

**Technology's Influence on Translation Practices: Analyzing Machine Translation  
and Post-Editing Strategies in the Framework of COP Documentation**

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## **Abstract**

This paper investigates the application of machine translation within the context of a specific, narrow topic: the Conference of the Parties (COP), relevant to climate change and international relations. This research is significant for my current academic focus and future career, motivated by curiosity about the potential utility of machine translation tools for the general public.

The scope of this study is highly focused, as few existing studies compare multiple machine translation tools - most often only one or two are analyzed. Additionally, previous research predominantly relies on statistical and automated scoring methods using various metrics. Despite the widespread recognition of climate change, the specific relationship between COP terminology and its connection to climate issues and United Nations official language remains underexplored.

The primary methodology employed is a qualitative assessment of machine translations generated by ChatGPT, Google Translate, and DeepL. These translations were analyzed by the author with the assistance of human translators, with evaluations based on four criteria: accuracy, readability, terminology consistency, and post-editing effort. Post-editing refers to the time and effort required to adapt machine-translated output to an acceptable standard, which may involve correcting errors or performing a comprehensive review, as conducted in this study.

The findings indicate that DeepL and ChatGPT provide sufficiently accurate translations - neither perfect nor exceptional, but quite convenient and generally reliable. The translations are adequate but require additional editing time to reach a satisfactory quality for users. No machine translation tool is flawless or ideal. Given that current tools largely rely on statistical algorithms rather than advanced machine learning or AI, it is anticipated

that future developments will improve translation quality. Further research is necessary to explore emerging tools, as the landscape of machine translation is rapidly evolving and remains underexplored.

### **Аннотация**

В данной работе исследуется применение машинного перевода в контексте конкретной, узкой темы: Конференция сторон (COP), имеющая отношение к изменению климата и международным отношениям. Это исследование имеет важное значение для моей нынешней академической деятельности и будущей карьеры, поскольку поскольку я интересуюсь потенциальной полезностью инструментов машинного перевода для широкой публики.

Сфера охвата данного исследования очень узкая, поскольку лишь немногие существующие исследования сравнивают несколько инструментов машинного перевода - чаще всего анализируются только один или два. Кроме того, предыдущие исследования в основном опираются на статистические и автоматические методы оценки с использованием различных метрик. Несмотря на широкое признание проблемы изменения климата, конкретная взаимосвязь между терминологией COP и ее связью с климатическими проблемами и официальным языком ООН остается недостаточно изученной.

В качестве основной методологии использовалась качественная оценка машинных переводов, выполненных с помощью ChatGPT, Google Translate и DeepL. Эти переводы были проанализированы автором с помощью переводчиков-людей, а их оценка основывалась на четырех критериях: точность, читабельность, согласованность терминологии и усилия по постредактированию. Под постредактированием понимается время и усилия, необходимые для приведения результатов машинного перевода к приемлемому стандарту, что может включать

исправление ошибок или проведение всесторонней проверки, как это было сделано в данном исследовании.

Результаты показывают, что DeepL и ChatGPT обеспечивают достаточно точные переводы - не идеальные и не исключительные, но вполне удобные и в целом надежные. Переводы адекватны, но требуют дополнительного времени на редактирование, чтобы достичь удовлетворительного для пользователей качества. Ни один инструмент машинного перевода не является безупречным или идеальным. Учитывая, что существующие инструменты в основном опираются на статистические алгоритмы, а не на передовые технологии машинного обучения или искусственного интеллекта, можно предположить, что будущие разработки позволят повысить качество перевода. Для изучения новых инструментов необходимы дальнейшие исследования, поскольку сфера машинного перевода быстро развивается и остается недостаточно изученной.

#### **Андатпа**

Бұл мақалада машиналық аударманы қолдану нақты әрі тар тақырып аясында зерттеледі: климаттың өзгеруі және халықаралық қатынастар саласына қатысты Тараптар Конференциясы (COP). Бұл зерттеу менің қазіргі академиялық жұмысыма және болашақ кәсіби дамуым үшін маңызды мәнге ие, себебі мен машиналық аударма құралдарының жалпы жұртшылық үшін әлеуетін қызыға қарастырамын. Зерттеудің ауқымы өте тар, себебі бірнеше зерттеулер ғана бірнеше машиналық аударма құралдарын салыстырып, көбінесе бір немесе екі құралды талдайды. Сонымен қатар, бұрын жүргізілген жұмыстар негізінен статистикалық және автоматтандырылған бағалау әдістерін қолданатын, түрлі метрикаларға негізделген зерттеулер болып келеді. Климаттың өзгеруі кеңінен танылғанына қарамастан, COP

терминологиясы мен оның климаттық мәселелермен байланысы, сондай-ақ Ұлттық әрі Халықаралық ресми тілді пайдалану мәселелері әлі де толық зерттелмеген.

Қолданылған негізгі әдістеме – ChatGPT, Google Translate және DeepL көмегімен жасалған машиналық аударманың сапалық бағалануы. Бұл аудармалар автор тарапынан адам аудармашылардың көмегімен сарапталып, бағалау төрт негізгі критерий бойынша жүргізілді: дәлдік, оқылымдылық, терминологияның бірізділігі және кейінгі редакция талаптары. Кейінгі редакция — бұл машиналық аударманың нәтижесін қажетті сапаға жеткізу үшін жұмсалатын уақыт пен күш-жігерді білдіреді; ол қателерді түзетуді немесе кең ауқымды түзетулерді қамтуы мүмкін.

Зерттеудің нәтижелері көрсеткендей, DeepL және ChatGPT жеткілікті дәл аудармалар ұсынады — мінсіз немесе ерекше емес, бірақ өте қолайлы әрі сенімді.

Аудармалар әдетте жеткілікті деңгейде ие болғанымен, пайдаланушылардың талаптарына сай болу үшін қосымша өңдеу уақытын қажет етеді. Ешбір машиналық аударма құралы мінсіз емес. Ағымдағы құралдардың негізінен статистикалық алгоритмдер мен дәлірек айтқанда, жасанды интеллект пен машиналық оқыту технологияларына емес, тәуелсіз болғанын ескерсек, болашақта аталмыш технологиялардың әрі қарай жетілдірілуі мүмкін әрі бұл саланың қосымша зерттеулерді қажет ететінін көрсетеді. Машиналық аударма саласы әлі де қарқынды дамып келе жатқандықтан, әлі толық зерттелмеген әрі қызығушылық тудыратын тақырып болып қала береді.

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## **Introduction**

In an era where every day internet users, in addition to certain organizations, and Multinational companies dealing with international audiences felt the need for translation. In return, free online solutions based on machine translation such as Google Translate and Microsoft Bing, firstly they were the mass producers of the first internet automation translators. Nowhere is this transformation more evident than in the use of machine translation and post-editing strategies within high-stakes, multilingual contexts such as Conference of Parties (COP). As international policy discourse increasingly relies on swift and accurate translation, understanding how exactly technologies mediates this process become essential for ensuring both efficiency and fidelity in cross-cultural communication. As for post-editing strategies, the analysis and the way you fix errors in the text is the way to make a post-editing in your text.

## **Background information and terms**

Post-editing refers to process when you are correcting in different areas automated systems like machine tools. These days, post-editing can be done by specific tools or usually by humans. This is done, in order to correct certain parts like accuracy, style or other consistencies in the text, so they sound and look more humane. Online web translators became widespread then, looking back at the demand from Internet users who prioritize constant, effective, cost availability, and convenience over quality and who do not consider professional services that are essential. Furthermore, language service providers have now begun to employ Machine Translation (MT) for masses. Machine translation is the translation conducted by the system that consists data regarding both the original text and sufficient data for the target text to make a complete translation of the text.

