

An Ecofeminist Study of Ueda Akinari's *Tales of Moonlight and Rain*

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Abstract: It can be safely asserted that there have been substantial academic discussions and research on Ecofeminism and Ecofeminist texts in recent times. To analyse the interconnectedness between nature and gender, and their representation in literature sounds intriguing, and hence, one can see the growing interest. It has to be mentioned that these discussions have been limited to certain time and spaces. There appears to be a gap, which is narrowing the scope of Ecofeminism. This paper shall try to fill the void by taking a Japanese text, which is relatively old. It is not that Japanese texts have not been under the scanner of the Ecofeminist lens. Yet, they have again been limited to modern times and popular culture. This analysis shall try something new, by bringing in Ueda Akinari's *Tales of Moonlight and Rain* (1776), a text from the Edo Period (1603-1867) in Japan.

Keywords: Myth, Sprit, Women, Demon, Witch, Ecofeminism

Ueda Akinari's *Tales of Moonlight and Rain* is a collection of nine short stories or tales. These are mainly ghost stories and retellings of earlier Chinese and Japanese myths. In his research on this text, Dennis Washburn calls it a literary 'pastiche', "with Akinari borrowing not simply the plot outlines from Chinese and Japanese sources, but even minute details of characterisation or description, sometimes lifting whole lines from original texts" (1990:39). The statement may raise questions regarding its originality. Still, Washburn believes that foreign readers are likely to be ignorant of the facts due to unfamiliarity with the context. Nonetheless, his statement does clarify that these stories were not the original constructs from Akinari's mind or pen. However, this should not be seen as a lack of Akinari's skill, as he too, like William Shakespeare, is providing a new outlook to existing stories.

The nine stories have different spirits in their narratives. However, this research is primarily concerned with only three of them, the ones which consist

of a female spirit. The first story that shall be utilised for the analysis is sixth one of the collection - "The Caldron of Kibitsu". It is claimed by Washburn as "the most ghastly of the nine tales" (69). The story is about Shotaro, a man taken to drinking, who marries a lovely woman named Isora. An ominous tone is set at the start of the story, where a Caldron (an oracle in the story) warns Shotaro against the dangers of their marriage. This warning turns out to be true, as Shotaro, abandons his wife Isora, for a prostitute named Sode. This is what ultimately leads to the gruesome ending of the story, where Isora's spirit takes vengeance for Shotaro's betrayal. One important thing to notice is that there is a shift in the narrative perspective in the tale. Whereas the first part is impersonal, the second is narrated relatively from the perspective of Shotaro. Therefore, even if readers initially resent Shotaro and sympathise with Isora, things take a different turn after the change of the narrator. Isora's brutal killing of her husband highlights it to be a result of her jealousy. And according to Japanese myth, a woman in jealousy becomes a serpent, which "can wreak her fury with a thunderbolt" (Akinari 149).

The above-mentioned statement by Akinari becomes more relatable with the next story for analysis. It is the seventh tale, where a spirit of a white serpent is actually present. The story is named "The Lust of the White Serpent", and both the negative words - 'lust' and 'serpent' are meant for a woman named Manago. So, quite clearly, a reader is certain to encounter yet another female evil spirit. This is the longest of the nine tales, and Manago's spirit takes three forms to win over Toyoo, a character represented as an irresponsible son of a fisherman. In her first attempt, Toyoo is rescued by an old man who remarks - "These evil creatures are aged serpents. Their nature is governed by lust" (177). This is a reference to Manago and her accomplice. So, just like in the previous story, here again, is an evil female spirit – who is governed by sinful qualities.

This constant categorisation of evil spirits as women even appears in a tale, which does not even have a female spirit in its plot. In "The Blue Hood", an abbot turns into a spirit. The villagers who know the abbot, find it difficult to comprehend this – as they only know instances where women turn into malicious demons. Kaian Zenji, the hero, is perplexed, and after listening to the villagers and their stories, he comments that "all of these cases are about

women. Probably because of the malice in their nature females readily turn into vicious demons” (189). This shows how myths are formed around women, categorising them as spirits that are jealous, lustful and malicious.

It is not that the collection does not have any virtuous female spirits. In the story “The House Amid the Thickets”, there is a feminine spirit who does not harm anyone, and only awaits the return of her husband after her death. However, out of the nine, this is only one story where a female spirit is not dubious. Still, she cannot be even called outwardly good. It is true that she does not unleash any trouble, but she does not perform any moral tasks as well. The example of stereotyping bad spirits to be women is not only limited to Japan. It is apparent in other cultures as well. In the case of the Santhal tribe from Jharkhand and West Bengal, witches are believed to be the prime danger to society. Interestingly, “Witches among Santhal can only be women” (Nathan 1998: 60). The transformation happens when a Santhal woman abandons her duties and professes familiarity with a ‘Bonga’ (family spirit). Coming back to Japan, there are other examples from literature where there are female evil spirits. One such example is none other than the spirit of Lady Rokujo from *The Tale of Genji* (1008) written by Murasaki Shikibu.

This is a long and comparatively old book, and there is a possibility that many have not read this work. Luckily due to the advent of ‘intertextuality’, one is likely to learn about the Lady Rokujo anecdote in Haruki Murakami’s novel *Kafka on the Shore* (2002). It should also be mentioned that Akinari’s work too was mentioned in this novel, and it deserves proper credit as this particular research would not have been initiated without it. *Kafka on the Shore* consists of a character named Oshima. He is insightful, and due to his large array of knowledge in different subjects; he is able to clear many doubts of the protagonist of the novel Kafka Tamura. Oshima primarily takes the aid of ‘intertextuality’ to do so, as he constantly alludes to literary references. So, when Tamura inquires about the existence of living spirits, Oshima instantly refers to *The Tale of Genji*. He cites that part of the story where Lady Rokujo “becomes so consumed with jealousy over Genji’s wife, Lady Aoi, that she turns into an evil spirit that possesses her. Night after night she attacks Lady Aoi in her bed until she finally kills her” (Murakami 242). Thus, again, what is prevalent is the idea of a vile female spirit.

In Japanese folklore, the idea of immoral female demons and ghosts is so common that there are a lot of online articles on this particular topic. One of them is an article by Gabriela Herstik, where she compiles a list of some of the cunning female demons from Japanese folklore. She marks that “These spirits often seek vengeance, typically from anything they encounter. While some have the ability to kill, others will simply watch the objects of their disaffection suffer and die” (np). This statement is followed by a discussion of spirits like –Oiwa, Hannya, Ubume, Nure-onna and others. This list, in a way, sheds light on how women in Japanese folklore have been depicted as nasty spirits, receiving the most unfavourable judgement. It is not a trivial issue at all and the seriousness of it can be brought forward by looking at it through the lens of Ecocriticism and Ecofeminism.

Cheryll Glotfelty in her essay “Introduction: Literary Studies in an Age of Environmental Crisis” analyses Ecocriticism by comparing it to Elaine Showalter’s model on the stages of feminist criticism. Glotfelty points out how the first stage of feminism deals with women’s representation in canonical texts. According to her,

These studies contribute to the vital process of consciousness raising by exposing sexist stereotypes-witches, bitches, broads, and spinsters-and by locating absences, questioning the purported universality and even the aesthetic value of literature that distorts or, altogether ignores the experience of half of the human race. (1996:22-23)

She then compares it to the ways in which Ecocriticism looks at the misrepresentation of environmental elements in literature. It enables her to form a connection between both approaches. This interconnection between women and the environment is also what Ecofeminism tries to study, and the literary text discussed here can be scrutinised through it.

It is to be noted that all the evil female spirits take refuge in nature. What they are transformed into - serpents, foxes and badgers; are nothing but animals from nature. These animals at the same time are also the embodiment of mischievousness. The serpents are attributed with the title of lust and jealousy, whereas foxes and badgers are attributed as tricksters. This constant use in classical Japanese folklore of denoting the same attributes to these animals has led to the creation of the ‘myths’ surrounding them. In

other words, the mythical stories have given the animals their mythical identity. In addition, these identities are also ascribed to women. This ultimately leads to the projection of women and animals as vindictive creatures that are capable of committing the most heinous deeds. The Ecofeminist, Greta Gaard acknowledges the persuasive power of literature. She mentions how broad social movements have been inspired by literary works like Harriet Beecher Stowe's *Uncle Tom's Cabin* (1852). She also believes that "literary critics are justifiably eager to contribute to the development of an Ecofeminist movement" (1996:2). This development and contribution from the Ecofeminist movement has to be an attempt at debunking the myths. As she pointed out, the persuasive power of literature is immense, and therefore the above discussed literary examples can prove to be dangerous.

