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Translation Of Environmental Terminology: A Study on Accuracy and Adaptation in Climate Change Reports

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Abstract
In an era of growing 'global' environmental discourse, the translation of environmentally-related terms has become not only important for effective communication and policy making, but also a matter of linguistic accuracy as well cultural sensitivity. This study analyses the translation techniques and challenges used to translate a body of significant environmental terms in English into Hindi, which particularly pertain to the climate change reports like those released by Intergovernmental Panel on Climate Change (IPCC) and similar international organizations. Based on a comparative textual analysis of specific multilingual documents and their Hindi translations, the article reveals coherence in accuracy patterns as well as semantic shifts arising from translational strategies. Using theory from translation studies and environmental communication, the chapter looks at how certain linguistic choices shape understanding of climate science/policy within regions. The results urge researchers to adhere consistently with terminology, include more experts on the translation panel and carry out translations in a sensitive manner regarding language and culture. This research adds to an expanding interdisciplinary literature linking translation with environmental activism, public engagement in science and cross-cultural learning.
Keywords: *Translation Studies, Environmental Terminology, Climate Change Reports, Hindi Translation, Cross-Cultural Communication, Eco-Translation*

INTRODUCTION

With the advent of the Anthropocene, climate has become one of most urgent challenges now crossing political and economic as well as linguistic boundaries. As environmental science endeavours to inform policy and grassroots mobilization, the translation of climate change-related texts has come into its own as an essential tool for inclusive and efficient communication. In a multilingual and multicultural country such as India, where dissemination of environmental knowledge is justified depending on access through the regional languages instead of what may be considered its true language use, translation cannot only be seen as a linguistic act; it becomes an important enabler for opening up to environmental justice.

Quoting Cronin, "Translation is not only a means of conveying knowledge but of shaping the knowledge that is conveyed" (Cronin 15). The assertion finds powerful expression in the Indian context, where annotations to environmental reports issued by international bodies like UN or IPCC, if translated into Hindi and other regional languages, can make all the difference between how climate action is understood, debated on and implemented at grassroots.

The purpose of research paper is to assess accuracy in its source about environmental terminology used for translation from English into Hindi on climate change. It examines the strategies that are employed in rendering core terms of ecology and science into Hindi, as well as to what extent semantic equivalence is retained or adjusted; And whether ecological concepts become adapted to local languages/culture.

The paper includes multilingual reports by international and country-level organisations (including the IPCC Assessment Reports, UNDP publications on climate action and Indian government's climate policies). In particular, the paper analyses Hindi translations of climate change documents including the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report Summary for Policymakers (AR6), outreach materials provided by the United Nations Development Programme and domestic environmental glossaries.

India's staggering multilingualism introduces dimensions to climate communication that are not found anywhere else. One such medium is Hindi, an official language of the Union Government which is spoken in many states and represents a mechanism for transmitting scientific information to informal masses as well policy articulation.

Its methodology is one of comparative textual analysis, and it concentrates on parallel texts in English and Hindi. In this analysis, a corpus of translated reports is used (the Hindi version of the Intergovernmental Panel on Climate Change's "Climate Change 2021: The Physical Science Basis" and UNDP Climate Dictionary) to identify translation strategies as well as semantic shifts. Environmental

terminology such as carbon neutrality, climate resilience, greenhouse gas emissions and mitigation are explored in relation to their conceptual equivalence (or non-equivalence), adaptation or access by readers. Theoretical reference is made to both translation and environmental communication theories, including concepts from authors like Lawrence Venuti, Michael Cronin or Mona Baker. The approach to purpose in the functionalist framework, in particular Skopos Theory is invoked to see how purposive translation has a bearing on climate messages reception in India. By integrating linguistics with culture and communication, the research offers insights into interdisciplinarity in the context of how translation shapes environmental dialogue within a multilingual community.