MT has never before been so widely employed by professional translation providers, and this trend suggests greater acceptance of the technology by the professional community with the likely improved applicability of MT but also reflects the increased need to cut the time and cost inherent in human translation. As computing systems became essential at the end of the 20th century, many translation systems were used commercially (Jolley, 2022, et.al). Furthermore, the internet started to develop, many websites demanded to be translated. Hagan (2016) claims, with appearance of social media known right now to every user, Machine Translation started to shape its form in order to capture its audience around the world. Some countries create policies, in which scientists can apply certain transformative changes due to climate change, but it is not allowed to mandate a decision. With the help of machine learning and AI (Artificial Intelligence), it can generate important questions about climate change, such as how a specific country has reduced carbon emissions. Additionally, through audiovisual machine translation, certain regions can access information on strategies for mitigating the impact of climate change. AI-based approaches help get into the situation, how to resolve them and facilitate effective response with policy-making domain (Cowls, 2021, et.al).

This research aims to explore the technological advancement specifically for the machine translation tools, and post-editing strategies, in shaping modern translation practices for COP documentation. COP or Conference of Parties involves multilingual communication, and accurate policy discussions. While machine translation proved to be useful in translating large amounts of texts rapidly, its integration into professional translation workflows — particularly in specialized documents like those COP-related, raising questions about the quality of the translation, the role of human intervention in post-editing. The role of this research is to give proper answer for translators and common users whether you can use several machine tools in translating specific, narrowed type of a text.

## **Research problem and Research Question**

The rapid increase of existing MT technologies has significantly reshaped professional field across various domains. Despite the integration of MT and post-editing strategies within highly specialized fields, which means COP or Conference of Parties remain not researched yet. Given the complexity of official, technical and diplomatic sensitivity of COP, the rising concerns appear, if talking about the parts of accuracy, consistency or context. While MT can increase efficiency, there is limited research assessing its real-world effectiveness and the role of human post-editing preserving the meaning and nuances in certain documents. This gap, along with the integration of machine learning within these systems, raises questions regarding the current state of technological translation, particularly in the context of this specialized terminology and the use of three popular, freely accessible machine translation tools: ChatGPT, Google Translate, and DeepL. The purpose of this research is to find out, whether three different translation machines work worse or better and get the answer at what parts they surpass each other.

During this research one research question will be answered: Which machine tools are most effectively integrated into modern practice by applying MQM model?

## **Literature review**

### **Background Information**

Depending on the interpreter's preferences, there is a plethora of services: websites, online glossaries and terminology corpuses. The only problem for using those websites, there are some which are user dependent or require more time to confirm the translation. Thus yes, interpreters having difficulties with translation of the certain segments require more time, because the glossaries may consider only those definitions, that were implemented into them, which is why, sometimes interpreters are using CAT-tools, when there is some

narrowed information. Some tools are available only by using internet, which means translators either install it on their device and use them offline (Castilho & Quintana, 2022). While using CAI tools, the interpreter is helping the tool as well, since they keep the work on itself inside of its memory, memorizing what corrections should be included into database. Here comes another revelation, CAT-tools are widely known and developed, while CAI tools are still developing and require attention, relying on the interpreter performance to distinct the machine translation, not stuttering in the process between its own speech, the original one and the machine translation. Many other tools like Google or DeepL are widely used right now within machine translation, some of them are integrated into CAT or CAI-tools like Google.

### **Terms and Concepts**

CAT (Computer-Assisted Translation) tools are software applications designed to facilitate the translation process, enabling faster and more efficient conversion from one language to another.

CAI (Computer-Aided Interpretation) tools are technologies designed to assist human interpreters in the translation process.

MQM (Multidimensional Quality Metrics) is a framework for analytic Translation Quality that can be applied by both machine and human. As a part of system, it can help to identify quality issues in translation products.

BLEU (Bilingual Evaluation Understudy) is an algorithm for evaluating the quality of text which has been machine-translated and automated.

### **Related Studies**

Google translate during the analyses, shows a significant number of errors in understanding specific context, while translating from Indonesian and English, the most frequent problems lies on capitalization, punctuation and fragmentation (Fitria, 2023). AI

applications are required sometimes to make proper written translations in order to achieve linguistic and correctness in the target language. You must take into an account that automatic evaluation can be used for estimation while human evaluation cost more time and speed (Wang, et. al, 2024). Recently some interpreters seek for help to make their workflow easier and effective. As it was mentioned previously, that many digital technologies became an essential part, it means that many interpreters consider to include AI-assisted interpreting tools on their daily basis. Brandi (2015) says, due to complexity of the tasks, interpreters can give prompts to CAI-tools to stop on certain terms and ask for the translation. They follow the script as intended to make sure, they understood the speech correctly, for instance, when the speech starts, they give away almost immediately the transcriptions and captions of the words. However, there is one flaw, which makes AI-assisted tools bad, it is the obligation to all viewers or guests to log into these programs without the help of actual interpreters. In addition, recently some interpreters gain help from the CAI-tools, which helps in understanding the context and giving some offers and even can repeat what the speaker said. Wang and Wang claims (2019), it is truth, many interpreters are having discomfort while using these machine translation tools for interpreting, firstly they need to work and train more, in order to cognitively be prepared for them.

ChatGPT is a tool made by the OpenAI Company, it was designed for various tasks and fortunately, it was made to conduct a machine translation. ChatGPT is capable of translating on many other themes like poetry-related texts with an amount of errors (Wang et.al, 2024).

One work related in comparison of Google and DeepL made a quality comparison regarding the topic of tourism. They have come into one distinctive conclusion. Freskila and Jayantini (2025) says, that both DeepL and Google Translate still have challenges in

translating culturally nuanced words and thus, they possess potential for further use.

Multidimensional Quality Metrics used when analyzing specific language groups through some categories by using either DeepL or Yandex (Cambedda et.al, 2021). In this matter, the authors compared both DeepL and Yandex in analyzing errors with linguistic analyses, after that they manually performed the evaluation through BLEU.

While conducting these kind of analyses, researchers use specific program or they conduct evaluation of the machine translation through some metrics like BLEU.

### **Research Gap**

The lack of metrics creates a certain gap, when you are doing an analysis and you do not know where to start. A certain analysis with using Multidimensional conducted in other work, they used BLEU-metrical system to assess the translation by using a distinct comparison with the use of human post-editing as a reference and with statistics, but the problem with BLEU is that you must have knowledge in programming. Majority of the employed statistical and analytical work with BLEU are conducted with the use of Likert type questionnaires, showing an unusual way of conducting qualitative analysis (Rivera-Trigueros, 2022). In another work, where there was a comparison between English-Korean texts, researchers set their goal to conduct almost fully with the use of automated evaluation and statistics. Certain categories like fluency or adequacy can't be checked by machine tools, that is why it is important to conduct your own human evaluation (Park & Pado, 2024). The relevance of this research heavily implies that none of these researches conducted an analysis with regards of using more than one or two machine tools. Which is why I conduct this certain research analysis with providing an insight regarding how three machine tools can handle a translation with the use of MQM and by assessing it with human translators.

## **Methodology**

### **Research Design & Research Question**

The objective of this research is to evaluate the comparative performance of three prominent machine translation (MT) tools—ChatGPT, Google Translate, and DeepL—to determine whether one outperforms the others. This topic was chosen due to the limited number of studies that conduct comparative evaluations involving all three tools, as most existing literature tends to focus on a single MT tool or, at most, a pair. Additionally, many prior studies assess only one aspect of translation quality, which may not fully capture the tools' overall performance. Although some research has examined the effectiveness and subtypes of MT tools, the rapid evolution of these technologies presents a challenge in maintaining up-to-date assessments.

Methodologically, this study adopts a product-oriented approach within the framework of translation studies, employing a qualitative research design. The goal is to analyze a range of machine translation tools that are widely utilized not only by professional translators but also by general users. To evaluate translation quality, this study applies the Multidimensional Quality Metrics (MQM) model developed by the Translation Automation User Society (TAUS). Multidimensional Quality Metrics can be used as a tool to identify the quality issues in translation and generate the measures to find out whether the translation meets the requirements (MQM, n.d). The focus will primarily be on the translation itself, particularly errors in meaning and terminology selection. While MQM does not have a specific author or a set of fixed rules, the organization provides examples of metrics and guidelines for summarizing results and assessing translations. The

assessment can be conducted either by the automated system or by a group of qualified translators.

The rationale for employing the Multidimensional Quality Metrics (MQM) framework lies in its ability to provide structured quality assessments based on standardized criteria.

