

Climate Change Discourse and Linguistic Vulnerability: Ecolinguistic Case Study of Spoken Balti Language at Discourse Level

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ABSTRACT

Aim of the Study: The current study aims to explore the ecolinguistic potentials of the Balti language, language preservation, climate change resilience, and support in terms of climate change knowledge in the Balti community. It also investigates the impact of climate change on the ecolinguistic and cultural heritage of the Balti community regarding climate change. It further examines the relationship between climate change and linguistic vulnerability in the Balti speech community.

Methodology: This research is based on constructivism and discourse to understand how narratives and discursive practices shape how the climate change M&A approach is perceived. In order to conduct the study, the researcher has employed the Fairclough Model of Discourse Analysis. The researchers have collected data from four districts of Baltistan; Skardu, Shigar, Ghanche, and Kharminag. Eight groups were involved in the interviews and group discussions. Members in each group varied from ten to thirty using the Simple Random technique.

Findings: The analysis of the interviews and the discussions revealed that the Balti language does not have the linguistic capacity to meet the climate change discourse. However, the use of words/expressions from languages (Urdu/English) to describe different situations of climate change shows the Balti language to be vulnerable indicating the lack of Balti vocabulary and scientific terminologies.

Conclusion: The study reveals that the Balti community holds local knowledge and practices regarding climate change. It further states that climate change forces the people to migrate to the safe zones of the region creating further problems for the government and the communities.

Keywords: Climate Change Discourse, Linguistic Vulnerability, Ecolinguistics, Balti Language, Language Endangerment, Indigenous knowledge.

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1. BACKGROUND

Balti language being an endangered and undocumented language goes through linguistic crisis due to the influence of Urdu and English languages at the discourse and communication level. Balti language does not have a script and the Balti language users use Romanized or Perso-Arabic script to write Balti. The Balti speakers face linguistic issues resulting in conceptual misconceptions while expressing beliefs and thoughts about climate change. Linguistic vulnerability is a burning issue of the Balti language in terms of climate change discourse and communication. Linguistic vulnerability and climate change communication create a distinctive linguistic environment in Baltistan where two dominant languages; Urdu and English construct thoughts and discourse among the Balti speakers. The Balti speakers go through linguistic vulnerability when they are to debate and communicate on climate change. Since climate change is a global issue, the current study focuses on the capacity of Balti language in terms of relevant discourse with local narratives. From a humanistic perspective, it is evident that climate change is a problem being faced by humanity we face a multitude of questions and attitudes regarding the issue which involves linguistics; communication, debate, and discourse (Zaccai et al., 2012).

Kongsager (2018) argues that the scientific community first officially discussed climate change as a globally recognized environmental problem in 1980 the way the acid rain and hole in the ozone layer were addressed and resolved. Hence, climate change became a burning discursive issue among the international community which created an Ecolinguistic ground for the exploration of solutions to the environmental problem. Kongsager (2018) and Schipper (2006) navigate the debate from the international scientific community and argue that the conceptualization of climate change from environmental pollution to human-influenced development led to the questions; of who is affected by climate change and why. These trending and emerging discourses shifted the issue from a mono-disciplinary to a transdisciplinary focus of natural science and social science in terms of research, production, and policy-making that support political decisions on the grounds of sustainable development. Climate change has now become a social, political, ethical, cultural, and communicational issue (Hulme, 2009, 2013; Giddens, 2009; Malone, 2009).

Foucault (1998) validates that discourses are the crucial and fundamental parts of the constructivist approach in the domains of social sciences. This approach interprets the ways of perceiving the self and the world as a whole are constructed by the individuals in everyday interaction in historical and cultural contexts that can be produced or reproduced by language itself.

1.1 Study Objectives

The current study aims to:

- 1) Explore the Ecolinguistic potentials of the Balti language, language preservation, climate change resilience, and support in terms of climate change knowledge in the Balti community.
- 2) Investigate the impact of climate change on the Linguistic and cultural heritage of the Balti community regarding climate change.
- 3) Examine the relationship between climate change and linguistic vulnerability in the Balti speech community.

1.2 Significance of Study

Balti language being an endangered language faces different problems, especially at the discourse level. The Balti speakers express their ideas and knowledge about the world through code-switching due to linguistic vulnerability within the Balti language. The current study aims to investigate climate change and linguistic vulnerability in the spoken Balti language at the discourse level. It also explores the influence of English and Urdu languages on the climate change discourse and communication in Baltistan. The study also explores the impact of bilingualism and language contact on the climate change discourse and communication within the Baltistan region. It finds out the factors causing language shifts

while expressing climate change knowledge and concepts. The study further explores solutions to the climate change communication crisis in Baltistan.

2. REVIEW OF RELATED LITERATURE

Nerlich *et al.* (2010) state that Climate change is the most discussed topic in the world because of the challenges faced by people regarding changes in climate and atmosphere that affect the ecosystem. This topic is becoming problematic due to the communication challenges which is because of the huge number of ideas and debates on this topic by different people. Climate change is a serious issue and every individual has different ideas having different backgrounds. To overcome the complexities and communication challenges language plays an important role in which the discussion-based approaches and the role of linguistics are highly appreciated and acceptable.

Kjersti Fløttum (2014) states that climate change narratives come in different genres, textual and discursive practices. Climate change text and talk are documented in different genres, personal stories, written in papers, used social media, etc. These all are closely related to the climate change policy and convey a message to the world about climate change. Flottum claimed in his paper (Linguistic mediation of climate change discourse) that there is not one genre in which we can put all the elements and stories, for this purpose people use different mixture of genres in which political, social, and scientific climate change narrative. He stated that to highlight the climate change issue we have to add some ethical points and the genres should have the plot, in which different characters are involved. The storytelling should be based on climate change issues and by giving characterization to nature, animals, society, and humans we can highlight the issues faced by the natural world and the elements of it.

