers often need to move between the two systems. However, direct translation is not always sufficient. A term may have a clear structural equivalent but a different semantic scope. For example, English land reclamation may correspond to Uzbek *yerlarni melioratsiya qilish*, but the Uzbek term *melioratsiya* is commonly associated with a broad system of measures aimed at improving soil, water and agricultural conditions. Similarly, English drainage may be translated as *drenaj*, *zovur* or *kollektor-zovur tizimi* depending on the context.

The aim of this article is to analyze the structural-semantic features of irrigation and land reclamation terms in English and Uzbek. The object of the research is the bilingual terminology of irrigation and land reclamation. The subject is the structural formation and semantic classification of selected terms. The study seeks to answer how irrigation and land reclamation terms are formed in the two languages, what semantic groups they represent, and what types of equivalence or non-equivalence appear in translation.

The research material consists of English and Uzbek terms related to irrigation, drainage, soil reclamation, water distribution and agricultural water management. The English terms were selected from international irrigation and drainage publications, including FAO materials, ICID terminology resources and standard manuals on irrigation and drainage. Uzbek terms were selected from Uzbek explanatory dictionaries, terminology studies and common professional usage in agriculture and water management. The study does not aim to provide a full dictionary; rather, it examines representative terms that reveal the main structural and semantic patterns of the field.

The methodological basis of the research includes comparative analysis, componential semantic analysis, structural word-formation analysis and terminological classification. Comparative analysis makes it possible to identify similarities and differences between English and Uzbek terms. Structural analysis focuses on the form of terms, including simple terms, derived terms, compound terms and multi-word terminological combinations. Semantic analysis determines the conceptual groups to which terms belong and examines relations such as synonymy, hyponymy, descriptive equivalence and partial equivalence. The terminological

approach is based on the idea that a term is not only a lexical unit but also a linguistic expression of a specialized concept.

The analysis shows that English irrigation and land reclamation terminology is dominated by compound nouns and noun phrases. Terms such as irrigation system, drainage network, water supply, soil salinity, crop water requirement, surface irrigation, sprinkler irrigation, subsurface drainage and groundwater level are formed through attributive combinations. In these structures, the first component usually specifies the field, method, object or function, while the second component names the central concept. For instance, in drip irrigation, the component *drip* indicates the method of water application, while *irrigation* identifies the general process. In subsurface drainage, the component *subsurface* specifies the location of the drainage process below the soil surface.

Uzbek irrigation terminology also uses word combinations, but its structural patterns differ because of the agglutinative nature of the language. Uzbek equivalents often appear as possessive or attributive constructions: *sug'orish tizimi*, *drenaj tarmog'i*, *suv ta'minoti*, *tuproq sho'rlanishi*, *ekinlarning suvga bo'lgan talabi*, *tomchilatib sug'orish*, *egatlab sug'orish* and *yer osti drenaji*. In these examples, semantic relations are expressed by word order, possessive suffixes, case markers or participial forms. The English structure *crop water requirement* is compact and noun-based, while the Uzbek equivalent *ekinlarning suvga bo'lgan talabi* is more descriptive and grammatically explicit.

One of the main structural differences is connected with the use of compound compression in English and descriptive expansion in Uzbek. English technical language tends to produce short multi-noun structures such as *canal lining material*, *drainage coefficient*, *irrigation scheduling model* and *salinity control measure*. Uzbek often renders these structures through explanatory combinations: *kanal qoplamasi materiali*, *drenaj koeffitsiyenti*, *sug'orish jadvalini tuzish modeli* and *sho'rlanishni nazorat qilish chorasini*. This difference is important for translation because literal word-for-word transfer may sound unnatural or unclear in Uzbek.

From the semantic point of view, irrigation and land reclamation terms form several conceptual fields. The first field includes general water supply and distribution terms, such as *irrigation*, *water delivery*, *canal*, *ditch*, *flume*, *flow*, *discharge* and *water allocation*. Their Uzbek equivalents include *sug'orish*, *suv yetkazib berish*, *kanal*, *ariq*, *nov*, *oqim*,

suv sarfi and suv taqsimoti. These terms describe the movement and management of water from the source to agricultural land. The second field includes irrigation methods: surface irrigation, furrow irrigation, basin irrigation, border irrigation, sprinkler irrigation and drip irrigation. Uzbek equivalents are yer ustidan sug'orish, egatlab sug'orish, bostirib sug'orish, polosalab sug'orish, yomg'irlatib sug'orish and tomchilatib sug'orish. These terms show that Uzbek often uses verbal-adverbial forms ending in -lab or -latib to express the method of action.

The third semantic field is drainage and groundwater regulation. English terms such as drainage, subsurface drainage, open drain, collector drain, drainage outlet, groundwater table and waterlogging correspond to Uzbek drenaj, yer osti drenaji, ochiq zovur, kollektor zovur, drenaj chiqish joyi, sizot suvlari sathi and ortiqcha namlanish or botqoqlanish. In this group, equivalence is sometimes partial. The English term drain may refer to a structure, channel or pipe, while Uzbek may require a more specific term such as zovur, drenaj quvuri or kollektor. Therefore, semantic precision depends on context.

