

Translating ecological narratives: A linguistics and cross-cultural analysis of 'Laskar Pelangi' from Indonesian to German

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ABSTRACT

Translation studies face enduring challenges in conveying ecological themes across linguistic and cultural boundaries. This research explores how ecological dimensions in Andrea Hirata's *Laskar Pelangi* (LP) are represented in its German translation, *Die Regenbogentruppe* (RBT). Grounded in Vinay and Darbelnet's translation theory, the study examines key ecological elements -landscapes, flora, fauna, environmental degradation, and eco-cultural practices-and analyzes how translation strategies influence their portrayal. The research adopts a comparative and eco-critical approach, combining textual analysis with a focus on the sociocultural implications of translation choices. Findings reveal that procedures like equivalence, adaptation, borrowing, literal translation, and modulation predominantly align with target-language norms, reflecting a balance between cultural domestication and fidelity to the source text. This study not only sheds light on the translator's role in mediating ecological narratives but also contributes to discussions on how translated literature can foster cross-cultural ecological awareness. By emphasizing the interplay between translation strategies and ecological representation, this research underscores the potential of literary translation as a tool for global environmental advocacy, providing theoretical and practical insights for scholars and practitioners in translation studies and ecological linguistics. Pedagogically, the study highlights how translation practice and instruction can foster ecological literacy and global responsibility, encouraging learners to connect linguistic sensitivity with environmental ethics.

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Introduction

Translation is a cultural activity that bridges linguistic and cultural boundaries, fostering cross-cultural communication and understanding (Badenes, & Coisson, 2015; Bradley, 2021; Munday, 2016). Beyond its linguistic function, translation negotiates cultural identities and facilitates the global exchange of knowledge (Ryan, 2020; Suo, 2015; Torres, 2023). Moreover, its broader role as a vehicle for cultural exchange has gained increasing scholarly attention (Geng, 2013; Hu, 2020).

From a communication perspective, translation involves a dynamic interplay between authors, translators, and readers, striving to break down linguistic and cultural barriers (Rothermel, 2014; Bao, 2025). It serves as a vital tool for promoting intercultural understanding, addressing the need for effective

communication across diverse linguistic and cultural contexts (Saule & Aisulu, 2014; Wang, 2014; Scott, 2023). In the context of ecological narratives, translation facilitates the internationalization of environmental discourses, allowing diverse audiences to engage with ecologically significant literature (Diamanti, 2022). Tsoneva (2024) and Scott (2018) expand this view, arguing that translation is not just linguistic transfer but a means of reimagining human-nature relationships within a planetary communication system.

Andrea Hirata's *Laskar Pelangi* (Hirata, 2005) provides an illustrative case at the intersection of literature, ecology, and translation. Set in the Indonesian archipelago, the novel *Laskar Pelangi* (hereinafter, LP) reflects complex human-environment relationships through portrayals of biodiversity, environmental degradation, and cultural adaptation. Translating this work into German *Die Regenbogentruppe* (Hirata, 2013) presents challenges and opportunities in transferring ecological and cultural meanings between distinct linguistic and ecological systems. The Malay Belitong community depicted in LP embodies Indonesia's ecological and cultural diversity. Translating their narratives into German not only bridges cultural perspectives but also enriches global ecological discourse. This underscores the translator's critical role in mediating environmental narratives through culturally sensitive choices. Literary works with ecological themes are growing in number in Indonesia (Pamungkas et al., 2022; Isti'anah & Suhandono, 2023). Econarratives shape human interactions with the environment (Stibbe, 2023). A foundational theory is provided to understand these narratives, emphasizing language's role in societal interactions with nature (Stibbe, 2014; Relva & Jung, 2021; Robinson et al., 2016).

This study examines the translation of ecological dimensions in LP into German *Die Regenbogentruppe* (hereinafter, RBT), focusing on how translation strategies influence the representation of environmental themes within the framework of Vinay and Darbelnet's translation theory. In this context, Vinay and Darbelnet introduce seven translation procedures: 1. Borrowing, 2. Calque, 3. Literal translation, 4. Transposition, 5. Modulation, 6. Equivalence, and 7. Adaptation (Safi & Nasser, 2022). These translation procedures provide a systematic framework for navigating these challenges. Their model offers tools to address the linguistic and cultural intricacies of translation (Chen, 2013; Saridaki, 2021). Moreover, these procedures are particularly relevant for translating ecological narratives, where preserving contextual and cultural fidelity is critical. By applying these strategies, translators can navigate tensions between ecological authenticity and linguistic coherence, contributing to both translation studies and the broader discourse on environmental communication.

