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## WAYS OF ENGLISH-UKRAINIAN TRANSLATION OF TWO-COMPONENTIAL TERMS IN THE SPHERE OF ENERGY EFFICIENCY

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*The article explores the main methods of translation of English two-componential terms in the field of energy efficiency by means of the Ukrainian language (on the material of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency). The relevance of the research has been justified in view of the modern needs of society and scientific issues.*

*The aim of the study is to identify ways of reproduction of two-componential terms in the field of energy efficiency in EU legislation and to clarify the difficulties faced by translators of the texts containing terminological units. The object of the proposed research is English two-componential terms in the field of energy efficiency and their Ukrainian equivalents. The subject of the article is translation methods of two-componential terms in the field of energy efficiency.*

*Based on the results of the research of modern scientific studies (cognitive and communicative approaches in particular), the essence of the concept of "term" has been clarified. The publications devoted to the investigation of various aspects of terms have been analyzed and the requirements to this layer of the lexical structure of the language have been singled out. The paper emphasizes that there are no terms that fully meet all the requirements. Therefore, it creates some difficulties in the translation process, especially within a language pair from different language branches. It was found that there are a number of challenges that the translator has to face while working with terminology, in particular: the need to deepen knowledge in a particular field, consultations with experts, the lack of updated terminology dictionaries, as well as the need to establish relations between terms and concepts.*

*The evidence from this study suggests that there are two terminological models of two-componential terms in the field of energy efficiency in our research materials. Translation methods of the identified two-componential terms have been singled out and described. It was determined that the terms of  $N_1+N_2$  model were rendered by means of compression, decompression, permutation, transposition, synonymous substitution, compound terms with prepositions, compound terms with abbreviations and replacement of the singular forms with plural ones. The study also suggests that loan translation was used to convey the meaning of the terms of  $Adj+N$  model.*

**Key words:** *terms, energy efficiency terms, requirements to the terms, term translation methods, compression, decompression, permutation, transposition, loan translation.*

**Куца О. І., Караневич М. І. Способи англійсько-українського перекладу двокомпонентних термінів у сфері енергоефективності.** У статті досліджено основні способи перекладу англійських двокомпонентних термінів у сфері енергоефективності засобами української мови (на матеріалі Директиви 2012/27/EU Європейського парламенту та ради від 25 жовтня 2012 р. про енергоефективність). Обґрунтовано актуальність запропонованої розвідки з огляду на сучасні потреби суспільства та проблеми науки.

Мета дослідження – визначення способів відтворення двокомпонентних термінів у сфері енергоефективності в законодавчих документах ЄС та з'ясування труднощів, з якими стикаються перекладачі текстів з терміноелементами. Об'єктом запропонованого дослідження слугували англійські двокомпонентні терміни у сфері енергоефективності та їхні українські відповідники. Предметом – способи перекладу двокомпонентних термінів у сфері енергоефективності.

На основі результатів досліджень сучасних наукових студій (когнітивного та комунікативного підходів) уточнено суть поняття **термін**. Проаналізовано публікації, присвячені вивченню різних аспектів термінів, і виокремлено вимоги, висунуті до цього пласту лексичного складу мови. Наголошено на тому, що термінів, які б повністю відповідали усім вимогам, не існує і це створює певні труднощі у процесі перекладу, особливо в межах мовної пари із різних мовних груп. З'ясовано, що існує ще низка викликів, з якими доводиться стикатися перекладачеві, який працює з термінолексикою. Серед них – необхідність поглиблення знань у тій чи тій галузі, консультування з експертами, відсутність оновлених словників термінів, а також потреба у встановленні зв'язків між термінами та концептами.

Згідно з матеріалами запропонованої розвідки, виявлено дві термінологічні моделі двокомпонентних термінів у сфері енергоефективності. Виокремлено та описано способи перекладу ідентифікованих двокомпонентних терміноелементів. Установлено, що, відтворюючи терміни моделі «іменник<sub>1</sub>+іменник<sub>2</sub>», перекладачі вдавалися до компресії, декомпресії, пермутації, транспозиції, використання варіантних відповідників, складних термінів з прийменниками, складних термінів зі скороченнями та заміною однини формами множини. Простежено, що терміни моделі «прикметник+іменник» були відтворені калькуванням.