Designed specifically for use in both translation studies and machine translation evaluation, the MQM framework aligns closely with the objectives of this research. Its application supported the analysis of the translation outputs and contributed to answering the research questions. By using MQM, it was possible to identify the strengths and limitations of each tool, as well as to highlight translation errors and inconsistencies many of which require human judgment to detect and interpret accurately.

During the analysis, I invited several Kazakhstani translators to review my findings and provide their opinions regarding these machines, their translation processes, and whether my assessments were accurate.

The research aims to answer the following question:

Which machine tools ensure higher quality translations when applying the MQM model?

### **Sampling**

For this study, I have employed a non-probability sampling method known as purposive sampling or purposeful. According to Patton (2015), while probability sampling is suited for statistical analysis and generalization, qualitative research focuses on exploring relationships and patterns. This approach is appropriate because I needed to examine specific terminology within texts from particular groups. To evaluate the quality and consistency of the results, I used machine translation tools such as Google Translate, DeepL, and ChatGPT for making evaluation with scorers. These tools were selected based on criterion-selection type. No interviews were conducted, instead, I collaborated with selected translators to review both the translations and my evaluations.

My sample consists of texts from COP29 documentation, specifically from the website of Baku organization. COP refers to the Conference of the Parties, which is associated with the United Nations framework regarding climate change and involves member countries discussing international treaties concerning this issue. The decision to focus on COP documentation was made because I wanted to analyze how well machine translation tools can handle specialized information, including abbreviations and the names of organizations. COP documentation relates to climate change, making it a challenging topic for these machines to translate and analyze.

For this study, I am applying a substantial example of initiatives or plans from the COP website. This approach will be more suitable for my analysis and less time-consuming for the invited translators, allowing them to not only assess my criteria but also provide their opinions on these machine translation tools.

### **Data Collection**

I adapted the TAUS Quality Assessment MQM (Multidimensional Quality Metrics) model in a simplified manner, using a summative approach to generate an evaluation score. The data collection site will be the official website of COP29 in Baku, which features their initiatives and plans from the conference. Each of these initiatives changes over the years, but I will focus on documentation from 2024, thus yes, these are the most available and the next is going to be conducted during 2025.

The machine translation process will be conducted according to the MQM model using my own scales and criteria: accuracy, terminology consistency, readability, and post-editing efforts. The particular QA method I employed is scoring, as this allows each translation system to be evaluated according to specific criteria. This ranking method also addresses post-editing efforts, particularly if the text requires revisions. The particular method concerns post-editing efforts, if the text requires some. Quality assessment model involves

the comparison and contrast of translation, adding the author's or user's reception with evaluation (Saldahna & O'Brien, 2014).

First, I have selected specific paragraphs from the initiatives that I and interpreters agreed to work with, which contains a wealth of technical terms, collocations, and phrasing, yet they must be not so big in length. I refer to my own criteria in alignment with the precision explanations provided by translators. This means that after making a judgment, I assessed the translation according to the established ranking and conducted my own analysis. This process involves precision checks and a thorough review of both the original text and the translated version. The reason I adapted my own scoring scale, rather than directly copying their framework, is that the original developers indicated it is permissible to modify the scale to suit specific research needs, as the original is not considered a perfect evaluation method. The comprehensive MQM (Multidimensional Quality Metrics) framework allows the use of existing metrics; however, if assessors have their own metrics that better meet their specific requirements, there is no obligation to adopt the standardized scale. Users can compare or adapt these metrics to facilitate meaningful comparisons across different evaluation methods. (Lommel et al., 2013).

### **The procedure**

First of all, I selected a specific paragraph from the source, which is rich in comprehensive terminology, collocations, and phrasing. I then developed my own evaluation criteria aligned with the MQM framework and created a custom scale, accompanied by detailed explanations. This process required significant time for precision checking, including thorough comparison and re-evaluation of the original text alongside the translated version. Additionally, I engaged in consultations with human translators and waited for their feedback to support the assessment process. The document with examples was

divided between translators to make assessment quick and in terms of their time management.

#### *Information regarding human translators*

One person is a winner of the Polyglot Superpowers project from the Science 2.0 Channel (Moscow city). The other one is the author of three scientific papers and four scientific articles (two of them in peer-reviewed scientific publications) on the topic of international relations and cultural diplomacy. The last one engaging in simultaneous and consecutive interpretation on almost every topic, but mostly on are sports (in particular football), education, healthcare, social sphere, international relations and politics. All of them translators.

#### **Ethical Considerations**

From the ethical viewpoint, I have taken steps to ensure that any information from the website, which is not distributed it or used for personal gain. This research is conducted independently, and this work will be free off plagiarism. The data will not be stored or shared, and the study is aimed to evaluate or compare the effectiveness of any particular tool.

Additionally, the content from the website belongs to the state of Azerbaijan, since Conference of Parties has not previously been held in Kazakhstan. Therefore, I have chosen to use an example from another country, I have selected is owned by the other country. I have contacted the authors of the website they have been informed regarding the study that I am conducting. With this, I am ensuring that I do not violate any laws regarding their intellectual property, as I have made it clear that I am not sharing their data as my own.

I have extracted their text solely as an example for my research, because they are free to use.

## **Limitations and Challenges**

I do not consider myself a professional translator, and those who participated in the research faced difficulties in contributing due to the amount of text involved in the translation, along with their commitments to their jobs. Due to some changes before releasing the version of this thesis, there were some problems with participants, due to their limited commitment.

The metrics of MQM is a bit comprehensive to use with their direct formula, that is why I kind of adapted their formula with finding mistakes by summing up the overall score rather just using several values. The Post Editing criteria is more of a subjective criterion, in terms of who checks the translation and who looks at the translation, that is why I asked three human translators to check.

## **Data Analysis**

Google Translate, ChatGPT, and DeepL are free tools available for common users and translators.

In this research, the scale ranges from a rating of 1 to 5. Each aspect will be quantified and then assessed on a scale of 1 to 5 to produce an overall grade. Each grade would be summed up in overall score with each criterion summed up with every example provided in the analysis and then divided into a number of criteria. To provide clear and understandable justifications for the assigned scores, the translation checks will be conducted between English and Russian, as I have greater proficiency in these languages. Each example includes a paragraph demonstrating the different translations produced by these machine tools and evaluation and analysis conducted with the help of scorers (human translators).

Accuracy, Fluency (Readability), Terminology Consistency, Post-Editing Effort.

**Accuracy:** Measures how much the translation preserves the meaning from the source. If the meaning is drastically altered or if critical information is missing, the score will be low.

**Terminology consistency:** Evaluates the use of domain-specific or technical terms.

Consistency and correctness are key here. A higher score means the translation uses terms correctly throughout.

**Fluency (Readability):** Focuses on how natural and grammatically correct the translation reads. Does it sound like something a native speaker would write?

**Post-Editing Effort:** This category assesses how much effort is required to turn the MT output into something fully polished. More edits mean a lower score.

For evaluating machine translation quality, a hybrid approach using MQM similar strategy to assess and a Likert scale-based scoring system was employed. Evaluators assessed each translation based on four key dimensions: Accuracy, Terminology consistency, Fluency (Readability), and Post-Editing Effort. Each category was scored on a 5-point Likert scale, where a score of 1 represents very poor quality and a score of 5 represents excellent quality. This allowed both qualitative insights and quantitative analysis of the MT system's performance, but specifically to say I am conducting a qualitative analysis, because I am not using an automated system, if I did this, the research would be quantitative and relied on the response of the machine.