LITERATURE REVIEW

The meeting point between the field of TS and environmental communication requires a combination of terminological precision as well as functional malleability. The classic theories of equivalence (that is, the source text and its target) lead us to Nida. Nida makes a clear distinction between formal equivalence, which concerns with imitative reproduction of form and content accuracy, and dynamic equivalent that stresses receptor impact (159). Dynamic equivalence is found to be of immense utility in environmental translation especially when certain technical terms have to sound culturally appropriate as available in Hindi.

On which basis, the functionalist model, in particular Hans J. Vermeer's Skopos Theory is considered one of the key models to guide research on that topic. Vermeer's argument in this case is that the purpose (skopos) of translation dictates strategy, and creative deviations from ST are possible where necessary to ensure communicative effectiveness (Vermeer 229). This is particularly true for India, where scientific findings have to be translated for audiences with differing levels of education and environmental awareness. When it comes to translating concepts such as carbon footprint or climate resilience, translators frequently end up with the difficult task of deciding between literal translation, adaptation-explanation and neologism.

In addition, terminology management which is a part of applied translation studies stresses the importance to use a bibliography term in every text with specific fields such as environmental science. According to Cabré, "terminological standardisation is a prerequisite for communicative efficiency and domain-specific knowledge dissemination" (Cabré 174). However, the lack of well-established environmental glossaries in Indian languages has made this task difficult.

Environmental Communication

Language is critical in the terms of climate change, for it plays an important role when that discourse itself has to be multilingual, as in the case of India. How we talk matters, and the field of environmental communication has long recognized that framing and dissemination are central components of engagement or response. As Buell puts it, "environmental rhetoric must bridge the gap between scientific abstraction and public apprehension" (Buell 35). This means that translation is not only a technical operation, but also an act of mediated knowledge transfer that may impede or facilitate teams on the ground towards climate action.

The linguistic diversity in India can be seen as a challenge but also as an opportunity. Translating environmental knowledge in over 100 languages is a necessary condition for ensuring that Tamil speakers can exercise voice in climate policy as a function of democratic rights. While the UNDP's Climate Dictionary (Hindi) is a first step towards standardising important terms in Hindi, translation to and usage of these terms at various institutions are still inconsistent or non-existent. Uniform terminology, furthermore, aids in comprehensibility global climate reports, ensuring that the terms are not muddled, such as mitigation (शमन), adaptation (कूलन) and net-zero emissions (शुद्ध शून्य उत्सर्जन) included.

Various researchers have studied shows inconsistencies and challenges in translating environmental terminology to Indian languages. For example, referring to her analysis of multilingual climate papers in the UN which are mistranslated into Hindi and the words were either lost or not exactly accurate which further leads to a conceptual misinterpretation like "ecosystem services" and "biodiversity loss" where loss is considered as superior by some great power (Sharma 88). Another phrase that may sound irrelevant and difficult to understand for a non-specialist Hindi reader that is very commonly used in ecology is ecosystem services and most of the times it is translated as पारिस्थिस्िक ि ंत्र सेवाएँ.

Their study of the Hindi translation of IPCC outreach materials (Kumar and Joshi) further exposes a bias towards literal translations, which does not take regional variations for environmental understanding into

account. They critique the requirement of scientific experts and linguistic professionals to participate in translation practices in participatory manner (Kumar and Joshi 103).

Even official documents show disparities. Comparing English and Hindi versions of the IPCC Sixth Assessment Report shows that certain key themes are slightly lost in translation. Example Climate adaptation strategies combines both र्लवायु अनुकूलन ि◌णनीस्◌ियाँ and र्लवायु परिविजन से स्रपटने की ि◌णनीस्◌ियाँ. The former is more exact with the latter being more readable.

These inconsistencies are indicative of a disconnect between terminological rigor and functional transparency. The difficulty is not only in matching terms but also making it culturally resonant, and understandable to a broader public while maintaining scientific accuracy.