**Ключові слова:** *терміни, терміни у сфері енергоефективності, вимоги до термінів, способи перекладу, компресія, декомпресія, пермутація, транспозиція, калькування.*

**Defining the problem and argumentation of the topicality of the consideration.** In recent decades, the growth and development of modern sciences have contributed to creation of new terms and coordination of terminology. The sphere of energy efficiency is not exceptional. Moreover, energy efficiency issues are of paramount importance nowadays for a number of reasons. Firstly, they give basis for resource efficient economy all over the world. Secondly, effective energy use may lead to the reduction of energy bills and reliance on external suppliers. In addition to that, using energy more efficiently may help to protect the environment. Ukraine, as the contracting party of the Energy Community, is implementing the European Directives on energy efficiency, designing various plans, one of which is the National Energy Efficiency Action Plan until 2020. Thus, there is a need in adequate translation of all these documents from English into Ukrainian and vice versa because the terms introduced in these translations will be further used by the stakeholders.

The fact that “with goal to implement the profile Directive 2012/27/EU of 25th October 2012 on energy efficiency there were developed and adopted several law and regulations acts” [20] proves that first of all, Directive 2012/27/EU (2) makes a great contribution into Ukrainian legislation and terminology development in energy efficiency sphere; and second, ways of English-Ukrainian terminology translation in this document should be examined thoroughly.

**Analysis of recent research and publications.** Significant contribution to the fundamentals of terminology study was made by M. Teresa Cabré (communicative theory of terminology), P. Faber (frame-based terminology), F. Gaudin (social terminology), Ye. Holovanova (cognitive terminology), T. Kyiak (semantic and sociolinguistic aspects of terminology), D. Lotte (selection and standardization of terms), R. Temmerman (sociocognitive terminology) and others. There are numerous studies devoted to English-Ukrainian term translation in various domains carried out by: V. Karaban (translation of scientific and technical terms), N. Sukhachova (translation of terms in the sphere of management), L. Verhun (translation of educational terms) and other researchers. And only few studies address the issues concerning energy terms in the English and Ukrainian languages. O. Derpak investigates Ukrainian energy terminology and its representation in Ukrainian lexicographical sources. O. Shvanova and O. Shvanov explore the structure of English terms in biogas production sphere and identify the ways of their translation into Ukrainian. O. Kutsa studies the necessity of investigation of energy terminology communicative and cognitive aspects, structural peculiarities of terminology in energy saving and energy efficiency spheres, and ways of translating terminological shortenings in the aforementioned domains. However, there are not any studies devoted to the investigation of English-Ukrainian term translation methods in energy efficiency sphere.

**Setting the goals and tasks of the article.** The aim of the research is to identify the main methods of English-Ukrainian translation of two-componential terms in the sphere of energy efficiency. To complete

the aim, the following tasks were set: (1) to define the notion of term; (2) to describe the main requirements to terms; (3) to identify the challenges in the process of term translation in specialized language texts; (4) to distinguish the main term translation methods of two-componential terms in the sphere of energy efficiency from English into Ukrainian.

During the research the following methods were used: theoretical analysis and synthesis of scientific sources (made it possible to describe the theoretical framework of the research); continuous sampling method (allowed us to identify terms and their equivalents in the target text comparing the original Directive and its Ukrainian translation); linguo-translation method (was used to define term translation methods); quantitative evaluation method (allowed us to compare the frequency of the applied term translation methods) and descriptive method (made it possible to comment on the collected data).

**The outline of the main research material.** The concept of term is one of the central and controversial issues in linguistic studies. There are different approaches to defining the notion of term. Special attention should be paid to the modern ones, namely, cognitive [18; 19] (represented by sociocognitive terminology and frame-based terminology) and communicative [16; 17] (described by the communicative theory of terminology). Accordingly, terms are “linguistic units which convey conceptual meaning within the framework of specialized knowledge texts” [18, 109]. In our case “specialized knowledge text” is Directive 2012/27/EU.