<b>MQM Category</b>	<b>1 = Very Poor</b>	<b>2 = Poor</b>	<b>3 = Satisfactory</b>	<b>4 = Good</b>	<b>5 = Excellent</b>
<b>Accuracy</b>	Major mistranslation or loss of meaning	Several errors that change meaning	Some minor inaccuracies or omissions	Minor mistakes, but overall correct	Fully accurate, meaning preserved
<b>Terminology consistency</b>	Incorrect or inconsistent terms	Several terminology issues	Some terminology issues	Mostly consistent and correct	Perfect terminology use, highly accurate
<b>Fluency (Readability)</b>	Unreadable, awkward, or ungrammatical	Poor flow, difficult to understand	Readable but stiff or awkward	Mostly smooth and natural	Fully fluent, sounds native

<b>Post-Editing Effort</b>	Requires major rewriting (high effort)	High effort, multiple changes needed	Moderate effort, some edits required	Low effort, only a few edits needed	Minimal or no edits needed (perfect)
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### Example 1

#### Original text:

Recognising the findings by the International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA) that batteries and other energy storage technologies can cost-effectively support energy grid reliability in a variety of ways, including (1) smoothing out the variability of renewables, (2) alleviating grid congestion, and (3) providing services, such as voltage and frequency control, as well as greatly enhancing the potential of renewables to contribute to reliable, flexible and highly integrated energy systems that contribute to achieving global net-zero emissions, and that distributed energy resources, such as solar paired with storage, can support decarbonisation, resilience and the electrification of isolated areas;

#### DeepL:

Признавая выводы Международного энергетического агентства (МЭА) и Международного агентства по возобновляемым источникам энергии (IRENA) о том, что аккумуляторы и другие технологии хранения энергии могут экономически эффективно поддерживать надежность энергосистем различными способами, включая (1) сглаживание колебаний возобновляемых источников энергии, (2) смягчение перегруженности энергосистем и (3) предоставление услуг, а также значительно повышают потенциал возобновляемых источников энергии для создания надежных, гибких и высокоинтегрированных энергетических систем, способствующих достижению глобального нулевого уровня выбросов, и что распределенные энергетические ресурсы, такие как солнечная энергия в сочетании с

накопителями, могут способствовать декарбонизации, повышению устойчивости и электрификации изолированных районов;

*Table 1*

*Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(3/5)</b>	<p><b>Pros:</b> Most semantic blocks are translated adequately. The key ideas have been preserved: economic efficiency, flexibility, the role of renewable energy and batteries.</p> <p><b>Disadvantages:</b> An important element of the original is lost: "such as voltage and frequency control" is a clear decrease in accuracy. The translation of "grid congestion" as "congestion of power systems" is formally acceptable but may cause ambiguity. In my opinion, translation was almost accurate, but missing details require intervention.</p>
<b>Terminology</b>	<b>(4.5/5)</b>	<p><b>Strengths:</b> Uses solid technical terms that match industry and policy language: "distributed energy resources", net-zero emissions", etc.</p> <p><b>Some issues:</b> «Колебания» for "variability" (oscillations) is a bit off. A more accurate term would be «переменчивость» (inconsistency), which better captures the nature renewables. «Накопители» (storage units) is acceptable but less formal than «системы хранения энергии» (energy storage systems). I think terminology is mostly appropriate and well-selected, just with a few minor improvements needed for precision.</p>
<b>Readability</b>	<b>(4/5)</b>	<p>The structure is mostly smooth and follows standard formal Russian writing style. Logical style is preserved, and the translation reads clearly.</p> <p>The sentence is very long and complex, which can affect reader comprehension. Breaking it up would improve flow. Some parts feel machine-like or overly literal, such as «повышение устойчивости» (increasing resilience), it could be as «повышение жизнеспособности». For me, it's readable but could benefit from stylistic smoothing and sentence restructuring for clarity and more human.</p>
<b>Post-Editing effort</b>	<b>(3.5/5)</b>	<p>It must be added about the missing phrase of what was mentioned in the accuracy, about voltage and frequency control. Slight improvements to terminology for post editing.</p>

**Overall score: 3.75**

**ChatGPT:**

Признавая выводы Международного энергетического агентства (IEA) и Международного агентства по возобновляемым источникам энергии (IRENA) о том, что аккумуляторы и другие технологии хранения энергии могут экономически эффективно обеспечивать надежность энергетических сетей различными способами, включая:

- (1) сглаживание переменчивости возобновляемых источников энергии,
  - (2) снижение перегрузки в сетях,
  - (3) предоставление услуг, таких как контроль напряжения и частоты,
- а также значительно расширяя потенциал возобновляемых источников энергии в создании надежных, гибких и высоко интегрированных энергетических систем, способствующих достижению глобальных целей по нулевому уровню выбросов, и учитывая, что распределенные энергетические ресурсы, такие как солнечная энергия в сочетании с накопителями, могут способствовать декарбонизации, устойчивости и электрификации изолированных районов.

*Table 2*

*Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(5/5)</b>	All the key elements of the original have been preserved, including the three listed storage functions, the important mention of “voltage and frequency regulation”, which DeepL omitted and the role of distributed energy resources. The grammatical structure reflects the logic of the original without distortion.
<b>Terminology</b>	<b>(5/5)</b>	Uses the terms correctly, for instance: переменчивость is “variability” is a good choice. «Энергетические сети» instead of just “energy systems” has an accurate translation – “energy grid”. «Технологии хранения энергии» is industry-standard phrase. «Декарбонизация»
<b>Readability</b>	<b>(4/5)</b>	The sentence flows logically and is grammatically correct. Natural syntax, formal but overly rigid. It is

**Post-Editing****(5/5)**

almost like original English version the entire passage is a single long sentence. Well-written, just a bit dense, it could benefit from light restructuring for a readability.

I suggest split sentence into two parts for a better flow. I think «в сочетании с накопителями» is correct, however, I think the translator can be more natural, but it depends whether ChatGPT wants to provide more formal translation or not. Depending on audience, probably a few changes can be applied.

**Overall score: 4.75****Google Translate:**

Признавая выводы Международного энергетического агентства (МЭА) и Международного агентства по возобновляемым источникам энергии (IRENA) о том, что батареи и другие технологии хранения энергии могут экономически эффективно поддерживать надежность энергосистем различными способами, включая (1) сглаживание изменчивости возобновляемых источников энергии, (2) снижение перегрузки сетей и (3) предоставление услуг, таких как управление напряжением и частотой, а также значительное повышение потенциала возобновляемых источников энергии для содействия надежным, гибким и высокоинтегрированным энергетическим системам, которые способствуют достижению глобального нулевого уровня выбросов, и что распределенные энергетические ресурсы, такие как солнечная энергия в сочетании с хранением, могут поддерживать декарбонизацию, устойчивость и электрификацию изолированных районов;

*Table 3**Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(4/5)</b>	<p><b>Strengths:</b> Preserves all other elements from the original, including voltage and frequency control (unlike DeepL). Logically aligns with original.</p> <p><b>The Problems of translation:</b></p>

<p><b>Terminology</b></p>	<p>(3/5) The phrase «в сочетании с хранением» is vague – «хранение» (storage) here lacks clarity. It should be «накопители» or «системы хранения энергии»</p> <p><b>Strengths of the translation:</b> The translation uses the correct and recognizable terms: «энергосистемы», «перегрузка», «декарбонизация». Including «управление напряжением и частотой», which is accurate and domain-appropriate.</p> <p><b>Weaknesses:</b> «Батареи» is too informal in this context. «Аккумуляторы» or «системы хранения энергии» would be more appropriate for policy or technical writing. «в сочетании с хранением», again it is vague. This weakens the technical clarity. «изменчивость» is acceptable, but «переменчивость» is a more idiomatic and nuanced choice in Russian when referring to renewables. Functional, but some terms are non-specialist or overly generic.</p>
<p><b>Readability</b></p>	<p>(3.5/5) <b>Strengths:</b> Generally smooth syntax; understandable to a wide audience. Sentence structure follows the original closely without losing coherence.</p> <p><b>Weaknesses:</b> Some phrases feel machine-generated. Here are the examples: «значительное повышение потенциала... для содействия» «солнечная энергия в сочетании с хранением» both sound clunky in formal Russian. Could benefit from more natural connective flow between clauses. Readable but lacks polish. A human translator would phrase certain ideas differently for better rhythm and tone.</p>
<p><b>Post-editing</b></p>	<p>(2.5/5) Would need editing in these areas: Replace or clarify generic terms: “батареи” to «аккумуляторы», «хранение» into «накопители» or “системы хранения энергии”. They must improve stylistic flow, especially in the latter half. Make the phrasing more natural — shift from literal translation to idiomatic Russian where appropriate. Requires moderate post-editing to reach publication-quality. Mostly accurate but feels mechanical and lacks domain finesse.</p>

**Overall score: 3.25**

**Example 2****Original text:**

Commitments, such as through the Global Methane Pledge (GMP) and the Lowering Organic Waste Methane (LOW Methane) initiative, to significantly reduce sources of emissions have catalysed cooperation and knowledge-exchange mechanisms. This includes South-South and triangular cooperation.