Coming back to Great Gaard's comments - literature is persuasive. So, even if the writer has no vile motives in his representations of female spirits, he is presenting them as immoral nonetheless. As the work is considerably popular now, it might persuade readers into forming a stereotype about women spirits. This formation is problematic because while spirits are a subject of belief and non-belief, women likely will become a substitute for the evil spirits. This is where the role of Ecofeminism is crucial. Modern readers, who are aware of these ideas must carefully locate the misrepresentations of women in literature. Here, Ecofeminism is used instead of Feminism because here the concentration is more on the cruel supernatural women spirits that are a part of the natural world. Feminists have more or less successfully pointed out misrepresentations and also altered people's mindset. Now, the time is for Ecofeminism to do the same, as it is a rising movement. The task is again to recognise the stereotypical representations of women and the natural world. Akinari was unaware of the concept, but it is the modern readers and critical thinkers, who need to carry out the operation of rectifying the problematic rendering. As literature is persuasive, what can be done is to create works that will question the older writings. It will pose a challenge to the traditional notions and hopefully will also correct them.

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**Ecology for the Privileged: An Ecocritical Study of
Lakshmi Nandan Borah's *Kayakalpa***

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Abstract:

Heterogenous distribution of environmental resources throughout the centuries are being overlooked by the concept of Anthropocene as the capitalists have monopolized the profit generation lately. This selective Anthropocene has thus become a subject of scrutiny for encouraging fundamental injustice against the suffering majority at the expense of privileged few, who have eventually come to normalize environmental exploitation under the influence of long-gone colonial discourse. A postcolonial ecocritical lens yet again exposes the colonial perspective of considering "nature" as an "empty" space to resume their exploitation by disregarding the presence and acquisition of local communities. Ecocriticism does not confine itself within anthropocentric manipulation, it also revisits the generational oppression upon the socially, economically underprivileged group whose unfamiliarity with globalized market economy has become a prime factor behind the tyrannical subjugation.

**Keywords: Anthropocentrism, Capitalocene, Ecocriticism,
postcolonialism**

Introduction:

Extractivism is understood as a process that feeds accumulation by differentiated ways of removing and appropriating nature (natural resources) through differentiated levels of labour exploitation. Imperialism and colonialism's historical economic, social and environmental asymmetric and exploitative exchange relations shaped and paved the way for the current dynamics of global capitalism.

By analyzing the implementation and outcomes of green policies, this book shows that new strategies of capital accumulation arise through the creation of new commodities, markets, vehicles of accumulation and ways of legitimizing capital accumulation.

Natacha Bruna, *The Rise of Green Extractivism*

In this introduction to the concept of extractivism, Bruna envisages the impact of capitalists' diverse ways to extract the resources from indigenous communities as they implement green policies to firmly affirm their authority by questioning the traditional ecological practices. Exploring the repetitive pattern through the pages of history, one can easily comprehend the significance of postcolonial ecocriticism, further commencing on the ongoing inequalities towards the third world nations. Acclaiming the prestigious Saraswati award for *Kayakalpa* (2002), Lakshmi Nandan Borah intertwines the scientific endeavors of Dr. Kripalani and his ethics, as the clash between them duly persuades menace to the ecology.

The primary aim of this paper is to criticize the illegal anthropocentric acquisition of natural reserves as "resource grabbing" (Bruna) continues to be an outlandish yet a very familiar injustice to the autochthonous inheritance rights in global south. Additionally, it also focuses on the ill-effects of commodification of nature as selective anthropocentrism by the capitalists eventually invigorates authority upon the socio-economically marginalized group.

Discussion:

"Nature is nothing more than an anthropomorphic construct created by Wordsworth and the rest for their own purpose" (Coupe,171). Language plays a major role in constructing the superiority of human over the non-humans. The concept of 'nature' was tactfully constructed to establish the significance of the majority, who consider themselves to be the torchbearer of human civilization. Bate's book *Song of the Earth* (2000) argued that colonialism and deforestation have gone together, as both of these worked hand-in-hand to push the 'unrecognized' to the periphery and devalued them by disregarding diversity. To validate human's anthropocentric expedition, the scientific experiments enjoy the privilege to use nature as its personal laboratory. To strengthen Liu's controversial statement on nature, Dr. Bob Walters' Dream Laboratory can be considered as the concrete version of Wordsworth's poem. While the astounding depiction of Indian "culture" mesmerized him, the vulnerability of "nature" was yet to be known.

I never imagined such a depleted state of Indian villages. Would I be able to stay here? Would I acclaim any pleasure by staying here?
However, to be able to build a house containing all the amenities and live there would have been a better idea.

(Borah, *Kayakalpa* 64)

Rather than earning recognition for its authenticity, nature gets validated by technological advancement to promote economic activities, campaigned by media. Nature does not remain an entity of its own but becomes a major source of profit generation, which is achieved by making a distinction between nature as a daily society and a romanticized version of natural beauty (Kidner 2000, Gómez-Baggethun et al. 2010, Shoreman-Ouimet and Kopnina 2015). Bob Walters envisioned the rural India to be a part of his upcoming philanthropic project, that would eventually give rise to Third World Tourism in India. Third world tourism is another notable concept of ecocriticism as the capitalist countries confer the responsibility of eco-friendly livelihood to these nations while the benefits of anthropocentric world are solely enjoyed by the capitalists themselves. Dr. Watson is one such fine example, whose laboratory artificially provided the healing power of nature, yet he could not convince himself to completely adapt to it. A visible detachment from contact with nature has eventually made people apprehend the significance of reconnecting with natural ecosystems that can assure freedom from modern civilization, especially in Western European countries (Fletcher)

“Listen, I am disgusted with what we claim to be technological civilization.”

(Borah, *Kayakalpa* 58)

The concept of being close to nature remains a romanticized indoctrination by disconnecting the privileged society from the vulnerable authenticity of it. Walters’ curiosity to witness a “virgin tourist spot” (Borah, *Kayakalpa* 59) unveils their unhinged obsession with observing nature in its performative nature rather than conservating it as an obligation. As harmony prevails in Dr. Kripalani’s complimentary note on the village, he intentionally avoids commenting on the lack of irrigation, healthcare and other facilities by revealing their double jeopardy towards the underprivilege and the nature. While Dr. Kripalani admires nature for its pastoral beauty, he exposes his own contradictory stand by showcasing his interest on the cultured version of nature where he witnesses only the unbothered beauty and non-vulnerable side of nature. It can be considered as an ill influence of industrialization, urbanization and DSP that makes it challenging “for most individuals to physically experience nature in the sense of natural areas” by enhancing detachment and alienation from nature (Bogert et al., 2022).

The journey of Dr. Kripalani moves from the digital countryside of Watson’s Dream Laboratory to Amarendra Brahmachari’s hermitage in

Himalayan ‘scenic sublime’. Beneath the change in spaces, the anthropocentric motive remains visible to prove nature’s obligation for human benefit.

with the intention of conducting research on the floras found at the remote heights of the Himalaya, teams of Western tourist-scientists participate in these expeditions. Involvement of scientists from pharmaceutical institutions is not unfeasible either.

(Borah, *Kayakalpa* 134)

Polarization of ownership upon environmental substances leads to further exploitation. State protected forests contribute towards making deforestation a regional issue due to the irresponsibility of concerned authority. This repetitive pattern is widely visible throughout the world until they get recognized as a global issue, followed by pollution, global warming etc. To understand this ownership, one can consider it a political construct as casteism in India was a social construct made to exploit the marginals. Vandertop refers to Jason W. Moore’s term Capitalocene, while referring to the “ecocritical crisis to the historically specific operations of capital”, as the colonies were highly responsible for providing the “Four Cheaps” (253) to ensure profit for the colonizers.

To validate the unlawful extraction of indigenous properties in the form of knowledge and raw material, these privileged minority manipulated the majority and kept them underprivileged till date by exploiting their resources for their own advantage. Dr. Kripalani’s conversation with Dr. Watson unveils the bitter truth, as opposite to the struggles of farmers in agro-based economies, the capitalists get to enjoy its benefits. The series of criminal events leading from the theft of “Bacterium Anujium” by Bacteriologist Dr. Jerry Brown, further takes the readers to international treacheries. This relationship between human and nature is entirely based on instrumental values, as human put them on top of the hierarchical ladder as they institute subjugation of nature as human’s basic right (Shoreman-Ouimet and Kopnina).