Having analysed approaches of various scholars (Diakov et al. [3, 234], D. Lotte [10, 72–76], V. Itskovich [4, 47], Panko et al. [12, 234], A. Mishchenko [11, 178–179]), the requirements to terms can be summarized in the following points:

- monosemy [3; 10; 11];
- accuracy [3; 10; 11];
- consistency [3; 10; 4];
- independence from the context (with permissible variation) [3; 10];
- conciseness (a term should be economical) [3; 10; 11];
- abstractiveness (representation of a concept) [11];
- reciprocation (unique term denotes unique concept) [11];
- absence of synonyms [3];
- semantic neutrality [3];
- euphony [3];
- a term should have a definition [3];
- a term should hold up to the word-formation and syntactic laws of a language [3; 12];
- a term should belong to a certain language for specific purposes and its terminological system [11].

The issue of requirements causes heated discussions which lead to elaboration of many different theories of this concept in past years. It should be admitted, however, that there are no ideal terms and, thus, terms cannot meet all the requirements [14, 9–11]. However, a translator should consider them while working with texts containing terms especially newly-coined ones which do not have equivalents in the target language.

Given that terms are key elements of any specialized text, translation of terms is not an easy task for a number of reasons. Let us consider some of them.

P. Faber claims that terms are “access points to more complex knowledge structures” [18, 108], thus, it is not enough to find the equivalent of a term, a translator needs “to be able to establish interlinguistic references to entire knowledge structures” in a specialized language text [18, 108]. Furthermore, a translator has to be familiar with such linguistic characteristics of terms as structure, etymology, classification and meaning.

It is also worth mentioning that M. Cabré admits that terminology-related problems may occur when translators do not know a term or its part, are not sure about the choice of the equivalent, absence of “standard unit agreed upon by the specialists”, etc. In addition, in line with P. Faber, M. Cabré emphasizes the importance of translators’ “sound knowledge of lexical morphology, lexicology, sociolinguistics and pragmatics” [16].

I. Kryvulkin and I. Hrebtsova maintain that the process of translation requires detailed studying of the peculiarities of each terminological system development as well as the history of international and domestic standardization criteria. Moreover, a translator should follow the rules of Ukrainian word-building, analyze terminological standards of a certain domain [7, 34]. A very practical recommendation is to consult the experts in the sphere [7, 34] “with competence in the source language” [16] due to the fact that there is lack of updated glossaries or they are inadequate for special needs of translation [16].

In order to solve some terminological translation problems, a thorough analysis of ways of terms rendering is needed.

O. Kutsa has singled out major structural types of energy efficiency terms. As for two-componential terms, such models were identified:  $N_1+N_2$ ,  $V_{ing}+N$ ,  $Adj+V_{ing}$ ,  $Adj+N$ ,  $N+V_{ing}$  [8, 348]. However, in our research materials only two models of two-componential terms in the sphere of energy efficiency were found:  $N_1+N_2$  (81%) and  $Adj+N$  (19%).

Having analyzed the studies devoted to the investigation of term translation [5; 6; 15], the main methods of two-componential terms in the sphere of energy efficiency have been singled out.

Thus, the methods of two-componential terms of  $N_1+N_2$  model are the following (see Figure 1):

As we can see from Fig.1 terms of  $N_1+N_2$  model were rendered by means of:

(1) 1-componential terms (with the use of compression):

*energy efficiency* – *енергоефективність* (2; 1); *energy consumption* – *енергоспоживання* (2; 1); *energy savings* – *енергозбереження* (2; 1); *energy supply* – *енергопостачання* (2; 1); *energy intensity* – *енергоємність* (2; 1); *heat supply* – *теплопостачання* (2; 1). It must be admitted that all terms of this model with “energy” as  $N_1$  are translated by corresponding compound terms;