Stronger partnerships among UN agencies and intergovernmental organisations, MDBs, MCFs, philanthropic organisations, bilateral donors and their implementing agencies for stronger ambition and actions for climate finance in urban areas and coordination for resource mobilisation for cities and regions to enhance climate finance in urban areas and access to finance for city and subnational, national and local governments;

**DeepL:**

Обязательства по значительному сокращению источников выбросов, например, в рамках Глобального обязательства по метану (GMP) и инициативы по снижению уровня метана органических отходов (LOW Methane), послужили катализатором сотрудничества и механизмов обмена знаниями. Это включает сотрудничество Юг-Юг и трехстороннее сотрудничество.

Укрепление партнерства между агентствами ООН и межправительственными организациями, МБР, МКФ, благотворительными организациями, двусторонними донорами и их исполнительными агентствами для усиления амбиций и действий по финансированию климата в городских районах и координации мобилизации ресурсов для городов и регионов с целью увеличения финансирования климата в городских районах и доступа к финансированию для городских и субнациональных, национальных и местных органов власти;

Table 4

## Overview of the criteria for evaluating translation

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(4.5/5)</b>	<p>Overall, the meaning is well preserved. The main commitments and cooperative mechanisms are clearly communicated.</p> <p>Minor nuance loss in phrases like “catalysed cooperation and knowledge-exchange mechanisms” is the translation “послужили катализатором сотрудничества и механизмов обмена знаниями” is good, but a bit mechanical and technical. A more accurate translation of «стимулировали развитие сотрудничества и обмена знаниями» might feel more natural.</p> <p>The second sentence (starting from “Stronger partnerships...”) was rendered with slightly unclear logic in Russian due to its complex structure. It’s grammatically correct but slightly overloaded.</p>
<b>Terminology</b>	<b>(4/5)</b>	<p>Acronyms (GMP, LOW Methane) are preserved with transliterations, which is appropriate. However, MDBs (Multilateral Development Banks) and MCFs (Multilateral Climate Funds) are translated as «МБР» and «МКФ», which may confuse a reader if not previously introduced in Russian.</p> <p>Terms like «финансирование климата», «мобилизация ресурсов», and «исполнительные агентства» are solid choices for the domain.</p> <p>The phrase «доступ к финансированию для городских и субнациональных, национальных и местных органов власти» is a bit redundant and could be clarified.</p>
<b>Readability</b>	<b>(3.8/5)</b>	<p>The text is dense and formal, reflecting the original, but in Russian it feels even heavier due to wordiness. The long second sentence contains multiple clauses and a lot of repetition (e.g., «финансирование климата в городских районах» appears twice). Breaking it up would improve readability.</p> <p><b>My Suggestion:</b> divide the second sentence into two or even three for better flow.</p>
<b>Post-editing</b>	<b>(3.5/5)</b>	<p>A professional editor would need to. Smooth out the sentence structure. Repetition must be reduced in the text. Possibly clarify or footnote the acronyms (MDBs, MCFs). Enhance flow and cohesion in the second paragraph. Not a major rewrite, but definitely some stylistic and structural polishing is needed.</p>
		<b>Overall score: 4.0</b>

Google Translate:

Обязательства, такие как Глобальное обязательство по метану (GMP) и инициатива по снижению выбросов метана из органических отходов (LOW Methane), по значительному сокращению источников выбросов, стали катализатором сотрудничества и механизмов обмена знаниями. Это включает сотрудничество Юг-Юг и трехстороннее сотрудничество. Более прочные партнерства между агентствами ООН и межправительственными организациями, МБР, МФК, благотворительными организациями, двусторонними донорами и их исполнительными агентствами для более сильных амбиций и действий по финансированию климата в городских районах и координации для мобилизации ресурсов для городов и регионов для улучшения финансирования климата в городских районах и доступа к финансированию для городских и субнациональных, национальных и местных органов власти;

*Table 5*

*Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(4/5)</b>	<p><b>Strengths:</b> The overall meaning of the original English text is conveyed accurately. Key ideas like international cooperation mechanisms and financial support for climate action — are preserved.</p> <p><b>Issues:</b> The phrase “такие как... по значительному сокращению источников выбросов” feels syntactically off in Russian. It would be clearer as: «Обязательства по значительному сокращению источников выбросов, такие как...». The ending of the long second sentence contains multiple repetitions that make the logical flow harder to follow.</p>
<b>Terminology</b>	<b>(4.5/5)</b>	<p><b>Strengths:</b> Correct use of terms like “финансирование климата”, “мобилизация ресурсов”, “исполнительные агентства”, and “межправительственные организации”.</p> <p><b>Author’s comment:</b> The acronym МФК is used for MCF (Multilateral Climate Funds), which may be confused with Международная финансовая корпорация. Consider using full forms or footnotes in formal contexts.</p>

<b>Readability</b>	<b>(4/5)</b>	<p><b>Strengths:</b> The first sentence is clearer and more natural than in the previous version.</p> <p><b>Issues:</b> The second sentence is too long and heavily nested. It would benefit from breaking into two or three parts. Phrases like «для более сильных амбиций» sound slightly awkward; a better option could be «для повышения амбиций».</p>
<b>Post-editing</b>	<b>(3.5/5)</b>	A good foundation that does not require retranslation. However, I recommend: Reworking sentence structure (especially the second sentence) to improve flow. Slight terminology clarification and naturalization of phrasing. This would take moderate effort for a human editor.

**Overall score: 4.0**

### ChatGPT:

Обязательства по значительному сокращению источников выбросов, такие как Глобальное обязательство по метану (GMP) и инициатива по снижению выбросов метана из органических отходов (LOW Methane), стали катализатором для расширения сотрудничества и механизмов обмена знаниями, включая сотрудничество Юг–Юг и трёхсторонние форматы.

Укрепляются партнёрские отношения между агентствами ООН, межправительственными организациями, многосторонними банками развития (МБР), многосторонними климатическими фондами (МКФ), благотворительными фондами, двусторонними донорами и их исполнительными агентствами — с целью повышения амбиций и активизации действий в сфере климатического финансирования в городских районах, а также для координации усилий по мобилизации ресурсов для городов и регионов, расширения доступа к финансированию для городских, субнациональных, национальных и местных органов власти.

### Table 6

*Overview of the criteria for evaluating translation*

Metric	Score	Note
<b>Accuracy</b>	<b>(5/5)</b>	The translation fully preserves the meaning, intent, and nuance of the original text. The roles of the GMP and LOW Methane initiatives, the types of cooperation, and the purpose of partnerships are all reflected faithfully. No semantic distortion or omissions were found.
<b>Terminology</b>	<b>(5/5)</b>	Use of field-appropriate and domain-consistent terminology as: «многосторонние банки развития (МБР)» – correct and standard term for MDBs. «многосторонние климатические фонды (МКФ)» – clear and suitable translation of MCFs. «климатическое финансирование», «мобилизация ресурсов», and “исполнительные агентства” are well-used and accurate. Even abstract concepts like "stronger ambition" are elegantly adapted to «повышение амбиций».
<b>Readability</b>	<b>(4/5)</b>	The style is formal, polished, and typical for international reports or policy documents. Sentences flow logically, and punctuation helps manage the density of information. The second paragraph is still quite dense and long, which is typical for such texts but might challenge less experienced readers. Minor improvements could be made by breaking it into two sentences or simplifying some coordination phrases (e.g., «а также для координации усилий...») could be split off for clarity).
<b>Post-editing</b>	<b>(5/5)</b>	The translation is ready for publication in a professional or academic context. Minor tweaks could be stylistic rather than corrective — no major editing is needed.
		<b>Overall score: 4.75</b>