To address this gap, this research paper employs a corpus-based comparative methodology on a corpus of multilingual climate change documents with both English and Hindi versions. The main corpus includes the official reports, outreach resources and media coverage of international agencies such as the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Development Programme (UNDP). This includes the Summary for Policymakers of IPCC Sixth Assessment Report (AR6) and Climate Dictionary in Hindi, released by UNDP India.

The author also examined a wide range of extra-academic Indian literature in the form of reports by governmental and non-governmental activists starting from the Ministry of Environment, Forest and Climate Change (MoEFCC), through Centre for Science and Environment (CSE) to TERI–to determine consistent as well inconsistent use of terminology. We have compiled these reports (whenever they are available) in Hindi as well English, which sheds an interesting light on how technical terms have to be localised/ adapted for the Indian readers.

While the emphasis remains on English-Hindi translation as these are other languages that also carry out institutional translation through international climate bodies like the IPCC. This more extensive reference can provide information on how the same environmental concepts are treated in other language communities.

Criteria for Analysis

For the analysis, the researcher look at how reoccurring environmental terms which form part of climate discourse are translated. Selected terms include, but are not limited to:

- Mitigation (शमन)
- Adaptation (अनुकूलन)
- Resilience (लचीलापन)
- Carbon Neutrality (कार्जन ि◌टथि◌ा)
- Greenhouse Gas Emissions (ग्रीनहाउस गैस उत्सर्जन)

Terms were identified for the dictionary based on their usage in climate change reports and their technical and conceptual importance in global climate policy. The study also assessed the semantic equivalence of these terms and but it did not analyze during its translated version, Hindi translations whether the scientific and policy-related content was comprehended. It also analyzes whether the translation has resulted in meaning loss or gain, and whether certain things like cultural terms have been translated culturally.

In India, where scientific communication has to often be tailored for a very academic audience that covers the spectrum from completely ill-informed to fully capable of research, this dimension is especially important. One example of this is how the term resilience may be translated as लचीलापन a phrase semantically proximate to its English equivalent but one which might not always carry the same structural or systemic meaning often inherent in the English term when deployed in discussions on climate science.

The study uses a comparative textual analysis method because the translated terms from Hindi versions are systematically compared with their source text counterparts in English. It includes the analysis of translation unit pairs in linguistic context, such as syntax, collocation and rhetorical function.

The study also cross-refers preferred equivalents, where applicable, to terminology databases and translation memory tools as used by UN-affiliated agencies. To act as a living resource and serve as a point of reference, the UNTERM database and the UNDP Climate Dictionary (Hindi) have been developed for this purpose. Furthermore, the research turns to descriptive translation studies as formulated by academics such as Gideon Toury for an analysis of the translation norms observable in the Indian institutional space. Translation after all, as Toury notes is a fact of the target culture (Toury 29) and this methodological observation holds that translated environmental terms in Hindi are not simply influenced

by linguistic equivalence but also by organisational politics and sociocultural salience. Each example orientates differently to value the interpretation of nuanced changes in meaning or function, so all translation examples are encoded, stored and analysed manually.

A comparison of key terms taken from climate change reports in English and Hindi throws up a mix of fidelity, semantic drift and innovation. Key terms of climate discourse, such as mitigation, adaptation, resilience and carbon neutrality, have been translated with diverging accuracy in congruence with the standards of the function concerned.

The word mitigation, for example, is always translated in the official Hindi versions of the IPCC and UNDP as शमन Although this is correct to a point, it does so at the expense of losing some of its contextual subtlety. Mitigation generally implies a more active and systemic process in environmental science, while the similar-sounding (and indeed related) term शमन in general usage connotes "appeasement" or "alleviation". The definition in the UNDP Climate Dictionary (Hindi) is also quite nuanced: "र्लवायु परिविजन के काि ण होने वाले प्रभावों को कम किने के स्लए स्कए गए प्रयास" (UNDP). This helps readers who may not be intimately familiar with the technical jargon.