Cultural influences shape literary expressions, embedding figures of speech and patterns that reflect perceptions of the natural world and the environment (Goga et al., 2018; Duc, 2025). Translating such culturally and ecologically embedded texts presents unique challenges, as it requires not only linguistic competence but also sensitivity to cultural and ecological dimensions. Zhao (2019) highlights that ecological translation involves selecting and adapting source-language ecological content to resonate with the target language's cultural and ecological context. This complexity underscores the need for translators to grasp the interplay of linguistic, cultural, and environmental factors in both source and target settings. Recent scholarship has expanded the field of eco-translation (Adler, 2020; Hastürkoğlu, 2020; Klaver, 2018; Pujol-Valls, 2018; Bradley, 2021; Park, 2019). Badenes & Coisson (2015) analyzed ecotranslation in novels, demonstrating how integrating ecology and translation can raise awareness of environmental issues and inspire action. These studies highlight the importance of an analytical framework that considers both ecological themes and cultural nuances. Yet research remains limited on how ecological dimensions of Indonesian literature are represented in translations into non-English languages, particularly German. Studies such as Kuncara (2015) and Martendi et al. (2022) address aspects of cultural or ecological translation but stop short of exploring this linguistic and cultural pairing.

To address this gap, the present study investigates how ecological themes in *Laskar Pelangi* are translated into German, focusing on the application of Vinay and Darbelnet's translation procedures and their impact on ecological representation. The study aims to contribute theoretically to ecological translation discourse and practically to strategies for preserving ecological meaning in cross-cultural literary translation.

Method

This study adopts a qualitative comparative approach to analyze the German translation of Andrea Hirata's *Laskar Pelangi* (LP), focusing on ecological themes and the translation procedures used to convey them. The source text (Hirata, 2005) and its German version (*Die Regenbogen-Truppe*, 2013) serve as the primary data. A total of 95 textual segments containing ecological expressions were purposively selected. Selection criteria included references to natural elements (flora, fauna, landscape), human-nature interactions (cultural practices or ecological wisdom), and environmental degradation or conservation.

These categories—*flora, fauna, landscape, degradation, and cultural ecology*—were operationalized to capture key ecological dimensions in both texts.

The analysis applied Vinay & Darbelnet's translation procedures (Salm et al., 1997) through four steps:

1. Close Reading: Both the source and target texts were read thoroughly to identify ecological themes and linguistic features.
2. Textual Comparison: Specific segments of the source text were compared with their translations to determine the procedures applied.
3. Categorization: Instances of translation were categorized according to Vinay and Darbelnet's procedures, highlighting patterns and trends in the translator's approach.
4. Interpretation: The findings were interpreted within the broader context of ecological and cultural translation, emphasizing how linguistic, cultural, and contextual factors influenced the translator's choices.

This methodical approach aims to shed light on the interplay between the linguistic and cultural nuances of the source and target texts. By examining the translator's decisions, the study seeks to provide insights into the challenges and strategies involved in translating ecological narratives, contributing to theoretical discussions in translation studies and ecological linguistics.

To ensure reliability, the coding and categorization were reviewed by two translation researchers, with discrepancies resolved through discussion. This approach provides a transparent account of how ecological meanings are represented and adapted in translation.

Results and Discussion

Results

In this section, we delineate the translation procedures employed to convey the ecological nuances inherent in LP into German. The ecological aspects are systematically categorized into distinct themes encompassing the environment's surroundings, animal life, dwelling, plant species, environmental degradation, and dietary elements. Each category is thoughtfully examined, providing a comprehensive overview of the translation strategies employed. We present two examples for each procedural approach, highlighting the nuanced and context-specific nature of the ecological translation process. The abbreviations ST and TT are used throughout this article to refer to the Source Text (the original text being translated) and the Target Text (the translated text in the target language), respectively can be seen in Table 1.