The fourth semantic field concerns soil condition and reclamation processes. English terms such as salinity, soil salinization, alkalinity, leaching, reclamation leaching, soil improvement and land reclamation are commonly translated as sho'rlanish, tuproq sho'rlanishi, ishqoriylik, yuvish, sho'r yuvish, tuproqni yaxshilash and yerlarni melioratsiya qilish. The term melioratsiya itself is of international origin and entered Uzbek mainly through Russian scientific and administrative usage. It has become fully integrated into Uzbek professional vocabulary and is productive in combinations such as meliorativ holat, meliorativ tadbirlar, meliorativ tizim and meliorativ monitoring.

The analysis also reveals different sources of terminology formation. English terms are frequently built from native Germanic words, Latin and Greek elements, and international scientific vocabulary. Uzbek terms are formed through native Turkic words such as suv, yer, ariq, egat, tuproq, sho'r and oqim, through Arabic-Persian elements such as ta'minot and tizim, and through Russian or international borrowings such as irrigatsiya, melioratsiya, drenaj, kollektor, koeffitsiyent and monitoring. This mixed origin reflects both the historical development of Uzbek scientific language and the practical influence of water management institutions.

Synonymy and variation are also observed in the two

languages. In English, irrigation canal and irrigation channel may be used in related contexts, though canal often suggests an artificial watercourse of larger scale. In Uzbek, ariq and kanal differ by size, function and institutional usage. The English drainage network may be translated as drenaj tarmog'i or kollektor-zovur tarmog'i. The second Uzbek version is more specific and reflects the traditional terminology of irrigated agriculture in Central Asia. Such variation shows that semantic equivalence requires knowledge of both language structure and professional practice.

The structural-semantic comparison demonstrates that irrigation and land reclamation terminology cannot be reduced to simple bilingual word matching. English and Uzbek use different grammatical resources to organize specialized concepts. English favors compact noun clusters, while Uzbek tends to use attributive, possessive and descriptive constructions. This difference is not a weakness of either language; it reflects their typological nature. In translation, the task is not to preserve the external structure of the source term at any cost, but to reproduce the concept accurately and naturally in the target language.

The semantic structure of the field also shows that many terms are organized hierarchically. For example, irrigation is a general concept, while drip irrigation, furrow irrigation and sprinkler irrigation are subtypes. In Uzbek, this hierarchy is preserved through combinations with sug'orish. Similarly, drainage functions as a general concept, while subsurface drainage, open drainage and collector drainage represent specific types. Such hierarchical relations are important for developing bilingual glossaries because they help users understand not only individual equivalents but also the systematic relations between terms.

The results confirm that some Uzbek terms have a strong local and regional character. Words such as ariq, egat, zovur and sizot suvlari are deeply connected with traditional and practical water management in irrigated agriculture. Their English equivalents may be approximate rather than absolute. For instance, zovur is often translated as drain or drainage ditch, but in Central Asian irrigation practice it may refer to a specific element of the collector-drainage system. The term sizot suvlari is usually rendered as groundwater, yet in agricultural discourse it often specifically refers to shallow groundwater affecting soil moisture and salinity. These examples show that semantic analysis must include cultural, environmental and professional context.

Another important issue is the coexistence of borrowed and native terms in Uzbek. Terms such as *irrigatsiya* and *sug'orish* may both be used, but they are not always stylistically identical. *Sug'orish* is more natural and widely used in practical speech, while *irrigatsiya* appears more often in scientific, institutional or international contexts. A similar relation can be observed between *drenaj* and *zovur*, although these terms may also differ technically. The translator must therefore consider register, audience and subject field. In a scientific article, *drenaj tizimi* may be appropriate; in a practical agricultural context, *zovur tarmog'i* may be clearer.

The findings have practical importance for technical translation, lexicography and education. In translation, structural-semantic analysis helps avoid false equivalence. In lexicography, it supports the creation of bilingual dictionaries with definitions, usage labels and contextual examples. In education, it helps students of agricultural engineering, irrigation and translation studies understand how technical concepts are expressed differently in English and Uzbek. Such knowledge is especially important in Uzbekistan, where water management is closely related to sustainable agriculture, environmental protection and international cooperation.

The study shows that irrigation and land reclamation terms in English and Uzbek form a complex and systematic layer of specialized vocabulary. Structurally, English terminology is mainly characterized by compound nouns and compressed attributive phrases, whereas Uzbek terminology widely uses possessive constructions, descriptive combinations, verbal-adverbial forms and borrowed international elements. Semantically, the terms are grouped around water supply, irrigation methods, drainage, groundwater regulation, soil salinity and reclamation measures.

The comparison reveals both full and partial equivalence. Terms such as drip irrigation and *tomchilatib sug'orish* show relatively clear correspondence, while terms such as *drain*, *land reclamation*, *waterlogging* and *zovur* require contextual interpretation. The study concludes that accurate bilingual use of irrigation and land reclamation terminology depends on structural awareness, semantic precision and knowledge of professional practice. Further research may focus on compiling an English-Uzbek glossary of irrigation and land reclamation terms with definitions, examples and discourse-based usage notes.

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