By contrast, carbon neutrality is कार्जन ि टथिि ा — a term that preserves both the linguistically and semantically valid sense. The phrase has received much traction in Indian media and more so from policy quarters,

including government sustainability reports. The clarity in this form of the word lies in keeping a transliteration from English with कार्जन but combining it with ि टथिि ा (neutrality) that is Sanskrit sloka and

extracted as ि टथि from which takes root term for neutrality.

Still, many terms are burdened with disconnection or misrepresentation. An example of this is the translation of climate resilience, which may also be र्लवायु लचीलापन, र्लवायु अनुकूलन क्षमिा, and प्राकृस्ि क आपदा सहनशीलिा depending on the context in different documents. The closest approximation is लचीलापन (flexibility or elasticity) but it does not quite capture the connotation of systemic robustness in its response to environmental shocks. They cause a "semantic dilution" and may mislead general Hindi readers.

Sharma writes of Hindi climate texts that the "terminological inconsistency reflects not just translation error but an absence of agreed reference frameworks" (Sharma 90). This certainly indicates the necessity for standard glossaries such as those targeted at policy or dissemination and translation for public engagement.

Three main translation strategies are identified in the study used for translating environmental terminology from English into Hindi including literal translation, cultural replacement and paraphrase.

- Translation Mistake Literal Translation is the most common strategy, especially in bureaucratic documents. This might work for some concepts like carbon dioxide (कार्जन डाइऑक्साइड) or global warming (वैस्ि क ि ापन); but it fails almost all the time with abstract ideas. Ecosystem services is another case in point

– translated literally as पारिस्थिस्ि की ि ंत्र सेवाएं, whilst displaying formal fidelity would remain semantically opaque to non-specialists.

- This is an unusual cultural substitution for scientific translations as they are generally highly technical, but it appears in NGO educational materials. Thus, the term climate refugees have been explained as र्लवायु आपदा से स्वथिास्पि लोग to actually simplify at the actual cost of losing some conciseness which makes it more approachable in Indian socio-political circumstances.
- It is simpler and more natural to handle untranslatable terms like this or whenever clarity trumps conciseness by using paraphrases. In the case of many entries in the UNDP Hindi Climate Dictionary, we have resorted to very short definitions (rather than direct equivalents), e.g., Climate Adaptation is rendered as ऐसे उपाय स्नसे र्लवायु परिविजन के प्रभावों से स्नपटा र् ा सके. This is an especially useful way of discussing your work if you are speaking to a lay audience.

While conversion of environmental terminology into Hindi is a challenging task both due to complexity many English words and the plurality of human languages in India. For instance, there are no direct equivalents in Hindi for the terms tipping point, geoengineering and anthropocene. Translators typically avoid adapting the term to make it fit in otherwise, or resort to borrowing (स्र्योइंर्ीस्नयरिंग) or extended paraphrasing. The missing specific word is not only due to the existence of lexical gaps but also because the general information about the knowledge as applied may be unknown to people.

This variability is due in large part to the absence of a centralised, standard glossary on the environment

in Hindi. So, for example, the word adaptation may appear as अनुकूलन, अनुप्रयोग, and ढलाव based on context.

A similar lack of coherence impairs transmission in educational and policy contexts. One long-term issue is the delicate line between a scientifically accurate language and what is comprehensible to the average person. As Venuti argues, "a translation that is too fluent may mask the complexity of the source text, while excessive literalism alienates the target reader" (Venuti 6). Coming back to the case of India, we see that scientific translators often shift along a spectrum between technical and functional extremes in their translation work, which prevents translation from fully serving one or both audiences.

DISCUSSION

The paper reinforces the importance of translation for understanding India's environmental discourse publicly. In a single-country context where language serves as the delimiter of information usage and dissemination, over 1 million people are affected by the way environmental terminology is translated in this native multilingual country.