Table 1. Ecological Categories, Translation Procedures, and Ecological Implications

No.	Ecological Category	Dominant Translation Procedures	Ecological Implications
1	Surroundings	Borrowing, Equivalence, Adaptation	Preserves local identity while ensuring geographic clarity
2	Animals	Borrowing, Equivalence	Maintains species specificity; balances familiarity and authenticity
3	Dwelling	Equivalence, Modulation, Adaptation	Reflects cultural context of habitat and human–nature relation
4	Plant Species	Modulation, Equivalence, Literal Translation	Balances botanical accuracy and cultural accessibility
5	Environmental Degradation	Modulation, Equivalence, Transposition	Shifts focus from ecological to economic dimension
6	Dietary Elements	Borrowing, Modulation, Equivalence	Retains culinary identity and ecological symbolism

Discussion

The translation of *Laskar Pelangi* into German reflects a dynamic ecological negotiation between linguistic fidelity, cultural domestication, and environmental representation.

Surrounding

The translation of ecological aspects related to the surrounding emphasizes the importance of borrowing, equivalence, and adaptation. These procedures enable the translator to maintain both the geographic accuracy and cultural relevance of the source text.

ST: *Gunung Selumar tidak terlalu tinggi tapi puncaknya merupakan tempat tertinggi di Belitong Timur.*

TT: *Der Selumar ist nicht allzu hoch, aber sein Gipfel bildet den höchsten Punkt im Osten von Belitong.*

The translation showcases equivalence through the faithful rendering of the meaning of *Gunung Selumar tidak terlalu tinggi* as *Der Selumar ist nicht allzu hoch* (The Selumar is not too high), ensuring that the geographical information is communicated accurately. The phrase *der höchste Punkt im Osten von Belitong* (the highest point in the east of Belitong) offers a culturally adapted description, considering the linguistic and geographical context familiar to the target audience. However, the use of borrowing to retain the term *Gunung Selumar* underscores the translator's intent to preserve the specific cultural identity of the location. This choice respects the cultural integrity of the source text while allowing the German-speaking audience to encounter the place name in its original form, enhancing the text's authenticity. The addition of the masculine article *der* aligns with the German linguistic structure, indicating the gender of the noun *Selumar* while maintaining the original toponym.

ST: *Pekarangan rumah orang Melayu ditumbuhi jarak pagar, beluntas, beledu, kembang sepatu dan semak belukar yang membosankan.*

TT: *Auf unserem Grundstück wuchsen langweilige Sträucher wie Gardenien und Hibiskus.*

Here, the translation involves adaptation, where specific plant names like *beluntas* are replaced with culturally familiar terms such as *Gardenien* and *Hibiskus*. These substitutions ensure that the German audience can easily relate to the described flora. The semantic adaptation is evident in the choice of ornamental plants that fit the aesthetic preferences of a typical German garden. However, the translator's decision to simplify the flora-replacing specific indigenous plants with more familiar equivalents-raises questions about whether the full ecological richness of the original text is captured. Plants like *beluntas* have deeper cultural and medicinal significance, which is lost in the German equivalents. The term *jarak pagar*, for example, describes a plant functioning as a fence around Malay homes, which is culturally and ecologically significant. The absence of a translation for this term could result in a loss of specific ecological details.

This example highlights the importance of a careful balance between cultural adaptation and ecological accuracy. While the adaptation makes the text accessible to German readers, it risks overlooking the unique ecological relationships present in Belitong. For a more thorough representation, the translator might retain some of the original plant names or provide additional context to ensure that the ecological significance is conveyed. Borrowing and equivalence allow the translator to retain local toponyms like *Gunung Selumar*, preserving ecological and cultural authenticity (foreignization), while adaptation ensures geographical intelligibility for the German reader (domestication). This aligns with Venuti's dichotomy, (Venuti, 1995) showing how ecological context determines the balance between the two.

Animals

The translation of animal names, particularly those that are unfamiliar or uncommon in Europe, presents an interesting challenge in ecological translation. In these cases, the translator must consider bioregionalism to maintain both linguistic and ecological accuracy.