### Example 3

#### Original text:

Building linkages between World Urban Forums, UN Climate Change Conferences, World Environment Days, and other relevant global and regional platforms for dialogue, actions, and initiatives, including through encouraging World Urban Forums’ host governments to appoint a Special Envoy for Urban Climate Action;

#### DeepL:

Налаживание связей между Всемирными форумами городов, конференциями ООН по изменению климата, Всемирными днями окружающей среды и другими соответствующими глобальными и региональными платформами для диалога, действий и инициатив, в том числе путем поощрения правительств стран, принимающих Всемирные форумы городов, к назначению специального посланника по действиям в области климата в городах;

Table 7

*Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(5/5)</b>	This translation accurately captures the original meaning, with precise naming of entities and faithful structural replication. The phrase «Налаживание связей» effectively conveys the idea of “building linkages,” aligning well with the original intent. The translation demonstrates a clear understanding of the source content and maintains fidelity while employing appropriate terminology for formal and official contexts. This suggests that the translator has successfully balanced accuracy and idiomatic expression, ensuring the translation remains both precise and natural in Russian.
<b>Terminology</b>	<b>(4/5)</b>	This extract highlights that the translation «...к назначению специального посланника по действиям в области климата в городах» accurately reflects the original phrase. However, the phrasing comes across as somewhat cumbersome and overly literal. A more fluid and idiomatic alternative in Russian would be «...по вопросам городского климатического действия» or «...по вопросам климата в городах.» These options are shorter and more natural within the context of formal documents, effectively preserving the original meaning while enhancing readability and stylistic appropriateness. This analysis underscores the importance of balancing fidelity to the source with linguistic fluidity in translation, especially within domain-specific and official texts.
<b>Readability</b>	<b>(4/5)</b>	<b>Current translation:</b> ...и другими соответствующими глобальными и региональными платформами для диалога, действий и инициатив, в том числе путем поощрения правительств стран, принимающих

<b>Post-editing</b>	<b>(4/5)</b>	Всемирные форумы городов, к назначению специального посланника...
		<p><b>Comment:</b> This sentence is grammatically fine but very dense and hard to parse on first reading. Breaking it up or simplifying the syntax could help.</p> <p><b>Suggestion:</b> Налаживание связей между Всемирными форумами городов, конференциями ООН по изменению климата, Всемирными днями окружающей среды и другими глобальными и региональными платформами, где обсуждаются совместные действия и инициативы. В том числе рекомендуется поощрять правительства стран, принимающих Всемирные форумы городов, назначать специального посланника по вопросам городского климатического действия. This improves readability without losing any nuance. A professional editor would only need to do light editing — mainly to improve flow and terminology. No structural rewrites required.</p> <p style="text-align: right;"><b>Overall score: 4.25</b></p>

**Google Translate:**

Установление связей между Всемирными форумами городов, конференциями ООН по изменению климата, Всемирными днями окружающей среды и другими соответствующими глобальными и региональными платформами для диалога, действий и инициатив, в том числе путем поощрения правительств, принимающих Всемирные форумы городов, назначать Специального посланника по действиям в области городского климата;

*Table 8**Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(5/5)</b>	Faithful to the original meaning. Nothing important is missing or distorted. «Установление связей» as “Building linkages” is perfectly acceptable. All key factors and actions are preserved. Nothing was missed during translation.
<b>Terminology</b>	<b>(4/5)</b>	«Специального посланника по действиям в области городского климата» is clear but again a

		bit long-winded. A more natural Russian phrase might be: <b>My suggestion:</b> “Специального посланника по вопросам климата в городах” or “по вопросам городского климата”. However, «действия в области городского климата» is understandable and formal, so it's not wrong is just slightly heavy to include.
<b>Readability</b>	<b>(3.5/5)</b>	<b>This version is more complex due to the embedded infinitive construction:</b> "...поощрения правительств ... назначать специального посланника..." This structure is grammatically acceptable but slightly awkward in formal Russian. Russian prefers gerunds or nominal forms here, like: «...поощрения правительств к назначению специального посланника...». This would align more naturally with standard Russian bureaucratic or diplomatic style. Also, the sentence remains very long, which affects readability.
<b>Post-editing</b>	<b>(3.5/5)</b>	Would require some revision for Style and syntactic flow and touch of simplification or restructuring. It's publishable with moderate editing.
		<b>Overall score: 4.0</b>

**ChatGPT:**

Установление связей между Всемирными форумами городов, Конференциями ООН по вопросам изменения климата, Всемирными днями окружающей среды и другими соответствующими глобальными и региональными платформами для диалога, совместных действий и инициатив, в том числе посредством поощрения правительств стран-организаторов Всемирных форумов городов к назначению Специального посланника по вопросам городского климатического действия.

*Table 9**Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(5/5)</b>	Fully accurate. Every element of the source sentence is preserved and faithfully rendered: «Building linkages» into «Установление связей» “including through encouraging...” into «в том числе посредством поощрения...» No omissions or distortions were found after that.

<b>Terminology</b>	<b>(5/5)</b>	Strong and appropriate use of formal Russian: «Конференции ООН по вопросам изменения климата» is accurate and smooth choice of words for translation. «Специальный посланник по вопросам городского климатического действия», which is a correct and precise form. «Платформы для диалога, совместных действий и инициатив» implemented naturally and professionally.
<b>Readability</b>	<b>(5/5)</b>	Despite its complexity, the sentence flows well and sounds like authentic policy language is formal, but clear. Good use of participial structures and compound phrases without overloading the reader. Smooth logical structure from start to finish.
<b>Post-editing</b>	<b>(5/5)</b>	This is ready to publish in a UN, governmental, or policy setting. No edits needed in my opinion.

**Overall score: 5.0**

#### Example 4

##### Original text:

With a changing climate comes more complicated health challenges. Climate change is impacting health in a myriad of ways, including by leading to death and illness from increasingly frequent extreme weather events, such as heatwaves, storms and floods, the disruption of food systems, increases in zoonoses and food-, water- and vector-borne diseases, and mental health issues. It also puts additional strain on health systems and facilities. Research shows that 3.6 billion people already live in areas highly susceptible to climate change.

##### DeepL:

С изменением климата возникают все более сложные проблемы в области здравоохранения. Изменение климата влияет на здоровье человека множеством способов, в том числе приводит к смерти и заболеваниям в результате все более частых экстремальных погодных явлений, таких как тепловые волны, штормы и наводнения, нарушению работы продовольственных систем, увеличению числа зоонозов и заболеваний, передающихся через пищу, воду и переносчиков инфекций,

а также к проблемам психического здоровья. Это также создает дополнительную нагрузку на системы и учреждения здравоохранения. Исследования показывают, что 3,6 миллиарда человек уже живут в районах, сильно подверженных изменению климата.

Table 10

*Overview of the criteria for evaluating translation*

Metric	Score	Note
<b>Accuracy</b>	<b>(5/5)</b>	The translation faithfully preserves the meaning of the original text. “Increasingly frequent extreme weather events” as «все более частых экстремальных погодных явлений» is accurate. All examples, like heatwaves, storms, floods, zoonoses, etc.) are included correctly. The final sentence is well-translated and numerically accurate.
<b>Terminology</b>	<b>(5/5)</b>	<b>Solid and appropriate use of terminology:</b> «Проблемы в области здравоохранения» – correct and formal. «Экстремальные погодные явления», «зоонозы», «переносчики инфекций»– all standard and precise. «Системы и учреждения здравоохранения» is a natural collocation in Russian.
<b>Readability</b>	<b>(4.5/5)</b>	Generally fluent and natural, with only minor opportunities for smoothing. Example: “Изменение климата влияет на здоровье человека множеством способов...” Could be slightly improved stylistically as: “Изменение климата множеством способов сказывается на здоровье человека...” This version sounds a bit more fluid. <b>Another possible tweak:</b> «...увеличению числа зоонозов и заболеваний...» It would be better as «...к росту числа зоонозов...» a little smoother and correct. Nothing is wrong, just opportunities for slight polishing in the text.
<b>Post-editing</b>	<b>(4.5/5)</b>	Minimal editing required. A professional editor may choose to rephrase slightly for flow, but the content is fully clear, coherent, and accurate.
		<b>Overall score: 4.75</b>

**Google Translate:**

Изменение климата влечет за собой более сложные проблемы со здоровьем.