This demonstrates that if not done judiciously, terminological variability can sow the seeds of confusion among readers less comfortable with the science behind most climate change terms, in this case, mitigation, resilience and so on. As Cronin rightly says, "the translator is not a neutral conduit but an active agent in constructing how knowledge is accessed and perceived" (Cronin 46). This is particularly evident in the example of translator agency in scientific texts, which must be accurate and accessible at the same time.

With environmental literacy wide variation in India and the need for climate change communication to effectively go beyond its narrow purview of English-speaking policymakers, translators play a crucial role, acting as liaisons between global science and local communities. Mis- or under-translating terms like carbon neutrality or adaptation strategies misinforms and undermines public debate as well as the democratic potential of climate policy.

Poor translations can also obstruct the application of some global environmental frameworks, including those derived from the IPCC and UNFCCC, etc., by preventing them from being localised effectively in state-level planning and rural extensions. As Buell suggests, "language determines the horizon of action" (Buell 79) since critical climate interventions could be deemed incomprehensible or unfeasible to broad sectors of the population if they are mistranslated or obfuscated.

In environmental translation domain, translators alike are more than just language mediators, they are cultural and epistemological mediators. Sit at the crossroads of science, policy and popular discourse. All in all, with translation of climate reports into Hindi and other Indian languages, the translators are also knowledge producers who not only determine what is said but how it is said as well. That said, the equivalence can just as easily be false: in English, ecosystem services may have been translated with complete formal fidelity to produce पारिस्थिस्िकी ित्र सेवाएं but such a term likely says as little about both the

economic and the moral dimensions of it as about its very essence especially if read by an uninitiated reader.

Environmental translation is a field so interdisciplinary that the translator must be informed both scientifically, in terms of policy fitting and cultural appropriateness. Similar to Venuti who writes, "the translator inscribes the foreign text with the values of the receiving culture" (Venuti 13) in his treatment of culture, and contributes to ecological knowledge is received into an Indian context through translation.

Need of the hour, as identified by this study, is the standardisation of environmental terminology in Hindi and other regional languages. Until now, there was no common and acknowledged glossary leading to inconsistencies concerning the terminology, especially for essential concepts such as resilience or geoengineering. There really should be a centralised, government-sponsored lexicon on the environment or something of that nature, developed in conjunction with scientific institutions, linguists and translators, which could then make sure that whatever term ends up being employed is consistent and correct in documents for the public (or schools) as well as media coverage.

One of the better initial strides comes from UNDP, which has created a climate dictionary for Hindi that includes easy-to-understand definitions and sentences. However, there is an imminent requirement for institutions to adopt and scale these tools. Standardised glossaries can be developed and shared on platforms in collaboration between government bodies like the National Translation Mission (NTM) and the Ministry of Environment, Forest and Climate Change (MoEFCC).

It is just as important, that subject matter experts are involved in the translation. Climate science, with its precision terminology and domain-specificity, also requires close collaboration among subject experts

and language professionals. This happens much too often when translations are made without the assistance of scientific consultation, which can lead to either overly literal translations or a loss of context. A multistage workflow that combines peer scientific review, cultural adaptation and linguistic editing paves the way to improve translated environmental materials. First of all, input/output method Implementation for environmental scientist reviewing on translation to words like carbon sequestration or permafrost melt. Finally, integration with local stakeholders and community translators could enhance the sociocultural relevance of environmental messages to facilitate their implementation in the field. The community-centred approach of this model reflects a central aspect of the climate justice and inclusive communication narrative.

CONCLUSION

This paper has examined the intricate and sensitive processes of translating environmental terminology especially in the context of climate change reports from English into Hindi. The issue is important for a country battling environmental degradation, if real and context-based translation must be guaranteed so that that the masses understand in order to get their buy-ins on environmental policy action in India.

By scrutinising climate change across selected reports, from the IPCC Summaries for Policymakers translated by national and international organisations, it is found that while some terms like 'carbon emissions' (कार्जन उत्सर्जन) have been relatively standardised, other words such as resilience, geoengineering and carbon neutrality have no consistent or culturally rooted equivalents in Hindi. This either causes semantic pollution or interpretive fuzziness.