Under the limelight of ecocritical perspective, the depiction of captive infrastructures provides a vague apocalyptic overview throughout the novel. As Dr. Kripalani chooses to “disconnect himself from the outside world” (Borah, *Kayakalpa* 36) by avoiding technology; Dr. Gehlot seeks for internet connection to escape from the cyber trap (Borah, *Kayakalpa* 91), all while

Janak Kumar had to digitally assassinate his robot guard to ensure freedom from the observation centre. On the other hand, Dr. Kripalani's diplomatic use of money could grant him freedom from the grasp of his abductors (Borah, *Kayakalpa* 203). The picturesque façade to culture the nature in all these hostage buildings prevents them from being exposed.

Language becomes a planned construct to alter the natural cycle. Janak Kumar was kept in a laboratory resembling the green-house under controlled statistics, while the concept of green house itself is an attempt to artificially capture the wilderness within a structure to feed human's post-structural doctrine. Janak Kumar becomes a prime example of "the domestic picturesque" (Barry, *Literary Theory* 255) due to his designation as a gardener and a "research sample" at Dr. Kripalani's residence (Borah, 154). Regardless of all the efforts, the civilized façade of Janak Kumar could not hide the wilderness within him. In an apocalyptic manner, he sacrificed himself for the betterment of a community that treated him selfishly based on his capacity to provide. Janak Kumar can be considered as the human portrayal of nature, as he is treated like a non-human by the benefactors of humanity. His deteriorated health and mind that eventually leads to self-destruction is the symbol of nature giving up on being the provider.

Although Anuj was stunned to see the magic of his medicinal potion, yet Janak Kumar's marvelous physique and strength terrified him... If Anuj fails to fulfil Janak Kumar's plea to set him free from the laboratory, then the latter is likely to strangle Anuj to death.

(Borah, *Kayakalpa* 155)

Revisiting the dilemma of the creature in Mary Shelley's *Frankenstein* (1818), Dr. Borah ignites a flame of terror through the "youthful" version of two guerillas. The ecocritical opinions to oppose the activities that could potentially harm the environment would not have been stronger, if scientific experiments were not conducted on the mute animals. Both, the "creature" of Victor Frankenstein and the sexually excited guerillas of Dr. Kripalani were the tragic outcomes of their creators' extraordinary brilliance. Nature is used as a hunting ground by the capitalists who are capable of claiming their ownership upon any creature available in our environment: "The prime component of all research is curiosity" (Borah, *Kayakalpa* 146)

Although the endless trial to suppress the non-human remains constant, yet Janak Kumar's becomes their representative despite belonging from the

exploiters' race. The character of Janak Kumar has been marginalized to such an extent that besides dedicating himself as a "research sample" for the development of medical science, he could not find any better reason to stay alive. He is the embodiment of mute non-human beings who possess no voice to protect themselves.

As the global capitalization of ecology encourages its agents to gain control over both flora and fauna yet available in nature, Dr. Kripalani's perspective discloses the hypocritical objective behind it. According to the data extracted from Peta, more than 774 thousand animals were held captive in laboratories and in Great Britain itself, 2.64 million scientific procedures were conducted involving living animals in the year 2024, as per the official annual statistics released by the Home Office (2025). Nature and the elements found in it should have been democratized, in fact, they were, until these neutral goods turned into something valuable with knowledge. This selective Anthropocene, therefore, has been repeatedly marginalizing the socially, economically and politically underprivileged, and bestowing opportunities predominantly to the capitalists. Referring to the practice of animal husbandry and scientific breeding of guerillas, capitalist scientist like Dr. Kripalani commends it as a "fast growing profitable business". Needless to comment, because instead of animals, he illegally extracted saplings from the remote heights of the Himalayas. However, the use of "illegally" is ironical due to the ongoing deforestation of those supposedly reserved areas. This puts Dr. Kripalani out of question because he was preserving a shrub from the face of extinction (Borah, *Kayakalpa* 141).

Anthropocentrism not only places humans above nature, but it is also related to the concept of cultural determinism, which assumes that society is shaped by cultural perceptions (Shoreman-Ouimet and Kopnina 2015). To validate this argument, we ought to reconsider the remarks left by Nayana Narlikar on her husband Dr. Anuj Kripalani. Although social establishment is forever fluctuating, Dr. Kripalani's dedication to alter this perception is primarily the prelude of this novel.

You may choose to be a dog in the mating season, but my dignity does not permit me to be a bitch.

(Borah, *Kayakalpa* 184)

A society's perception of natural cycles of nature exhibits their morality, the schema, that they are likely to abide by during the moment of crisis and

in abundance. The phrase “mating season” does not solely represent the reproductive period but it also serves the purpose as an artificial way of holding onto one’s disorderly physical needs. Although scientific advancement receives compliment for such discovery, yet we ought to realize how environmental manipulation has resulted in mankind’s desired outcome. Ajanta Dikshit’s lost youth can be considered as an emotional manipulation (Borah, *Kayakalpa* 103), whose personality resembles with the nourishing quality of nature who would rather provide selflessly than safeguarding her own interest. In both of these instances, defenseless nature and defenseless human loses their identity. An uncanny resemblance between Dr. Kripalani as a person and as a scientist is seen through colonial perspective. The colonizers’ obsession with considering the colonies “empty” in knowledge and wisdom is reflected in the actions of Dr. Kripalani and other Western-scientists. Both Ajanta Dikshit’s ideology and Amarendra Brahmachari’s wisdom were the prime elements to reverberate Dr. Kripalani’s insight into reconnecting with nature, which were vital to regain his consciousness and let go of the research shaped by revenge and curiosity. It is evident that a capitalist agenda with a colonial mindset to establish ownership upon nature is prone to become the subject of scrutiny, as one exhibits this exploitation within a broader framework.

Conclusion:

Therefore, Lakshmi Nandan Borah’s *Kayakalpa* is not only a novel containing human’s uncontrollable greed under the influence of over-consumption, but it also shades light on the ill effects on ecology as we start following the consumerist model of capitalism.

The consequences of environmental degradation, therefore, is eventually impacting the entire globe whereas the uneven distribution of these resources is an irony to the situation. Amongst these benefactors, majority of them live in the industrialized developed nations and the minorities are the most privileged residents of other developing nations’ urban elites’ area. Whereas equal access to and distribution of natural resources should have been a fundamental right under the umbrella term of democracy, yet the privileged few are partaking environmental exploitation at the expense of the deprived majority. Needless to mention, but sustainable livelihood is yet a foreign concept to them. Hence, this complex arrangement highlights the need of reviewing ecocriticism with a varied version of anthropocentric view on the basis of socio-economic disparity.

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**Nature as Memory and Spirit: Reading Janice Pariat's
'A Waterfall Of Horses' through Ecocriticism**

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Abstract

This paper studies eco-consciousness in Janice Pariat's short story "A Waterfall of Horses", from her collection *Boats on Land*, through the point of view of ecocriticism. The story is set in the Khasi hills of Northeast India and it delineates the complex relationship between humans and their natural environment. It further delineates the sceneries as backdrops and also as living presences that shape memory, identity, and ethical consciousness. Through close reading, thematic analysis, and ecocritical interpretation, the study analyses how Pariat combines oral traditions, local language, and cultural memory to convey ecological and moral awareness. Nature functions as both memory and spirit which then preserves communal histories that guide human actions and reflect their responsibilities. The story also highlights the limitations of language in fully capturing lived reality and emphasises the potency of oral narratives in transmitting ecological and cultural knowledge. More than that, the narrative binds magical realism with historical and social contexts and illustrates the ethical and ecological consequences of human actions within the environment. Through its complex portrayal of human-environment interconnectedness, ethical complexity, and regional specificity, Pariat's work contributes to a broader understanding of ecological literature in India. This paper shows that literature can serve as a vital medium for sustaining ecological consciousness which links cultural memory, ethical reflection, and environmental stewardship.