ST: *Nama burung Pelintang pulau selalu menarik perhatian siapa saja, di mana saja, terutama di pesisir.*

TT: *Die Pelintang der Inseln waren überall in der Lage, die Gemüter zu erregen, besonders aber in der Küstengegend.*

In this case, the translator employs borrowing to retain the term *Pelintang* in its original form. This choice reflects a preservation of cultural specificity and maintains the bird's unique identity within the cultural context of Belitong. The decision to borrow *Pelintang* without further adaptation is consistent with the strategy of preserving cultural and ecological identity. In this case, the translation focuses on the functional aspect of the bird's flight behavior, simplifying the description but maintaining the essential ecological information. The addition of *der Inseln* (of the islands) helps situate the bird in its native environment, aligning with the ecological context while adapting it linguistically for the German reader. The translation of *selalu menarik perhatian* (always attracting attention) into *waren überall in der Lage, die Gemüter zu erregen* (were able to arouse emotions everywhere) shifts from a more literal interpretation to a more expressive one. The phrase *arouse emotions* deepens the emotional resonance of the bird's presence, which is a thoughtful adaptation that connects more profoundly with the German-speaking audience.

ST: *Setelah Serindit Melayu terbang melesat pergi menembus langit maka hadirilah beberapa keluarga jalak kerbau.*

TT: *Nach den Serindit kam eine Schar Stare.*

The translator uses the borrowing procedure by omitting the word Malay. This is unfortunate because there are many types of serindit birds spread throughout Indonesia, and the Malay Serindit is a typical bird in the Malay land that symbolizes wisdom, beauty, courage, loyalty, humility, and wisdom. Inappropriate word choice can certainly affect the understanding of TT readers. Furthermore, the translator translates the word *buffalo starling* with the word *stare*, which means ordinary starling, not buffalo starling. The starling (*Sturnus vulgaris*), also known as the common starling, is the most widespread and common member of the starling family (*Sturnidae*) in Eurasia. However, because this type of bird is so popular, the word *starling* is acceptable. The choice of *stare* (starlings) to represent *jalak kerbau* (buffalo starlings) is a cultural adaptation. It reflects the need to use a species familiar to the German audience, as buffalo starlings might not be well-known in Germany.

It is not always easy to translate the names of species. First, there is the question of the translator's accurate recognition of the animal or plant. After accurately identifying a species, a translator may encounter the issue of several viable translations: species might have one or more commonly used names in the target language. The local bioregion is one example of this. The translator must make some decisions because of the diversity of birds shown in the examples, which may cause readers of the target text to see different images. These decisions may include: a. Not all birds described in the source text can be found in Europe; b. The translator's choice of words for one Indonesian bird may not be synonymous with the German word for that bird, making it less representative of Indonesian birds; and c. Some Indonesian words refer to Asian birds, which may not be well-known in German-speaking nations; d. regional climate differences may also have contributed to some of the remedies implemented. In LP, all of the bird's names are translated through the borrowing procedure. Borrowing terms such as *Pelintang* sustains the species' cultural significance, reflecting Hu Gengshen's eco-translatology principle of "adaptation and selection"—the translator adapts the text to the target ecosystem while selecting strategies that preserve ecological diversity. However, replacing *jalak kerbau* with *Stare* demonstrates domestication, prioritizing familiarity over ecological precision.

Dwelling

Examining the dwelling aspect provides a unique lens through which we explore how linguistic representations convey the essence of shelter and human habitation within the ecological context. Here are some examples:

ST: *Diantara rumah panggung itu berdesak-desakan kantor polisi, gudang-gudang logistik PN, kantor telepon, toapekong, kantor camat, gardu listrik, KUA, masjid, kantor pos, bangunan pemerintah..., tandon air, warung kopi, rumah gadai yang selalu dipenuhi pengunjung, dan rumah panjang suku Sawang*

TT: *Unser baufälliges Haus stand auf Stelzen, rundherum die Polizeistation, ein Lagerraum der Bergbaugesellschaft, der chinesische Tempel, die Gemeindeverwaltung. Das Standesamt, die Unterkunft der Hafendarbeiter, das Wohnheim der Matrosen, der Wasserturm, Läden der Peranakan-Chinesen, Dutzende von Buden, wo man Kaffee und andere Getränke bekommen konnte, und Pfandhäuser, die ständig voller Kunden waren. Am äußersten Rand der Siedlung lag das Langhaus der Sawang.*