In concert with functionalist approaches in translation theory, especially as championed by the Skopos Theorist, analytic methods provided evidence that translators tended to employ a combination of literal translation, paraphrasing and cultural substitution when adapting technical terminology. However, without this subject expertise to support these strategies they may also just be ways of distorting the meaning slightly differently. As Michael Cronin puts it "translation is central to the way environmental crises are framed and understood across linguistic borders" (Cronin 45).

Overall, the research is incredibly useful in understanding how translations are carried out within climate communication but as to be expected, it has its faults. The analysis was restricted to a subset of official climate files, mostly those distributed in English as well as Hindi. Calls to many regionally circulated reports and vernacular versions languished for the same accessibility reasons. This is followed by the fact that the research does not address issues of audience reception or call for real world observation which could have provided further understanding of how end-users perceive translated content. Further empirical research utilising surveys or focus groups will allow us a richer understanding of how various translation strategies can affect the perception and behaviour of members of the public. Third, a paucity of machine translation corpora or far-reaching terminology databases (as exist in the EU translation ecosystems) constricted the technological side of the research. The extent to which AI tools and CAT (Computer-Assisted Translation) software enable or obstruct environmental translation in the Indian scenario is still an unchartered territory.

Future research could also examine how these texts are received among different demographic groups in India, especially rural and semi-urban audiences. Including qualitative interviews and measures of comprehension can enable further understanding of the cognitive and cultural effects associated with environmental translation. A new direction here could be to map regional patterns of translation of environmental terms into Indian languages (e.g. Bengali, Tamil, Marathi) to evaluate how different linguistic communities frame ecological risk and sustainability? For the future, it would be interesting to see whether AI-based translation tools such as that of Google Translate or Bhashini, could also prove effective means for proliferating information about climate across Indian languages. Nonetheless, as Venuti warns, "automated translation often prioritises speed over nuance" (Venuti 112) implying that human intervention and cross-departmental collaboration are crucial. In much the same way, the overlapping fields of translation studies and environmental communication provide ample material for research. Translation is not simply about language in multi-lingual India, where the climate crisis has become a lived reality, this is a moral and ecological duty.

WORKS CITED

1. Buell, Lawrence. The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture. Belknap Press of Harvard UP, 1995.
2. ~. Writing for an Endangered World: Literature, Culture, and Environment in the U.S. and Beyond. Belknap Press of Harvard UP, 2001.

3. Cabré, María Teresa. Terminology: Theory, Methods and Applications. Translated by Janet DeCesaris, John Benjamins, 1999.
4. Cronin, Michael. Translation and Globalization. Routledge, 2003.
5. Intergovernmental Panel on Climate Change (IPCC). Summary for Policymakers: Climate Change 2021: The Physical Science Basis. IPCC, 2021. [Hindi version: र्लवायु परिविजन 2021: भौस्िक स्वज्ञान आधाि, IPCC Outreach PDF].
6. Kumar, Arvind, and Reema Joshi. "Translating Climate Science: A Study of Hindi Versions of IPCC Outreach Materials." Indian Journal of Language and Communication, vol. 6, no. 2, 2021, pp. 97–110.
7. Nida, Eugene A. Language, Culture, and Translating. Shanghai Foreign Language Education Press, 2001.
8. Sharma, Meenakshi. "Translating the Environment: A Comparative Study of Multilingual Climate Documents." Translation Today, vol. 15, no. 1, 2020, pp. 85–94.
9. Toury, Gideon. Descriptive Translation Studies and Beyond. John Benjamins, 1995.
10. United Nations Development Programme (UNDP). Climate Dictionary (Hindi), 2023, www.undp.org/india/publications/climate-dictionary-hindi.
11. Venuti, Lawrence. The Translator's Invisibility: A History of Translation. 2nd ed., Routledge, 2008.
12. Vermeer, Hans J. "Skopos and Commission in Translational Action." Translated by Andrew Chesterman, in The Translation Studies Reader, edited by Lawrence Venuti, 3rd ed., Routledge, 2012, pp. 191–202.