Keywords: Ecocriticism, Northeast India, Oral traditions, Nature and memory, Humanenvironment relationship, Magical realism

Introduction

William Wordsworth as a central figure of Romanticism, laid emphasis on the moral, spiritual, and educational power of nature. In “The Tables Turned”, he famously urges: “Come forth into the light of things, / Let Nature be your teacher,” (Wordsworth 258) which suggests that direct engagement with the natural world cultivates wisdom, memory, and ethical awareness. For Wordsworth, nature is a backdrop for human activity and also a living presence that shapes thought, nurtures the imagination, and preserves cultural and ecological and cultural consciousness, that links human life with the rhythms, histories, and spirits of the environment.

S.T. Coleridge, another pioneering figure of Romanticism, delineated the imaginative and moral dimensions of human engagement with nature. In *Biographia Literaria*, he writes about the role of the poet in perceiving “the living spirit of nature” (Coleridge 304) and mediating its ethical and spiritual significance to society. For Coleridge, observing and reflecting on the natural world cultivates ethical awareness and a sense of responsibility towards it. His conceptualisation of nature as a living, dynamic force forms an early theoretical framework for ecocriticism, and that acts as strong tools to examine how literature can encode ecological ethics, spiritual memory, and human interconnectedness with the environment.

Eco-consciousness is defined as an ethical factor known for a strong awareness of the environment and its ecological processes. It consists of an individual’s knowledge, attitude, and behaviour regarding the environment and the internal relationship between humans and nature. This concept rears an ecological view point that prioritises paying attention to environmental cues that guide communities towards a path of sustainable survival and development through a recognition of their deep interconnectedness with the natural world.

The relevance of eco-consciousness in literature is noticeable through the way in which traditional wisdom, ancestral knowledge, and ecological ethics are deeply embedded, preserved, and transmitted through folktales, myths, and oral narratives. In Northeast India, folktales such as the Khasi

story of Ka Lukhimai, the Assamese tale of Tejimola and many other folktales reflect a grave awareness of the natural world. These folktales often depict human interactions with forests, rivers, and other natural elements that reveals the consequences of disrupting ecological balance. Through such stories, communities encode complex lessons about respect for nature, sustainable resource use, and the spiritual significance of the environment. Thus, literature functions as an important medium for sustaining and reinforcing ecological consciousness across generations that links cultural memory with ethical care for the natural world.

Janice Pariat is a contemporary Indian English writer whose works often reflect ecological consciousness which is based on her experiences growing up amidst the natural beauty of Assam and Shillong. *Boats on Land* by Pariat is a collection of short stories that often explores human relationships with memory, place, and nature. “A Waterfall of Horses”, one of the stories in this collection, evokes nature as a living presence, and that shapes identity, memory, and the spiritual sensibilities of its characters.

Northeast India is the easternmost region of the country. It stands out for its astounding natural beauty and rich, distinctive cultural heritage. Despite its beautiful landscapes: towering hills, serene lakes, lush valleys, and winding rivers: the region remains relatively unexplored and often overlooked. Janice Pariat’s debut work, *Boats on Land: A Collection of Short Stories*, deals sensitively into the historical, cultural, and social dimensions of Northeast India, that binds together its unique traditions, everyday life, and the grave connection between people and their environment.

Objectives

The paper aims to:

- Examine the representation of nature as memory and spirit in Janice Pariat’s “A Waterfall of Horses”.
- Explore how ecological ethics and human-nature relationships are encoded in her narratives.
- Analyse the influence of regional folklore and cultural memory on Pariat’s ecological imagination.

Methodology

The study adopts a qualitative, literary-analytical approach, which focuses on close textual interpretation. The primary text for analysis is Janice Pariat's *Boats on Land*, with particular emphasis on the short story "A Waterfall of Horses". Secondary sources include ecocritical theory texts and scholarly studies on Northeast Indian folktales. The research conducts close reading, which involves careful, detailed analysis of the text to uncover layers of meaning; thematic analysis, used to identify and examine recurring motifs and ideas such as nature, memory, and spirituality; and ecocritical interpretation, which interprets the text through the lens of human-environment relationships and ecological ethics. These tools together help light up the way in which Pariat's narratives encode ecological consciousness and the interconnection between humans and nature.

Results And Discussions

Ecocritical Analysis Of Janice Pariat's "A Waterfall Of Horses"

Janice Pariat's short story "A Waterfall of Horses" is a part of her collection *Boats on Land*, gives us an important material for ecocritical reading that binds human experience, cultural memory, and the natural environment. Set in the village of Pomreng in the 1850s, the story situates itself in Northeast India, specifically the Khasi hills, a region known for its lush landscapes, rivers, and forests. The choice of setting is itself ecocritical: it reflects the geographic and ecological specificity of the region but also the ways in which human memory, culture, and identity are crocheted with the natural world. Through a detailed close reading of Pariat's language, narrative techniques, and thematic concerns, the story emerges as an exploration of nature as memory, as spiritual presence, and as an ethical framework guiding human interaction with the environment.

Nature As Memory And Cultural Repository

One of the most significant features of "A Waterfall of Horses" is the manner in which natural landscapes serve as vessels of memory. The story is narrated by an unnamed child narrator and it positions the reader within the lived experiences of the village, where hills, rivers, and forests are background sceneries and they also actively participate in the preservation and

transmission of cultural memory. Pariat's use of oral narrative which is emphasised by the child narrator that recounts the story second-hand, reflects the larger theme of oral traditions as custodians of collective memory. The story probes questions such as "how much more accurate, and potent, are oral traditions as compared to the written word?" and "how much of our reality cannot be conveyed at all through language?" By incorporating snippets of Khasi, left untranslated, like "Ka ktien" Pariat delineates the limitations of written language in fully capturing local realities, while she simultaneously delineates the deep rootedness of culture and memory in oral practice. The environment: forests, rivers, and village landscapes: acts as a mnemonic device, that anchors memory and allows the past to persist through spatial and ecological continuity.

The ecological consciousness in Pariat's narrative is reverberated by this connection between memory and environment. The Khasi hills and village settings are depicted with an atmospheric attention that conjures both pastoral beauty and historical specificity. The hills are not passive; they absorb, retain, and reflect human histories, from colonial intrusion to local resistance. By encoding memory within the environment itself, Pariat aligns with ecocritical perspectives that regard landscapes as active participants in cultural and ethical processes, that amplifies the Romantic emphasis on nature as both moral and mnemonic agent.

Nature As Spiritual Presence

Nature in "A Waterfall of Horses" also functions as a spiritual presence which is closely connected to its role as a repository of memory. The story includes elements of magical realism, particularly through the villagers' resort to black magic in response to the threat posed by colonial figures. In Indian cultural understanding, black magic carries consequences for its victims and also for its practitioners which delineates an ethical dimension inherent in engagement with unseen natural and spiritual forces. Pariat's delineation of these forces places the environment as morally and spiritually responsive: humans cannot act upon it without repercussions. This narrative strategy shows the ethical knot between human actions and the ecological and spiritual worlds, and that reflects the Romantic idea, articulated by figures like Wordsworth and Coleridge, that nature is imbued with a living, instructive spirit.

The atmospheric descriptions of the village landscape further strengthens this spiritual dimension. Pariat shifts between idyllic pastoral scenes and depictions of desolation, which reflects the moral and emotional states of her characters. The hills and rivers matches with the human experience; they are crocheted with the narrative of cultural resilience, the consequences of colonial intrusion, and the ethical complexities of using supernatural forces. In this sense, nature serves as both mirror and agent, shaping identity and moral consciousness, while it simultaneously delineates human responsibility toward the environment.

Human-Nature Interconnectedness And Ecological Ethics

Pariat's story also focuses on the ecological ethics through human-environment relationships. The villagers' actions are set against a scenario which is connected to historical and cultural resonance, suggest an implicit ethical code: engagement with natural and spiritual forces carries consequences, and community well-being is contingent upon respecting these forces. The black magic episode exemplifies this principle. While it is a fantastical narrative element, its ethical weight reflects ecological reality: misuse or disruption of natural forces: symbolized here through magical intervention, has repercussions, and this reflects broader principles of sustainability and environmental responsibility.

More than that, the narrative lays emphasis on how the environment structures daily life and social interactions. The Khasi language embedded in the text, the depiction of local customs, and the vivid portrayal of village life delineates a profound interconnectedness between human society and its ecological setting. Through these elements, Pariat points to a subtle environmental consciousness: the natural world is a living, ethical space, inseparable from human experience, memory, and culture. By bringing the specificity of Northeast Indian sceneries and cultural practices to the fore, the story challenges universalised, homogeneous representations of nature and culture and focuses on the importance of localised ecological knowledge and ethical engagement.