The sentence *Diantara rumah panggung itu berdesak-desakan* (among those stilt houses, crowded) is translated to *unser baufälliges Haus stand auf Stelzen* (Our dilapidated house stood on stilts). The translator has chosen a more specific term, *Stelzen* (stilts), to convey the idea of raised houses. The words 'electricity substation', 'mosque', 'post office', and 'government building' are not translated at all, despite the theme of the neighborhood, which plays an important role in describing the situation around the Malay community housing. The translator in this case uses the adaptation procedure, which involves making changes to the text to ensure cultural, social, or historical relevance in the target language. This is common when translating idioms, jokes, or cultural references. Moreover, the sentence structure is adjusted to fit German syntax, but the overall organization and sequence of the elements are preserved.

The translation of *tandon air* to *Wasserturm* (water tower) may seem like a mismatch at first glance, but it could be an example of a functional equivalence. Here are a few possible reasons for this translation choice:

- Cultural and Functional Equivalence: In some contexts or regions, especially in German-speaking areas, the concept of storing water might be closely associated with a water tower rather than a ground-level tank

(water tank). The translator might have opted for 'Wasserturm' to convey the idea of a structure that holds and supplies water to the community.

- The term *Wasserturm* could have been chosen for linguistic reasons, as it captures the essence of a water storage facility. While *tandon air* might literally translate to 'water tank,' the translator might have selected *Wasserturm* to provide a more vivid and culturally resonant image in German. In addition, the use of water tanks in Germany is not as common as it is in Indonesia, where practically every household has a water tank, even in urban areas.

It's essential to note that translation involves interpretation, and translators often need to make choices based on context, cultural considerations, and the subtle differences between the target and source languages. In this case, *Wasserturm* might be a choice made to effectively communicate the idea of a water storage structure to a German audience. Translating *tandon air* into *Wasserturm* shows functional equivalence within a German ecological frame. While the translation naturalizes the setting, it partially erases the local ecological texture, exemplifying the ecological cost of cultural adaptation.

ST: *Gubuk itu beratap daun sagu dan berinding lelak dari kulit pohon meranti. Apa pun yang dilakukan orang di dalam gubuk itu dapat dilihat dari luar karena dinding kulit kayu yang telah berusia puluhan tahun merekah pecah seperti lumpur musim kemarau.*

TT: *Es hatte ein Dach aus Zweigen der Sagopalme und besaß Holzwände aus Meranti-Rinde. Was im Haus geschah, konnte man von aussen sehen, denn die Rinde war schon viele Jahre alt und aufgeplatzt wie sumpfige Erde in der Trockenzeit.*

Lexically, the translator has opted to borrow the specific terms related to the materials of the roof and walls. *Sagopalme* directly borrows from the original term *daun sagu* (sago leaves), and *Meranti-Rinde* borrows from *kulit pohon meranti* (bark from the meranti tree). These borrowings help maintain the specificity of the materials used in the construction of the hut.

While borrowing specific terms for the materials, the translator has also ensured functional equivalence by providing a clear description of the components of the hut in German. *Dach aus Zweigen der Sagopalme* (roof made of branches of the sago palm) and *Holzwände aus Meranti-Rinde* (wooden walls made of Meranti bark) convey the original text's functional elements. So, borrowing is a significant translation procedure employed in this text, allowing the translator to retain the specificity of the building materials while making the translation accessible and meaningful to a German audience. As a result, the author has been successful in expressing the language and cultural aspects of the original German text. The choice of specific terms for building materials and the use of descriptive language contribute to maintaining the cultural richness and visual imagery of the source text in the translation.

Plants Species

This section unravels the fascinating world of botanical translation, where the plant species category unriddles the linguistic complexities surrounding the portrayal of various plant species, from the grandeur of trees to the delicate intricacies of flowering plants. The translation of the following passage appears to involve two translation procedures, such as literal translation and modulation.