Изменение климата влияет на здоровье множеством способов, в том числе приводит к смерти и болезням из-за все более частых экстремальных погодных явлений, таких как волны тепла, штормы и наводнения, разрушение продовольственных систем, рост зоонозов и болезней, передающихся через пищу, воду и трансмиссивных болезней, а также проблемы с психическим здоровьем. Это также создает дополнительную нагрузку на системы и учреждения здравоохранения.

Исследования показывают, что 3,6 миллиарда человек уже живут в районах, сильно подверженных изменению климата.

*Table 11*

*Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(4.5/5)</b>	Overall accurate, but with a couple of minor issues: “волны тепла” for “heatwaves” is understandable, but less idiomatic than “тепловые волны” in Russian. “разрушение продовольственных систем” is slightly stronger than “disruption of food systems” – might be better as “нарушение работы продовольственных систем.” Repetition of “Изменение климата” at the start of both the first and second sentence feels redundant. Otherwise, the meaning is preserved well.
<b>Terminology</b>	<b>(4/5)</b>	Some terms are slightly off or inconsistent: “трансмиссивных болезней” – while technically correct, it’s too narrow in general public health discourse. Better to say: «болезней, передающихся через переносчиков инфекций». «Болезни» is more casual than “заболевания” in this context.
<b>Readability</b>	<b>(4/5)</b>	A few readability issues due to structure and word choice: Very long second sentence can be split for clarity. Repetitive use of “болезни”, “проблемы”, and “изменение климата” without variation makes it feel slightly flat. The message comes across, but a bit of rephrasing would help the rhythm and fluency.
<b>Post-editing</b>	<b>(4/5)</b>	This version would require moderate editing before publication — primarily: Polishing terms and phrases, Adjusting sentence flow. Enhancing consistency in tone (formal or institutional)

Overall score: 4.5

**ChatGPT:**

С изменением климата возникают более сложные проблемы в области здравоохранения. Изменение климата влияет на здоровье человека множеством способов, включая повышение смертности и заболеваемости из-за все более частых экстремальных погодных явлений, таких как тепловые волны, штормы и наводнения, нарушение продовольственных систем, увеличение числа зоонозов и заболеваний, передающихся через пищу, воду и переносчиков инфекций, а также проблемы с психическим здоровьем. Это также оказывает дополнительную нагрузку на системы и учреждения здравоохранения. Исследования показывают, что 3,6 миллиарда человек уже живут в районах, сильно подверженных изменениям климата.

*Table 12**Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(5/5)</b>	The translation accurately conveys the meaning of the original text. There is no loss of information, and the message is preserved well. The concept of “more complicated health challenges” is effectively translated as “более сложные проблемы в области здравоохранения”. “Impacting health in a myriad of ways” is translated as “влияет на здоровье человека множеством способов”, which captures the full sense of the original.
<b>Terminology</b>	<b>(5/5)</b>	The terminology is precise and appropriate for the context: "Зоонозы", "переносчики инфекций" are correct technical terms commonly used in health and environmental discourse. “Тепловые волны”, "экстремальные погодные явления", and "психическое здоровье" are standard, correct terms in Russian.
<b>Readability</b>	<b>(4.5/5)</b>	This is a strong translation, but a couple of small points can make it flow a bit better:

**Post-editing****(4.5/5)**

“повышение смертности и заболеваемости из-за все более частых экстремальных погодных явлений”: This phrase is a bit long and could be simplified for readability.

**Suggestion:** "в том числе увеличение числа смертей и заболеваний, вызванных всё более частыми экстремальными погодными явлениями" — a more natural phrasing for this complex idea. The sentence structure is generally good, but breaking up the longer sentence about extreme weather and health impacts might improve readability slightly.

Very minimal editing is needed:

The structure is generally clear, but for better fluency, slight changes in wording or splitting longer sentences could be useful.

Terminology consistency and clarity are high, but a couple of phrasing adjustments would improve the flow.

**Overall score: 4.75****Example 5****Original text:**

For instance, extreme heat could lead to at least 21 million additional deaths by 2050 and stunting due to impacts on nutrition from decreasing crop yields while diarrhea, malaria, and dengue outbreaks may increase with heavier precipitation. Increased physical and mental health risks have wider effects on lives and livelihoods, impacting the ability to achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities as well as equal pay for equal work.

**DeepL:**

Например, экстремальная жара может привести к дополнительной смерти по меньшей мере 21 миллиона человек к 2050 году, а отставание в росте - к ухудшению питания из-за снижения урожайности, в то время как вспышки диареи, малярии и лихорадки денге могут участиться при более обильных осадках. Повышение рисков для физического и психического здоровья имеет более широкие последствия для

жизни и средств к существованию, влияя на возможность достижения полной и продуктивной занятости и достойной работы для всех женщин и мужчин, в том числе для молодежи и инвалидов, а также равной оплаты за равный труд.

Table 13

*Overview of the criteria for evaluating translation*

<b>Metric</b>	<b>Score</b>	<b>Note</b>
<b>Accuracy</b>	<b>(4.5/5)</b>	The translation accurately reflects the meaning of the original, with just a few points of minor concern: The phrase “to at least 21 million additional deaths” is translated as “к дополнительной смерти по меньшей мере 21 миллиона человек”, which is mostly correct, but the phrasing feels a bit off. It would be better as “к 21 миллиону дополнительных смертей” for clarity. “Stunting” (which refers to growth stunting due to poor nutrition) is translated as “отставание в росте”, which is a good translation but not the most common phrase in this context. “Задержка роста” would be a more standard term in medical contexts. “Impacting the ability to achieve full and productive employment and decent work for all” is well-rendered, though the use of “влияя на возможность достижения” can be slightly smoothed.
<b>Terminology</b>	<b>(4.5/5)</b>	The terminology is accurate, but a few terms could be made more consistent or clearer: “Отставание в росте” could be replaced with “задержка роста” for a more common and medically accurate term. “Ухудшение питания” as the phrase works, but “недоедание” might be more appropriate for describing the nutritional problems. “Риски для физического и психического здоровья” is clear, though in a more medical setting, “угрозы физическому и психическому здоровью” would be a slightly more formal phrasing.
<b>Readability</b>	<b>(4.5/5)</b>	This translation is generally clear, but the sentence structure can be improved slightly for better flow: The phrase “к дополнительной смерти” could be rephrased to “к 21 миллиону дополнительных смертей” for a smoother read. The sentence about the risks to health could be simplified slightly, as it feels a bit heavy and could use a break for clarity.
<b>Post-editing</b>	<b>(4.5/5)</b>	The translation is quite strong, but there are some minor adjustments needed for clarity and flow:

Adjusting “отставание в росте” to “задержка роста” or another more common phrase. The phrasing of “к дополнительной смерти” could be revised to “к 21 миллиону дополнительных смертей” for better clarity. A few sentences could be restructured to be slightly less dense.

**Overall score: 4.6**

### Google Translate:

Например, экстремальная жара может привести к как минимум 21 миллиону дополнительных смертей к 2050 году и задержке роста из-за воздействия на питание из-за снижения урожайности, в то время как вспышки диареи, малярии и лихорадки денге могут усилиться из-за более сильных осадков. Повышенные риски для физического и психического здоровья оказывают более широкое воздействие на жизнь и средства к существованию, влияя на способность достигать полной и производительной занятости и достойной работы для всех женщин и мужчин, включая молодежь и лиц с ограниченными возможностями, а также на равную оплату за равный труд.