(2) compound terms one element of which ( $N_1$ ) is in the Genitive Case (i.e., permutation):

*energy use* – *використання енергії* (2; 1); *energy sector* – *сектор енергетики* (2; 1); *energy distributor* – *дистрибутор енергії* (2; 1); *carbon leakage* – *витік вуглецю* (2; 1); *heating system* – *система опалення* (2; 1); *electricity production* – *виробництво електроенергії* (2; 1); *grid reinforcements* – *посилення енергосистеми* (2; 1); *energy consumer* – *споживач енергії* (2; 1); *fuel input* – *витрата палива* (2; 1); *heat production* – *виробництво тепла* (2; 1); *efficiency criteria* – *критерії ефективності* (2; 1); *fuel category* – *категорія палива* (2; 1); *energy sales* – *продажі енергії* (2; 1); *energy supplier* – *постачальник енергії* (2; 1). It is worth mentioning that “energy” is translated in two ways: “енергії” and “енергетики”. These examples show the necessity of synonymous substitution especially in the case of polysemantic terms within one terminological system. Thus, in the process of translation, attention should be paid to the context;

(3) compound terms one element of which ( $N_1$ ) is in the Genitive Case with adding (decompression):

*energy import* – *імпорт енергоресурсів* (2; 1); *energy improvement* – *покращення енергоефективності* (2; 1). As it can be seen, in the first example the part “-ресурсів” was added and in the second one “-ефективності” was added. It was done in order to avoid ambiguity. Let us also consider the context in the original: “*The Union is facing unprecedented challenges resulting from increased dependence on energy imports and scarce energy resources, and the need to limit climate change and to overcome the economic crisis*” (2) and its translation into Ukrainian “*Європейський Союз стоїть перед безпрецедентними викликами, які впливають з підвищеної залежності від імпорту енергоресурсів та дефіциту енергетичних ресурсів, а також перед необхідністю обмежити наслідки зміни клімату й подолати економічну кризу*” (1). The concepts “енергія” and “енергоресурси” are different. Thus, in order to render this

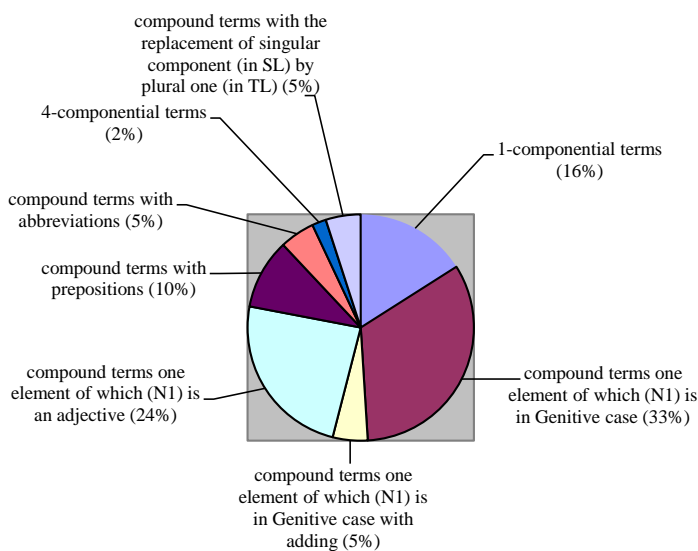


Figure 1. Methods of translation of the terms of  $N_1+N_2$  model in the sphere of energy efficiency

two-componential term adequately, the context should be taken into account and additional research is needed to understand what an urgent issue is for the EU in this situation: energy itself or energy resources;

(4) compound terms one element of which ( $N_1$ ) is an adjective (transposition): *energy chain* – енергетичний ланцюг (2; 1); *energy audit* – енергетичний аудит (2; 1); *generation assets* – генеруючі потужності (2; 1); *network tariffs* – мережеві тарифи (2; 1); *energy poverty* – енергетична бідність (2; 1); *energy product* – енергетичний продукт (2; 1); *energy manager* – енергетичний менеджер (2; 1); *district heating* – центральне тепlopостачання (2; 1); *combustion installation* – спалювальна установка (2; 1);