ST: *Ia memanjat pohon kepang rindang yang berseberangan dengan pohon karet.*

TT: *Er kletterte auf einen Baum mit dichtem Blattwerk, der am Ufer gegenüber dem Gummibaum stand.*

The translation appears to be linguistically and culturally accurate. To properly translate the meaning of the source text into the target language, the translator has made the necessary word selections and structural changes. Given that modulation entails shifting the expression or perspective without altering the original meaning, the expression *pohon kepang rindang* (leafy tree) is modulated to *Baum mit dichtem Blattwerk* (tree with dense foliage) in the target text. The connotation of a lush or leafy tree is faithfully conveyed in the translation. Furthermore, *pohon karet* in ST is translated to *Gummibaum* in TT. This is a specific translation referring to a rubber tree. From an ecological and cultural perspective, this literal translation procedure can be seen as an attempt to maintain the specificity and cultural nuance associated with the term. The use of *Gummibaum* in German reflects not only the botanical aspect of the tree but also its economic significance as a rubber-producing plant. This decision might be driven by the desire to preserve the connection between the term and the cultural context it carries in the source language. It's possible that *Gummibaum* is a more familiar and widely accepted term among German speakers than *Kautschuckbaum* when talking about rubber trees in general.

In translation, the selection of words involves more than just finding direct equivalents; it also takes into account the naturalness, clarity, and cultural appropriateness of the chosen terms. The goal is to reach the desired audience with the message in a way that speaks to them. The ecological theme in the source text is adequately presented in the translation. Both texts describe a person climbing a leafy tree that is located opposite another tree (specifically, a rubber tree). The translator has successfully retained the ecological elements of the source text, and the choice of words in the target language aligns with the original context. In the next example, examining a specific example sheds light on the application of the equivalence procedure:

ST: *Selain itu disana juga tak jarang buaya sebesar pangkal pohon sagu melintasi jalan.*

TT: *Dort konnten einem Krokodile über den Weg laufen, so groß und dick wie Palmenstämme.*

In this instance, the term *pohon sagu* (sago tree) in ST is skillfully translated to *Palmenstämme* (palm trees) through the application of the equivalence procedure. It is noteworthy that while the sago tree and the palm tree may diverge in their botanical characteristics, the strategic use of the word *Palmen* (palms) in the German vocabulary, as seen in expressions like *Urlaub unter Palmen* (holiday under a palm tree), fosters a nuanced understanding. The balance between accuracy and familiarity helps maintain cultural relevance while conveying the ecological context. The deliberate choice of the word *Palmenstämme* serves a dual purpose. Firstly, it provides a tangible visual image for German readers, drawing upon their familiarity with the concept of vacations in tropical destinations abundant with palm trees. This not only aids comprehension but also ensures that readers can vividly imagine the lush, warm Belitong setting described in the source text. Secondly, while *Sagopalmen* might be a more precise term, the use of *Palmenstämme* strikes a balance between accuracy and reader familiarity, ensuring a seamless integration of the cultural and environmental context.

By opting for this equivalency strategy, the translator navigates the complex terrain of linguistic nuances and cultural connotations, facilitating a more immersive reading experience for the German audience. This nuanced approach showcases the translator's skill in not merely transposing words but adeptly bridging the linguistic and cultural gaps between the source and target languages. The translator maintains the overall sentence structure while introducing culturally appropriate modifications. This syntactic alignment contributes to the fluency and natural flow of the translated passage. The phrase *so gross und dick wie Palmenstämme* (as big and thick as palm trees) introduces an idiomatic expression in German. While the literal dimensions may not be the focus, the use of idiomatic language adds richness to the description, ensuring that the translation resonates idiomatically with the target audience.

In essence, the linguistic analysis reveals a meticulous approach to translation that goes beyond word-for-word conversion. It involves a thoughtful consideration of semantics, pragmatics, cultural nuances, and idiomatic expressions, showcasing the translator's ability to navigate the complexities of language and deliver a nuanced and culturally resonant rendering of the source text in the target language. The translator modulates *pohon keping rindang* to *Baum mit dichtem Blattwerk* and replaces *pohon sagu* with *Palmenstämme*, applying equivalence to achieve cultural resonance. This illustrates eco-translatology's "textual harmony"—where linguistic adaptation sustains communicative balance between source and target ecologies.