*Table 14*

*Overview of the criteria for evaluating translation*

Metric	Score	Note
<b>Accuracy</b>	<b>(5/5)</b>	The translation accurately conveys the meaning of the original text with no significant issues. The phrase “to at least 21 million additional deaths” is now correctly rendered as “как минимум 21 миллиону дополнительных смертей”, which reads naturally and accurately. The idea of stunting (delayed growth) is well-translated as “задержка роста”. The health risks affecting employment and wages are also correctly conveyed with appropriate terminology.
<b>Terminology</b>	<b>(5/5)</b>	The terminology is accurate and appropriate, including in the context of health and social issues: “Задержка роста” is a correct and commonly used term for stunting. «Инфекционные болезни» (diarrhea, malaria, and dengue) and “лиц с ограниченными

<b>Readability</b>	<b>(4.5/5)</b>	<p>возможностями" (people with disabilities) are appropriately used.</p> <p>«Равная оплата за равный труд» is a strong and clear translation for equal pay for equal work.</p> <p>Overall, the translation reads clearly, but there are some minor issues with sentence structure: «Из-за воздействия на питание из-за снижения урожайности» is a bit repetitive due to the use of “из-за” twice. It could be improved with «влияния на питание, связанного со снижением урожайности» for smoother flow.</p> <p>The sentence «Повышенные риски для физического и психического здоровья оказывают более широкое воздействие на жизнь и средства к существованию» could be simplified slightly for better fluency.</p>
<b>Post-editing</b>	<b>(4.5/5)</b>	<p>The translation is very good, but some minor adjustments would enhance it further: Rewriting the “из-за воздействия на питание из-за снижения урожайности” part for conciseness. Slight adjustments in sentence structure could improve clarity and flow.</p>

**Overall score: 4.8**

### ChatGPT:

Например, экстремальная жара может привести к как минимум 21 миллиону дополнительных смертей к 2050 году и задержке роста из-за воздействия на питание вследствие снижения урожайности, в то время как вспышки диареи, малярии и лихорадки денге могут усиливаться при более интенсивных осадках. Повышение рисков для физического и психического здоровья оказывает более широкое воздействие на жизнь и средства к существованию, влияя на возможность достижения полной и продуктивной занятости и достойной работы для всех женщин и мужчин, включая молодежь и людей с инвалидностью, а также на равную оплату за равный труд.

### Table 15

*Overview of the criteria for evaluating translation*

Metric	Score	Note
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<b>Accuracy</b>	<b>(5/5)</b>	The translation accurately conveys the meaning of the original text. There is no significant loss of information or distortion in the message. "At least 21 million additional deaths" is well-translated as "как минимум 21 миллиону дополнительных смертей". "Stunting" (delayed growth) is correctly rendered as "задержка роста". The remaining health-related and socio-economic impacts are properly expressed.
<b>Terminology</b>	<b>(5/5)</b>	<b>The terminology is appropriate and clear in the text:</b> «Задержка роста» is a correct medical term for stunting. «Инфекционные болезни», "психическое здоровье", and «люди с инвалидностью» are used correctly and in the context of the original text. «Равная оплата за равный труд» is an excellent, commonly used expression in Russian.
<b>Readability</b>	<b>(4.5/5)</b>	The text is clear and generally easy to read, but there are minor areas that could be improved for better fluency: "Задержке роста из-за воздействия на питание вследствие снижения урожайности": This part could be slightly more concise. Instead of "вследствие снижения урожайности", consider "из-за снижения урожайности" to avoid redundancy. The sentence "Повышение рисков для физического и психического здоровья оказывает более широкое воздействие" is accurate, but it feels a bit heavy. Breaking it into two sentences might improve readability.
<b>Post-editing</b>	<b>(4.5/5)</b>	The translation is very strong, but the sentence structure could be improved slightly to make it smoother: Adjusting the "из-за воздействия на питание вследствие снижения урожайности" part to be more concise. Splitting the longer sentences for improved clarity and readability.
		<b>Overall score: 4.75</b>

## Findings

The results show, by summing up the overall score and then dividing it into 4 criteria:

DeepL, in total:  $3.75+4+4.25+4.75+4.6=21.75$ .  $21.75/4= 5.4375$

Google Translate:  $3.25+4.75+4.0+4.1+4.8= 20.9$ .  $20.9/4= 5.225$

ChatGPT:  $4.75+4.75+5.0+4.75+4.75= 24$ .  $24/4= 6.0$

The interpreters looked at the translation and gave a few notable insights on the translation.

**About DeepL:**

“The translation accuracy is quite good. The key points of the text are clearly translated. The biggest con is ‘skipping’ an important part of the text (such as voltage and frequency regulation) leads to the fact that this part is absent in the Russian translation. I have a feeling that “isolated areas, cost-effective support, significantly increasing the potential of renewable energy sources, can contribute” could be translated better.

**About ChatGPT:**

“The translation accuracy is quite high. Not a single part of the text is missing, as in the case of “such as voltage and frequency control” when translating via DeepL. Perhaps it would be possible to translate certain sections of the texts better, but I have no critical comments on the accuracy of the translation”.

**About Google Translate:**

“Translates fully, does not skip words and phrases when translating text. However, in some places the translation is clearly literal and it is noticeable. That is, the texts of the Russian translation understandable, but there is a feeling it was possible to formulate or paraphrase the texts differently. Significant editing of the translation is required in order for the translated text to be readable and stylistically correct”.

**Discussion**

During the Research, three translators and one text were involved in the work. Two of three are the Kazakhstani interpreters who use machine translation for their needs rarely, while the last one was working more on the written translation. The text was extracted directly from the website of COP29.

The results show there are different errors could be done by machine tools at some areas while using them. The results expected to be different, because the sample was different when the research was started, DeepL, back then showed better results, however, when

scorers decided to change the sample according to their appropriateness, the results showed distortions. While the Google Translate performed a bit better with the lesser amount of text, however still requires a lot of polishing. As for the ChatGPT, yes it could be worse and it could be even better than DeepL, but it highly depends on whether the user wants to make some changes in the translation and whether the user knows the language itself, it can be done even more perfectly than anyone can imagine, if giving it some certain prompts and knowing how ChatGPT works. In terms of this study, I did not give any prompts to make translation better or worse, or make some changes. That's a direct translation provided by ChatGPT. To answer the research question, ChatGPT has given a good, overall, in different samples of texts' not being a direct program or a web service for doing certain translations. Right now it is one of the best among three to use for written translations and for translating certain terminology as COP.

### **Conclusion**

Examining the results and influence of technology on translation process of how machine tools changed throughout time. With the analysis of several parts of texts, it showed how different three machine tools in offering a variety of levels in accuracy, terminology consistency, readability and in post-editing efforts required to make translation look better. In my analysis it appeared that ChatGPT showed the best results in every segment with several small mistakes, while DeepL made a severe mistake once and afterwards continued to be accurate, however in the next examples, they were translated further more accurately. It shows, that even so developed and efficient as DeepL can make a mistake and get rid of important piece of information. While unexpectedly, Google did not distort any piece of information, while giving a general, holistically appropriate translation, of course with some problems, in overall, it maintains its capacities, but lack some deep understanding what kind of text and context is used among the sentences. Among three of them,

ChatGPT despite its flaws showed the best results in maintaining proper and normal translation of certain text with specific register and by giving it a small part of a text, such as COP, where a lot of terms regarding the climate change and use of natural resources. To answer the research question, yes, ChatGPT maintains good translation and can be used both by common users and translators to speed up the process, however it still shows its flaws, as results show most of the scores were somewhere in 4.5-4.7 points, not in the range of 5. This analysis indicates that none of the three machine translation tools—Google Translate, DeepL, and ChatGPT—can be considered fully reliable or optimal at present. Each still requires comprehensive analysis and correction to ensure accuracy. Looking ahead, it is reasonable to expect that future research will explore different tools or newer versions, especially as AI and machine learning technologies continue to evolve rapidly. The rapid advancements in this domain over the next year or two will likely lead to significant improvements across all platforms.

From a practical perspective, the current reliance on tools like Google and DeepL by both professional translators and ordinary users reflects their popularity and perceived usefulness. However, the researcher's findings reveal a certain level of surprise and frustration—particularly given that ChatGPT offers broader functionalities beyond translation, yet remains less integrated into routine translation workflows. These insights are valuable for writers and translators seeking to assess the dependability of these tools; understanding their limitations can help minimize post-editing efforts. Since translating large volumes of text manually is impractical within a limited timeframe, reliance on machine tools is understandable. Ultimately, the data underscores the importance of ongoing evaluation of these systems to better inform their effective and efficient use in both professional and everyday contexts.

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