(5) compound terms with prepositions: *efficiency gain* – виграш в ефективності (2; 1); *grid connection* – підключення до енергомережі (2; 1); *energy taxes* – податки на енергію (2; 1); *energy billing* – рахунок за енергію (2; 1);

(6) compound terms with abbreviations: *heat efficiency* – тепловий ккд (2; 1); *electrical efficiency* – електричний ккд (2; 1);

(7) 4-componential terms (with the use of decompression):

*expected savings* – очікуваний обсяг економії енергії (2; 1). In the original it can be understood that “savings” refer to “energy” because one of the components of the preceding term “energy saving target” is “energy”: “...the level of the energy saving target or **expected savings** to be achieved over the whole and intermediate periods...” (2) whereas in the Ukrainian translation the preceding 3-componential term “energy saving target” is conveyed as “завдання щодо енергозбереження” (1). Thus, adding is required to avoid misconception. Moreover, one more component was added in the TL “обсяг” with account taken of the norms of the Ukrainian language;

(8) compound terms with the replacement of singular component (in SL) by plural one (in TL): *space heating* – опалення приміщень (2; 1); *energy service* – енергетичні послуги (2; 1). In these examples, “space” is translated as “приміщень” and “service” in rendered as “послуги”. These changes were made with the consideration of the TL norms.

Two-componential terms of **Adj+N** model were translated by means of the same term model (loan translation): *smart meter* – інтелектуальний лічильник (2; 1); *geological storage* – підземне зберігання (2; 1); *renewable energy* – відновлювана енергія (2; 1); *useful heat* – корисне тепло (2; 1); *overall efficiency* – загальна ефективність (2; 1);

*deep renovation* – масштабний ремонт (2; 1); *mechanical energy* – механічна енергія (2; 1); *electrical capacity* – електрична потужність (2; 1); *nuclear power* – атомна енергетика (2; 1); *energy auditor* – енергетичний аудитор (2; 1).

**Conclusions and directions for further research in this area.** Thus, in conclusion it must be emphasized again that the researchers are not unanimous in their views on the concept of “term”. In our paper we considered modern approaches, namely, communicative and cognitive, and viewed term as a linguistic unit with conceptual meaning within the subject field of energy efficiency. It was found out that the main requirements to terms are: monosemy; accuracy; consistency; independence from the context (with some variation); conciseness; abstractiveness; reciprocation; absence of synonyms; semantic neutrality; euphony; a term should have a definition; a term should hold up to the word-formation and syntactic laws of a language; a term should belong to a certain language for specific purposes and its terminological system. Given that there are no ideal terms, some of the terms from our research materials (both in SL and TL) do not meet all of the aforementioned requirements which causes some difficulties in the process of translation. Moreover, there are some other challenges in term rendering, such as: the need to establish interlinguistic references, learn the peculiarities of the terminological system, have sound knowledge of the subject field and lack of updated glossaries, etc. The findings of the study indicate that there are 2 two-componential term models ( $N_1+N_2$  and **Adj+N**) in the sphere of energy efficiency in the investigated Directive. The evidence from this research suggests that 16% of  $N_1+N_2$  model were translated by means of 1-componential terms (with the use of compression); 33% – compound terms one element of which ( $N_1$ ) is in the Genitive Case (i.e., permutation); 5% – compound terms one element of which ( $N_1$ ) is in the Genitive Case with adding (decompression); 24% – compound terms one element of which ( $N_1$ ) is an adjective (transposition); 10% – compound terms with prepositions; 5% – compound terms with abbreviations; 2% – 4-componential terms (with the use of decompression); and 5% – compound terms with the replacement of singular component (in SL) by plural one (in TL). Loan translation method was used in the process of **Adj+N** model rendering.

The object of further investigation is to determine methods of Ukrainian-English translation of multi-componential terms in the sphere of energy efficiency, illustrating them with examples from the official documents approved by the Cabinet of Ministers of Ukraine.

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