Environmental Degradation

This section guides us through the translation intricacies associated with the 'environmental degradation' category, peeling back layers of linguistic expression to reveal how languages navigate the delicate balance between articulating environmental crises and maintaining cultural sensitivity. In this category, the first example of a translation procedure is modulation. This is the process of altering the viewpoint or point of view without altering the core idea.

ST: *Sekarang mereka bebas menggali timah dimana pun mereka suka di tanah nenek moyangnya dan menjualnya seperti menjual ubi jalar.*

TT: *Sie buddelten Zinn hinter ihrem Haus aus und verkauften es wie Wurzelgemüse auf dem freien Zinnmarkt, den sie selbst aufgebaut hatten.*

The example of *menggali timah* (digging tin) uses modulation to shift from the more specific description of digging tin on ancestral land to a more general one in German, focusing on the act of mining and selling without explicitly emphasizing the ecological impact. The metaphor of "selling it like root vegetables" serves as a cultural adaptation, ensuring the expression makes sense to the German reader.

Tanah nenek moyangnya in ST is translated to *hinter ihrem Haus*. The translation captures the idea of land behind their house, although it doesn't explicitly convey the ancestral connection. There is a transposition of words and structures to adapt the sentence to the German language, for example, in the

rearrangement of *hinter ihrem Haus* (behind their house). The ecological theme is not explicitly presented in the provided text. The focus is more on the activity of digging tin and selling it rather than emphasizing the ecological aspects of the land or the consequences of the activity on the environment.

In summary, the translation appears to be linguistically and culturally reasonable, utilizing various translation procedures. However, the ecological theme may not be prominently conveyed in the target text, as the emphasis seems to be more on the economic activity described in the source text.

ST: *Lahan eksplorasinya tak terbatas.*

TT: *Die riesigen Bodenschätze wurden von der Firma PT Timah einer staatlichen Bergbauergesellschaft, gefördert und verwertet.*

The example regarding *lahan eksplorasinya tak terbatas* (unlimited exploitable land) is translated as *die riesigen Bodenschätze* (huge subsoil resources). This translation shifts the focus from the idea of unlimited land exploitation to subsoil resources, which changes the ecological message. The term *unlimited exploitable land* in the original text, which conveys the unchecked exploitation of the land, is diluted in the German translation, which emphasizes the exploitation of subsoil resources but fails to maintain the same ecological emphasis on land usage and environmental damage. The introduction of entities like PT Timah (a company) and a state mining company adds to the focus on the economic aspect, rather than the ecological devastation implied in the original. In conclusion, the translation demonstrates certain translation procedures from Vinay and Darbelnet, but there is a shift in emphasis from the original ecological theme to a focus on subsoil resources and the entities involved in their exploitation. The ecological aspect is somewhat diluted in the target text.

The phrase *unlimited land exploitation* is plainly translated with the words *fördern* and *verwerten*, which have neutral meanings of supported, to make use of, to use, or to utilize. Thus, the translation conveys the impression that tin panning is supported and funded by the government for the progress of the island of Belitong, whereas this is contrary to what the LP novel wants to convey, namely that the government controls tin mining and the proceeds are not used to develop the island of Belitong. The natives of the island of Belitong remained poor and were left poor despite having infinite natural wealth because the profits from tin mining went to the authorities in Jakarta. In fact, the rulers at that time practiced exploitation. Thus, the translation of the ecological aspect of the environmental damage category cannot be said to successfully convey the original meaning as in other aspects. In this category, modulation and transposition shift the focus from environmental exploitation (*lahan eksplorasinya tak terbatas*) to economic productivity (*riesige Bodenschätze*). The ecological critique in the source is thus attenuated, signaling a movement toward domestication and ideological neutralization.

Dietary Elements

As we embark on the exploration of ecological translation, the *dietary elements* category emerges as a tantalizing avenue, delving into the linguistic expressions that capture the essence of nourishment, culinary traditions, and the unique relationship between language and gastronomy. The food category produced a wide variety of translations, but the borrowing procedure dominated due to the vast differences in food culture, so that there were no equivalents for some dishes.