Oral Tradition, Language, And The Limits Of Expression

A distinctive feature of the story is its meditation on oral traditions and the limitations of language. The story probes the question of how much

reality can be captured through written words, and how oral traditions might convey truths inaccessible to conventional textual forms. This thematic concern aligns with ecocritical theory which recognises alternative modes of knowing and experiencing the environment. Oral narratives are gravely tied to place, culture, and ecological context; they show both ethical and ecological awareness that written texts may fail to fully convey. By including untranslated Khasi words and relying on a second-hand child narrator, Pariat delineates the enormous complexity of human-environment interactions, revealing how ecological and cultural consciousness is transmitted through both speech and experience, rather than solely through language.

Through this narrative strategy, Pariat shows the intimate bond between humans, language, and the environment. The story suggests that some aspects of ecological and cultural reality, whether the moral consequences of black magic, the rhythm of village life, or the historical presence of colonial forces: can only be apprehended through lived experience in a particular scenario. This reinforces the ecocritical perspective that knowledge of the environment is not abstract but deeply intertwined with memory, culture, and ethical sensibilities.

Subversion Of Binary Narratives And Ethical Complexity

Another important aspect of Pariat's ecological and cultural vision is her dynamic portrayal of human agents within historical and environmental contexts. While the story is set during the British colonial period, it avoids simplistic binaries of Indian good versus British bad. Characters are portrayed with ethical complexity which shows that human behaviour: like interaction with the natural world: is morally complex and conditional. This reflects the ecological principle that human-environment relationships are complex and dynamic, and so it resists simplistic moral categorisation. By knitting in magical realism, historical context, and the ethical aspect, Pariat situates ecological consciousness not as an abstract ideal but as lived, culturally grounded, and morally textured.

Conclusion

In "A Waterfall of Horses", Janice Pariat shows how literature can act as a medium for ecological awareness, moral reflection, and cultural memory. Through her atmospheric delineation of the Khasi hills, incorporation of oral

traditions, ethical framing of magical realism, and dynamic characterisation, the story depicts nature as both memory and spirit and shows the interdependence of human and environmental systems. Pariat's narrative strategy points out the limitations of language in conveying ecological and cultural truths while celebrating the power of oral storytelling to preserve ethical and ecological consciousness. By placing her story within the specific landscapes and cultural traditions of Northeast India, Pariat expands the terrain of Indian English literature and also contributes to a global dialogue on literature, ethics, and ecological awareness.

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A Study of Individual Carbon Footprint and Eco-Consciousness in the Student Population of Duliajan

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Abstract: Carbon footprint (CF) refers to the total greenhouse gas emissions, expressed in carbon dioxide equivalents (CO₂ e), resulting from human activities. At the individual level, carbon footprint reflects the environmental impact of personal lifestyle choices such as energy consumption, transportation patterns, food habits, and waste generation. Assessing individual carbon footprints is essential for understanding the role of everyday behaviour in climate change mitigation. The present study was conducted to assess the individual carbon footprint of the students in Duliajan and check the eco-consciousness levels among the literate student population of Duliajan. The study follows a quantitative research design and is based on primary data collected from 50 undergraduate students aged 19-22 years belonging to middle- and lower-income groups in a semi-urban setting. Data were gathered using the WWF carbon footprint calculator, a structured Google Form-based questionnaire, and selective personal interviews. The findings reveal that eco-consciousness levels among students are considerably low despite existing government and institutional (top-down) interventions. This indicates the need for a shift in individual mindset towards environmental responsibility. The study concludes that an effective reduction in individual carbon footprint requires a synergistic integration of top-down policy measures and bottom-up behavioural change.

Keywords: Carbon footprint, Climate change, Eco-consciousness, Sustainability, Youth.

Introduction:

A carbon footprint refers to the total amount of greenhouse gases- primarily carbon dioxide (CO₂), but also methane (CH₄), nitrous oxide (N₂O), and other emissions- released directly or indirectly by human activities. These gases trap heat in the atmosphere and contribute significantly to global warming and climate change. A carbon footprint can be calculated for an

individual, household, organization, community, product, or even an event, depending on the scale being assessed. It includes emissions from everyday actions such as using electricity, cooking, traveling by car or air, manufacturing goods, managing waste, and producing food. At a broader level, industries, transportation networks, energy production systems, and agricultural practices also contribute heavily to overall emissions. Measuring the carbon footprint helps identify which activities or sectors generate the highest emissions, enabling individuals and policymakers to adopt strategies for reduction. For example, using renewable energy, improving fuel efficiency, practicing sustainable agriculture, reducing consumption, and promoting recycling can significantly lower emissions. A lower carbon footprint generally indicates more sustainable living and production patterns, whereas a higher footprint signifies practices that place greater strain on the environment. As climate challenges intensify globally, understanding the concept of a carbon footprint becomes essential for developing effective mitigation policies and encouraging responsible behavior. It also helps countries and institutions track their progress toward international climate goals such as those outlined in the Paris Agreement. Ultimately, recognizing and reducing carbon footprints is crucial not only for environmental preservation but also for protecting public health, enhancing energy security, and ensuring long-term ecological balance. The research study of individual carbon footprint of students in Duliajan College is necessary because it plays a crucial role in raising awareness and environmental consciousness among college students, who are future decision-makers and responsible citizens. Understanding the concept of carbon footprint will help students recognize how their daily choices- such as transportation, energy use, consumption habits, and waste generation- directly impact the environment and what they can do on the individual level to contribute to environmental sustainability.

Objectives of the Study:

- To calculate the individual Carbon Footprint of collage going students of Duliajan.
- To compare how they stack up against the current global average of 4.7 tons CO₂e/person/year.

- To identify high emission areas and make lifestyle changes in order to reduce personal Carbon Footprint in an effort to align it with the global benchmark of sustainable personal Carbon Footprint of 2 tons CO₂e/ person/ year by 2050.
- To access the current eco-awareness levels among the College students.

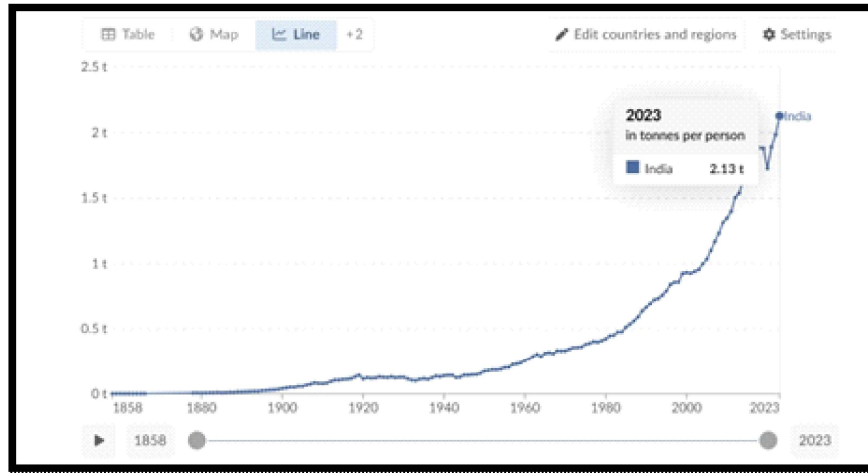
Methodology:

The study is conducted with 50 respondents who are college students aged between 19 and 22 years, belonging primarily to middle- and lower-income groups in a semi-urban area. The research follows a quantitative analysis approach and is based on the following methodology:

- **Carbon Footprint Calculator:** A standardized carbon footprint calculator (<https://footprint.wwf.org.uk/>) was used to assess the individual carbon emissions of students based on their lifestyle patterns, including energy use, transportation, food habits, and waste generation.
- **Google Form–Based Questionnaire:** A structured questionnaire was administered through Google Forms to collect quantitative data on students’ daily activities, awareness levels, and attitudes towards environmental sustainability.
- **Personal Interview Interaction:** One-to-one interviews were conducted with selected students of Duliajan College.