Appendices: Figures, Charts and Glossary

Glossary of Key Environmental Terms

English Term	Hindi Translation	Type of Translation	Comments
Climate Change	जलवायु परिवर्तन	Literal	Widely accepted in Indian climate discourse.
Carbon Emissions	कार्बन उत्सर्जन	Literal	Standardised across reports; rarely paraphrased.
Mitigation	न्यूनीकिण / ननवार्ण	Adaptive	Multiple renderings found; sometimes confusing.
Resilience	लचीलापन / संधार्ण क्षमर्ा	Cultural + Paraphrased	Varies by context; often lacks precision.
Carbon Neutrality	कार्बन टस्थर्ा	Literal + Neologism	Still unfamiliar to many; requires explanation.
Renewable Energy	नवीकिणीय ऊजार्ा	Literal	Consistent across reports.
Geoengineering	भू प्रौद्योनिकी	Transliterated	Rarely explained; could be misunderstood.
Ecosystem Services	पारिनस्थनकी त्र सवाए	Literal + Paraphrased	Not well-known; sometimes avoided or generalised.
Climate Justice	जलवायु न्याय	Literal + Ideological	Politically loaded; not always retained in meaning.
Sustainable Development	सर् नवकास	Literal	Well-established in policy and media narratives.

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Figure: Types of Translation in Sample Terms

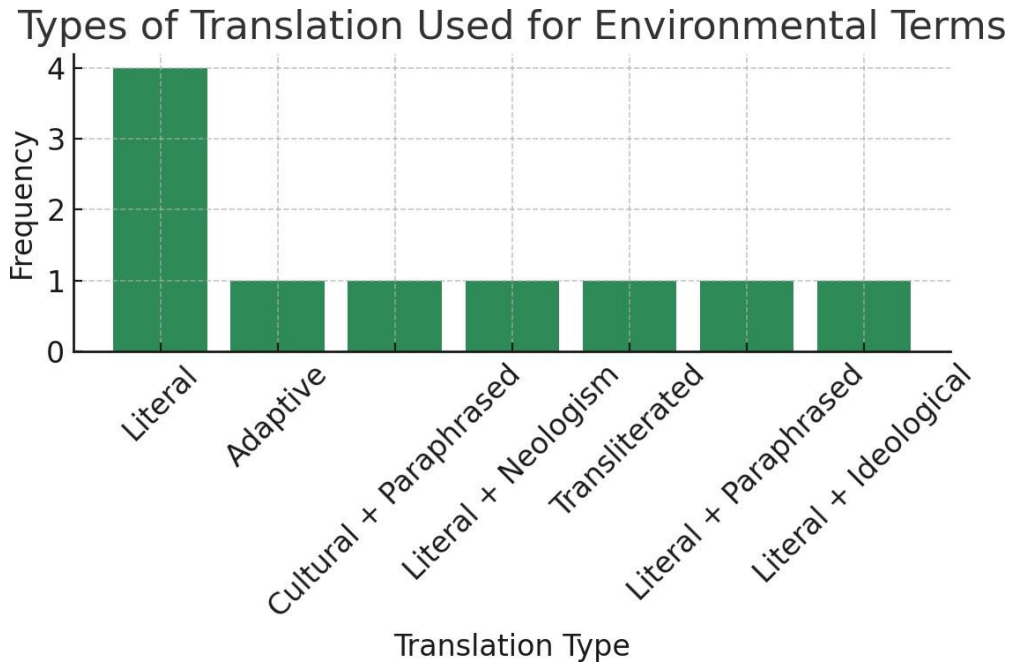

Figure 1: Distribution of translation types used for environmental terminology in selected climate change reports.