ST: *Mereka telah berlatih berbulan bulan dan setiap pagi makan telur setengah masak dicampur jadam dan madu pahit.*

TT: *Sie trainierten über Monate hinweg, aßen jeden Morgen weiche Eier mit Jadam und bitteren Honig.*

The category of *dietary elements* highlights translation challenges involving culturally specific foods. The translation procedure of borrowing is particularly prominent when dealing with terms like *jadam*, which is retained as is in the German translation (e.g., *Jadam*). This strategy allows for the preservation of specific cultural and ecological nuances tied to the local ingredients, though the understanding of such terms depends on the target audience's familiarity with them.

The following example discusses the combination of borrowing, modulation, and equivalence translation procedures.

ST: *Siapa pun akan muntah karena bau lobak asin, tauco, kanji, kerupuk udang, ikan teri, asam jawa, air tahu, terasi, kembang kol, pedak cumi, jengkol, dan kacang merah yang ditelantarkan dalam baskom.*

TT: *.. musste man sich bei dem Gestank von eingelegten Rettichen, fermentierten Bohnen, Tapioka, Krabbenmehlpaste, kleinen Trockenfischen, Tamarinde, Sojasoße, roten Bohnen und Jengkol-Bohnen, die in angerosteten Blechschüsseln vor dem Laden herumagen, übergeben.*

The German translation uses terms like *eingelegte Rettichen* and *Krabbenmehlpaste*, which may not be commonly used in everyday German cuisine. However, these terms effectively convey the exotic and diverse nature of the ingredients described in the source text. The translation achieves equivalence by providing specific terms for each ingredient while maintaining the original meaning, and modulation is used to adapt the expressions of the ingredients to terms that are culturally relevant and appropriate in the German context. The sentence structure is transposed, with adjustments to fit the natural flow of the German language. In translating the word *jengkol* to *Jengkol-Bohnen*, the translator uses a borrowing procedure. This is to maintain the words' intended meaning, relevance, and local flavour so that these terms' semiotic and cultural meanings will not be lost if they are translated literally (Das & Mazumder, 2020; Elmenfi, 2014).

Modulation, where terms are adjusted to fit the cultural context (e.g., *tauco* translated as *fermentierte Bohnen* or fermented beans), helps the translation feel natural while conveying the intended meaning. The ecological theme is often not explicitly emphasized in the translation, though it is present in some contexts (e.g., the description of abandoned, decaying food). The focus shifts more to the specific ingredients and their unpleasant sensory qualities rather than a clear ecological message. However, the translation reflects an adaptation to the target language's cultural context, ensuring that the ecological elements are integrated while still respecting the local culinary norms. Borrowing terms such as *Jadam* or *Jengkol-Bohnen* preserves culinary authenticity and ecological rootedness. This strategy exemplifies foreignization through lexical retention, allowing readers to "encounter the other" ecologically and culturally. Modulation and equivalence further facilitate cross-cultural comprehension without erasing local specificity.

Conclusion

The analysis of translation procedures applied to the ecological aspects of *LP* into German reveals the delicate balance between linguistic accuracy and cultural adaptation. By employing techniques such as borrowing, equivalence, and adaptation, the translator effectively conveys ecological information, though challenges remain in maintaining the full richness of the source text's environmental context. Future translations might consider incorporating more specific ecological references or providing contextual explanations to enhance the representation of the source bioregion's flora and fauna. The study concludes that the translation process effectively adapts ecological themes into the target language, though the ecological focus might not always be as pronounced. The use of domestication (adapting the text for target-language readers) and the preservation of cultural and ecological nuances through various translation techniques contribute to the success of the translation in conveying environmental issues. The study contributes to the broader discourse on how translation can shape ecological consciousness across different cultures and languages. Across categories, the translator alternates between foreignization and domestication to negotiate ecological meaning. Borrowing and equivalence predominantly preserve ecological identity, while adaptation and modulation promote cultural accessibility. These patterns confirm that ecological translation is not merely linguistic but ecological mediation—a dynamic interplay between ecosystems, languages, and cultures.

Declarations

- Author contribution** : Merry Lapasau was responsible for the entire research project. She also led the writing of the manuscript and the collaboration with the other author. Ryan Hidayat, Nik Rafidah, Arjulayana participated in the data collection, transcription and analysis. They also revised the manuscript. All authors approved the final manuscript.
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