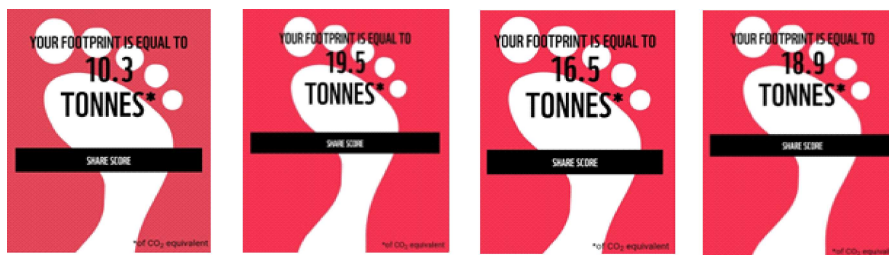
Analysis:

The ideal maximum carbon footprint required to prevent severe climate change and limit global warming is widely considered to be less than 2 tons (as against the current Carbon Footprint of 4.7 to 4.8 tonnes per year according to the International Energy Agency) of CO₂ equivalent (CO₂e) per person annually. This threshold is regarded as the sustainable per capita limit that individuals should strive to remain below in order to support global climate goals and reduce environmental stress. This target (is to be achieved globally) aligns with the Sustainable Development Goal 13 (SDG 13), “Climate Action” which calls for urgent action to combat climate change and its impacts in line with the Paris Agreement. However in case of India, according to the article “India: CO₂ Country Profile”, published in *Our World in Data* the CO₂ emissions per person annually is above 2 tons (2.13 t as per 2023 data).



Data Source: <https://ourworldindata.org/co2/country/india>

Based on the Carbon Footprint Calculator, in our study it was observed that among the 50 respondents, all of whom were college students between 19 and 22 years of age, the average carbon footprint recorded was markedly higher than not only the global average Carbon Footprint but also more than the current average Carbon Footprint of India. Every respondent exceeded the sustainable threshold, highlighting a concerning pattern of high-emission lifestyles even within a semi-urban student population of middle- and lower-income groups.

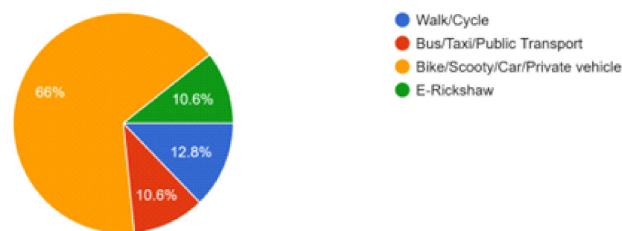


Sample of Results generated from Carbon Footprint Calculator (The average being 10.98/Person/Year)

Questionnaire to analyze reasons (Lifestyle) behind high Carbon Footprint Emission:

Besides the Carbon Footprint Calculator, a questionnaire was designed to analyze the reasons behind the high Carbon Footprint noticed amongst the students. Following are the questions and the responses based upon the questionnaire followed by the analysis of the responses:

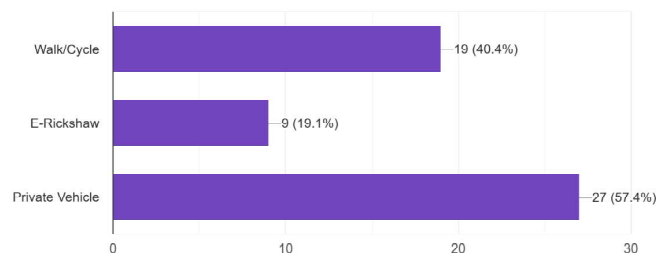
Q1: How do you usually come to College?



It is observed that 10.6% of the respondents use E-Rickshaw, 10.6% use Bus/Taxi/Public Transport, 12.8% of respondents walk/cycle and a majority, i.e., 66% use Private Vehicles like Bike/Scooty/Car, etc. for daily transportation, due to the non-accessibility to a robust public transportation system thereby contributing to the high carbon footprint as observed by the carbon footprint calculator.

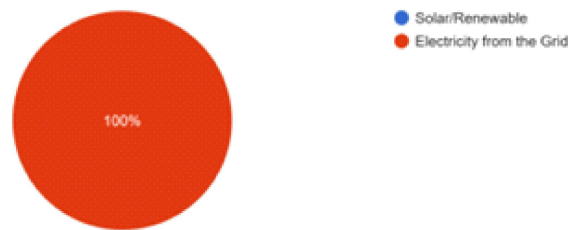
Q2: When going short distances (less than 2 kms), what do you usually choose?

2. When going short distances (less than 2 km), what do you usually choose?
47 responses



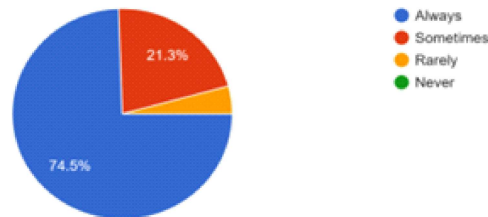
From the above data it is figured out that even in case of short distances, majority i.e., 57.4% opt for private vehicles. Only 19.1% use E-rickshaws and 40.4% opt to walk/cycle.

Q3: What type of electricity is mainly used at your home?



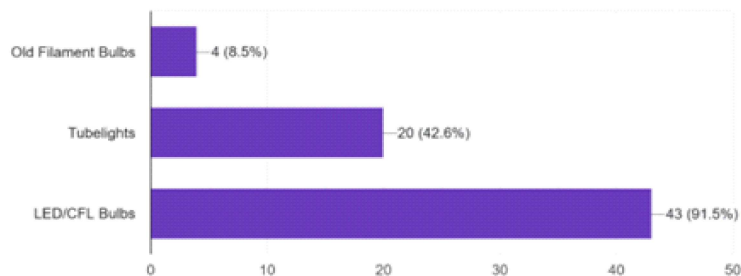
The above data clearly states that 100% respondents use electricity from the grid (generated by thermal power plants and some energy generated by Oil India Limited through fossil fuels). In Duliajan and its surrounding areas the prevalence of solar/renewable energy either in houses or institutions is not seen.

Q4: Do you switch off lights, fans, chargers when not in use?



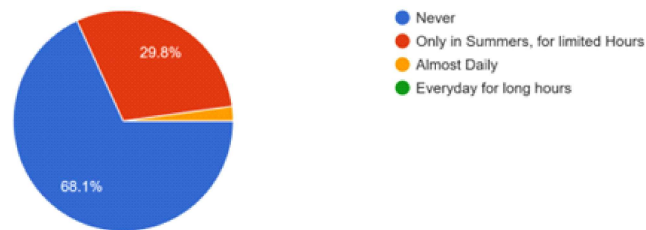
Based on the given response, it is observed that 74.5% of participants reported that they always do so. When asked why, the primary reason given was cost-cutting- as people are generally concerned about reducing personal expenses. On further analysis it was found that the eco-consciousness levels were absent or minimal in most cases.

Q5: What type of bulbs do you mostly use at home?



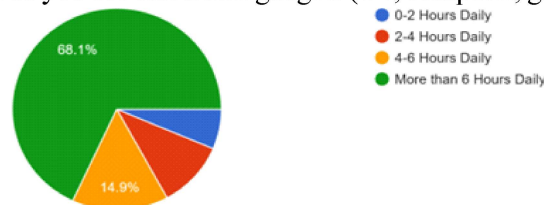
One positive finding is that most respondents, i.e., 91.5% use CFL bulbs. On personal interview it was found that CFL bulbs were preferred over traditional bulbs and tube-lights, to cut electricity cost. There was no conscious environment related concern in this regard as well.

Q6: How often do you use air conditioning (AC)?



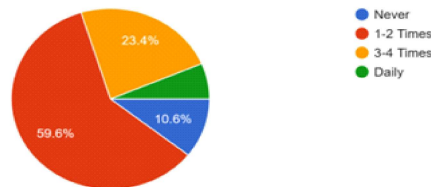
68.1 % said they never do, and in follow-up personal interviews a large portion said they simply do not have an AC at home. This aligns with global research, as stated in the article ‘Air Conditioning and Inequality’, showing that ownership and usage of AC is strongly linked to income level: wealthier households are far more likely to have and use AC than lower- or middle-income ones. In the article ‘The Impact of Air Conditioning on Residential Electricity Consumption across World Countries’ published in *The Journal of Environmental Economics and Management* confirm that once households adopt air conditioning, their electricity consumption jumps significantly (on average by ~36 %). As AC usage spreads with rising income and living standards, overall residential electricity demand for cooling and associated carbon-dioxide emissions are projected to double globally by 2050. (Nature Communications). Because many of the respondents belong to lower or middle income groups they lack AC at home, thus their carbon footprint remains comparatively lower in this regard. In the absence of eco-consciousness as seen above, (in case of increased affluence) the Carbon Footprint will climb automatically.

Q7: How often do you use electronic gadgets (TV, computer, gaming, mobile)?



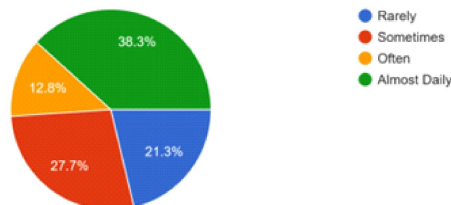
It is observed that the majority- 68.1% of participants engage in using electronic gadgets for more than 6 hours. Electronic gadgets contribute significantly to carbon footprint through energy-intensive manufacturing (mining, processing, etc.), high operational energy use (electricity for devices, data centers, streaming) and massive E-waste. Digital tech emissions are a growing concern, potentially doubling by 2025 if unchecked, impacting climate change.

Q8. How often do you eat meat in a week?



A majority- 59.6% consume meat 1-2 times weekly, while 23.4% consume 3-4 times weekly with a significant amount of respondents consuming meat on a regular basis. Non vegetarian diets (high in red meat) have a significantly larger carbon footprint than vegetarian and vegan diets due to resource intensive animal agriculture, leading to more greenhouse gas (GHG) emissions from food, land-use, deforestation and waste.

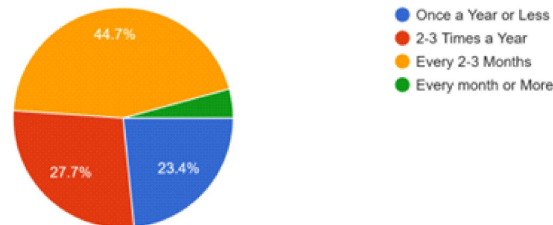
Q9: How often do you eat packaged snacks (chips, chocolate, soft drinks)?



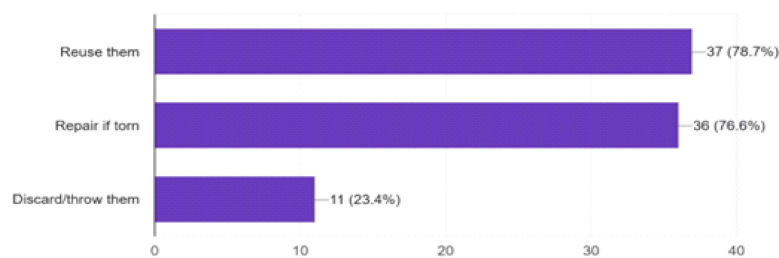
According to the collected data, a significant proportion of respondents regularly consume packaged snacks: 38.3% almost daily, 27.7% sometimes, 12.8% often, and only 21.3% rarely. This pattern of consumption has important environmental implications. Packaged snacks carry a substantial carbon footprint, largely due to the packaging itself—raw materials alone account for nearly 50% of total packaging-related emissions. Additionally, the transportation of packaged food items, including deliveries through services like Swiggy and Zomato, further increases emissions. Food waste and

discarded packaging materials also contribute to greenhouse gases such as methane, which is more potent than carbon dioxide. Moreover, the production of processed food relies on energy-intensive manufacturing processes and agricultural practices involving chemical fertilizers, extensive land use, and high resource consumption. Overall, frequent consumption of packaged snacks indirectly amplifies carbon emissions across multiple stages- from production and packaging to transportation and waste management.

Q10 (a): How often do you buy new clothes?

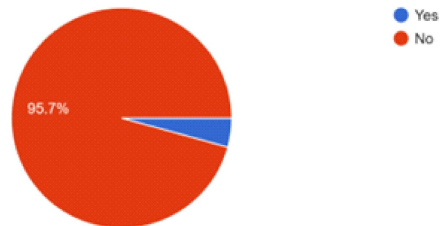


Q 10 (b): With regards to used clothes, which one would you prefer?



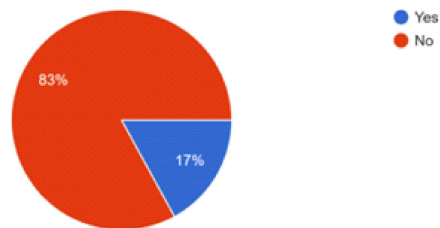
In response to the question, “How often do you buy new clothes?”, it is seen that the consumption of clothes is high and almost 23.4% of clothes were discarded or thrown away, adding to the garbage. Also, the data indicates a strong tendency toward reuse and repair, which is encouraging from a sustainability perspective. Such practices are often associated with lower and middle-income groups, where frugality is a necessity. This also reflects a broader pattern observed in environmental studies: higher-income groups typically generate a larger carbon footprint, partly due to higher consumption levels, including frequent clothing purchases. In contrast, lower-income groups tend to follow more sustainable habits like reusing and repairing, which naturally help reduce overall carbon emissions.

Q11: Do you purchase sustainable items?

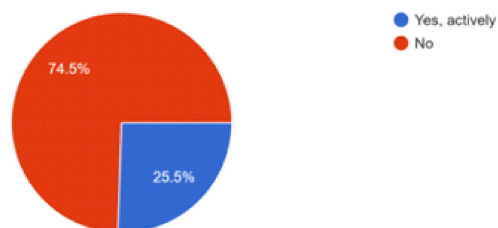


The statistics reveal that almost 96% of the population here is not aware/conscious of sustainability while purchasing items/products. This reflects the low eco-sensitivity and awareness of the concerned population.

Q12 (a): Are you aware of your carbon footprint?

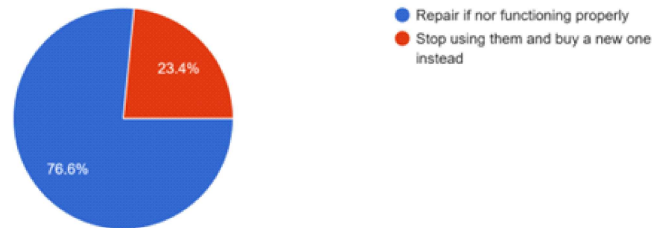


Q12 (b): Do you consciously take steps to reduce it?

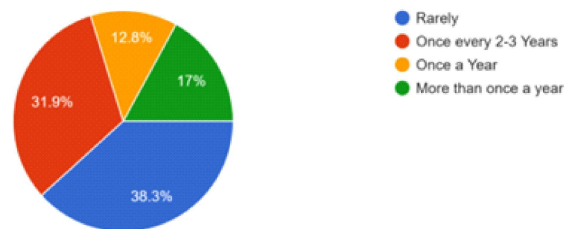


From the above data, it is seen that 83% of the respondents are totally unaware of the concept of carbon footprint and 74.5% revealed that they never took any steps to reduce their Carbon Footprint as they are not aware of the same. From the analysis it becomes clear that majority of the respondents lacked the eco-consciousness despite their literacy levels.

Q13 (a): With regards to gadgets, which one would you prefer?- Repair if not functioning properly/Stop using them and buy a new one instead?

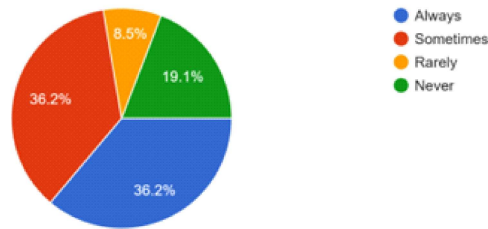


Q13 (b): How often do you buy new gadgets (phone, laptop, headphones, etc.)?



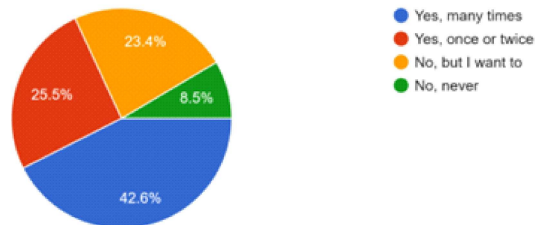
With regards to buying new gadgets, 76.6% opted to go for repairing and reusing the gadgets if it does not function properly. Though these are sustainable practices it may have more to do with the low income levels rather than eco-consciousness. The data also reinforces the results of research studies which show that carbon footprint is higher in higher income groups. An authentic and widely cited analysis on Carbon Footprint of different income groups (reports by Oxfam International and the SEI-Stockholm Environment Institution, particularly the 2023 report “Climate Equality: A Planet for the 99%”) shows that high income groups have a significantly larger footprint than low-income groups- both globally and within individual countries.

Q14: Do you separate waste at home (dry/wet, recyclable/non-recyclable)?

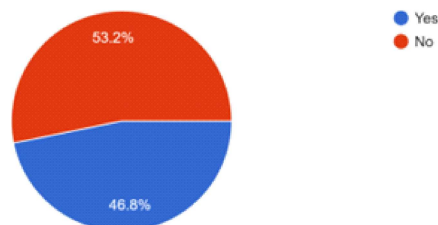


Though a majority- 36.2% did separate solid from wet waste, on personal interview it has been figured out that there is no waste management project or recycling plant functioning in the locality. Some of the solid waste are sold off for recycling (to units which are not local) and most of the other solid and wet waste are disposed off in vacant lands, drains, etc.

Q15 (a): Have you ever planted a tree yourself?

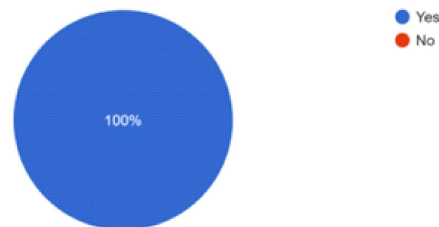


Q 15(b): Have you kept track of the survival/growth of trees planted by you?

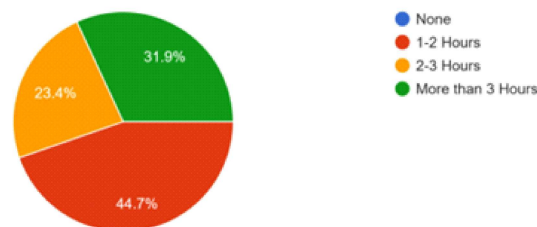


Majority-42.6% planted trees themselves many times but almost an equal majority-53.2% responded that they never kept a track of their survival. The plantation of trees may be more because of the mandatory tree plantation programme for college admissions as per government policy. Since there was no such policy to keep track of their survival it is obvious that a large majority responded that they had never kept track of the same. Thus, the practice of tree plantation emerged more of a mandatory exercise rather than being prompted by eco-consciousness.

Q16 (a): Do you feel rejuvenated when you are in the midst of greenery/nature?



Q16 (b): How much time do you spend relating to Nature?



From the above data it is clear that 100% of the respondents feel rejuvenated by nature. However, their lifestyles reveal that time spent in nature for majority of them is minimal, i.e., restricted to 1-2 hours. This could be due to modern lifestyles and screen focused lives- like increased engagement with electronic gadgets, social media, rapid urbanization and industrialization- that physically separate us from natural experiences leading to diminished understanding and appreciation of ecosystems. Modern lifestyles prioritize indoor, digital and consumer driven activities over outdoor engagement, causing a cultural shift where nature is seen as separate from humanity rather than integral to it.

Suggestions:

The recommendations emerging from this study operate at two interconnected levels. At the individual level (bottom-up approach) is essential, where people consciously adopt lifestyle changes, become aware of their personal Carbon Footprint, and take active/proactive steps to reduce it. Equally important is the policy level (top-down approach) in which the government and institutional bodies implement stronger regulations, infrastructure support, and environmental policies to curb Carbon Footprint at the systemic level. Together, these two approaches can create a comprehensive pathway for meaningful and sustained carbon reduction. Following are the suggestions:

A) Individual Level(Bottom-Up Approach):

- Restrict the use of private vehicles for both long and short distances, and rather opt for public transport, vehicle pooling, cycling, or walking whenever possible. This shift can significantly reduce unnecessary fuel consumption and lower overall carbon emissions.
- Install solar panels on individual roof tops for power generation, if possible.
- Tree plantation and continuous maintenance for survival.
- Reduce meat consumption by choosing lower-impact protein sources such as plant-based proteins, legumes, tofu, and other sustainable alternatives.
- Opt for locally sourced food whenever possible and avoid packaged and processed food as packaged and processed foods increase Carbon Footprint because they require more energy for manufacturing, packaging and long-distance transportation and they generate plastic and packaging waste that adds to carbon emissions.
- Making sustainable clothing choices- such as opting for organic cotton, organic dyes, handlooms and adopting a minimalist wardrobe- can significantly reduce the carbon footprint generated from fashion and textile consumption. Reuse and recycle textile waste.
- Single Use Plastics (SUP) increase carbon footprint because they are made from fossil fuels, require high energy for production, are used briefly and create long-lasting waste that adds to river and land pollution and emissions of greenhouse gas. Therefore, conscious restrictions of SUP should

be practiced. For eg.: Carrying environment friendly shopping bags may be opted for while shopping.

- Encourage a conscious and mindful reconnection with nature in daily life, through simple practices such as spending time outdoors, engaging with green spaces, and appreciating natural surroundings. Such habits foster environmental responsibility and strengthen personal commitment to sustainability.
- Take conscious steps to participate as environment stewards by promoting practices such as- engaging in neighborhood cleanup, tree plantation and maintenance, support environmentally responsible business, support local artisans, growing native plants and herbs/vegetables at home which require less water and maintenance.
- Be aware and create awareness on personal waste (through wet-dry segregation) management and proper disposal.
- Be mindful of digital habits by deleting old emails, unsubscribing from unnecessary newsletters, and watching videos in lower resolution or downloading content when possible. As deleting old emails reduces carbon footprint because emails are stored on energy-consuming data servers. Fewer stored emails mean less energy is needed for storage, backup and cooling in data centers, which lowers electricity use and CO2 emissions. Choose greener technologies by opting for energy-efficient or remanufactured devices.

B) Top-Down Approach:

- In Duliajan and its surrounding areas, the lack of robust public transportsystem compels people to rely heavily on private vehicles. The government should therefore strengthen and expand public transport services, making them more reliable, affordable, and accessible. Additionally, dedicated cycling lanes and well-maintained roads should be developed to encourage safe and sustainable mobility options such as cycling.
- Demand Corporate Responsibility: In a place like Duliajan, where ample open land is available, institutions such as OIL and other mega companies can play a significant role through their CSR (Corporate Social Responsibility) initiatives. They may install solar panels in unused or vacant areas, enabling the generation of substantial amounts of renewable energy.

Investment in development of community solar/wind energy programmes through creation of Solar/WindFarms can further strengthen local sustainability efforts and reduce dependency on non-renewable sources.

- Awareness on proper waste-management practices must be strengthened through institutional initiatives. Local recycling units for wet waste, solid waste, and e-waste should be established to ensure systematic processing of waste products. Scientific and efficient waste-management methods are essential to reduce environmental impact and promote long-term sustainability.
- The government should prioritize the creation and preservation of green spaces over unchecked urbanization, as expanding greenery helps absorb carbon emissions, improves air quality, and significantly contributes to reducing the overall carbon footprint. Also, a stricter enforcement of existing laws is necessary to combat environmental pollution effectively.
- Educational institutions to prioritize awareness building on environment through awareness programmes, student projects, etc.
- Create awareness through digital initiatives by leveraging online platforms to advocate for environmental protection. Sharing eco-friendly ideas, promoting sustainable practices, and influencing consumer behavior through social media and digital campaigns can significantly amplify environmental consciousness.
- Hold companies accountable for perceived greenwashing or environmentally harmful practices, and apply public pressure for greater transparency.
- Encourage businesses to adopt genuinely sustainable operations to drive broader systemic changes and reduce overall environmental impact.
- Make eco-friendly alternatives in consumer products accessible and affordable.
- Advocate for policy change especially with regard to SUP (Single Use Plastic) both in production and in usage.

Conclusion:

In conclusion, this study finds that the individual carbon footprint of college students in Duliajan is notably high. A primary contributing factor is a deficit in individual environmental consciousness, as evidenced by the survey data. Effective mitigation requires a dual-pronged strategy. Systemic interventions such as enhancing affordable public transit, instituting efficient waste management, and rigorously enforcing environmental policies must be coupled with individual behavioral shifts towards sustainable lifestyles. It is also suggested that there is an urgent need to embed environmental ethics in the education curriculum along with pedagogical accountability in its execution starting from the school level upto graduation. Cultivating such environmental stewardship through pedagogy is essential to prepare future generations. Ultimately, fostering sustainability in Duliajan will depend on a synergistic top-down and bottom-up approach, integrating policy with personal responsibility.

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