UNCCD (2015) and Ravindranath (2007), highlight the importance of the ecosystem in the production of market and non-market-based services which play an important role in sustaining the environment and providing life for all living things. In market-based services commodities, we have different things like food, wood, etc. and in non-market services, we have the local values related to our culture, carbon, and the process of preservation of plants and animals. It also highlights the immaterial things like spiritual values which are part of maintaining nature and ecosystem from the disasters and problems like climate change. Di Gregorio *et al.* (2017), Ravindranath (2007), and Verchot *et al.* (2007) inform us about the importance of the agriculture and forestry sector to overcome the threats and issues related to the ecosystem. They highlight that the forestry and agriculture sector has the power to make better food care for the future and it is the role of the agriculture sector to improve the production of foods and give food security. Forestry plays a vital to overcome the problems and issues of biodiversity and improve it better for the future. They also play their role in making better social vulnerabilities and sustaining the environment and society. Shipper (2006), investigates the concept of the policy-makers and how it has changed since the 1990s. In his paper, he discussed the objectives of the policy after the reworking of the climate change problem. After the analysis of the knowledge of the policymakers, he comes to know that climate change has been the biggest problem for the world and gives us an approach that in the academic and political sector the concept of climate change comes from the history where people had to work on it. It is rooted in the early stage in which meditation and adaptation strategies were taken to control climate change.

Angie Daze, in (Understanding Vulnerability to Climate Change) discusses climate change and what people think about climate change in their daily lives. For some people, climate change is a change in weather patterns because it becomes cool and hot at different times and seasons. For some people, climate change is a matter of life in which they think about food production, water shortage, and the threats of being affected by different disasters and security. This paper presents the dialogue, negotiations, and talks between the participants and policymakers related to the issue of vulnerability to climate change and the approaches that are taken by the policymakers for vulnerable communities. The study highlights the situation of the people of Vietnam, Peru, and Ghana which are being affected by climate change issues. The case study analyzes the vulnerability to climate change around the globe and the mediation and

adaptation of the people to fight climate change. Climate Vulnerability and Capacity Analysis (CVCA) methodology is used in this case study by the policymakers. Adaptation is the most acceptable process by which people and policymakers take the steps related to planning and adjustment in response to the issues of changing risks like natural disasters and forecasting upcoming problems. Vulnerable people are those people who are left out and they don't have the voice in the decision and planning making. It is important that vulnerable people should be given a voice in decision-making because their involvement will improve the adaptation method and their presence will benefit their community also they will tell about the community's issues regarding climate change and it will be an effective adaptation method. This case study highlights the complicated pattern of physical, environmental, economic, social, and political aspects that pin down people's vulnerability to climate change. They declare that vulnerable people are doing their best to fight climate change and taking steps to overcome the issues and risks related to climate change. They explained that during the discussion with the people, they said that the climate change circumstances are different in different places and they accounted that there should be effective adaptation to manage the risk of vulnerable people to climate change.

Nasir et al, (2002) define Ecolinguistics as the term which is the amalgamation of ecology and language. This term became known in the 1990s. Einar Haugen is the person who introduced this concept first time and says that it is the relation and interaction between a language and its environment. It was the first time when Haugen introduced this concept and highlighted the importance of the given language and its interaction with its environment, (Haugen, 1972, p.235). He forced that the sociological and psychological environment plays a vital role and is an important than the physical environment where people use a language in their daily life. In sociological and psychological environments people have conversations about their lives and daily challenges and by conversation, they come to know the real meaning of the problems. The word Ecolinguistics highlights the different kinds of aspects, elements, and interests in the field of language and environment. Without language, we cannot understand nature and for this purpose, we have the language through which we can discuss the environment. Language and environment go with each other because both are important. (Stibbe, 2015, p.5) pointed out that the term ecology refers to different meanings for different contexts. Different communities explain the term ecology with a different meaning and it is divided into two levels of meaning and concept. The first one is the "relation of something with other things" and the second meaning is the environment.

Wening et al., (2012) in their research article (The Vulnerability of The Javanese Language: An Analysis of Students' Competence), explored the bounding of language use and language proficiency in association with the language vulnerabilities. This paper discussed the vulnerability of the language as a result of its low usage and low proficiency of the speakers due to many issues such as migration, marginalization, and influence of the dominant language. This paper examined the Javanese language decline due to the decrease in everyday usage and the different reasons given before. Researchers conducted in-depth interviews with the people and gave a conclusion after analyzing the data. After analyzing the data they came to know that the Javanese language is at risk and endangerment due to the mixing of the Indonesian language after the migration and it is evident that they have to suffer a lot in terms of their original language. The usage of the Indonesian language in everyday life they are facing risk and their language and culture are threatened and endangered. If the Javanese people uncheck the problem the Indonesian language puts domination on their social context and the language which is spoken by Javanese people will be dominated by the other language and their purity will be lost in terms of culture, language, and way of doing also. Due to a lack of preservation effort, the Krama register is at serious risk because they mix the Ngoko register and the Indonesian language in their conversations. To overcome this problem they will have to include the Javanese language in their school course and to preserve their language they have to use the language in their daily practices and family setting. In Javanese society, most people make mistakes in their conversations and use a mixture of Javanese and Indonesian vocabulary for shortcuts. Language is the identity of any nation and society if it is finished or unused then the identity will be lost.

According to (UNFCCC) United Nations Framework Convention on Climate Change negotiations there are most vulnerable countries to climate change. They did assessments that focused on climate change, and climate variability and some assessments noted the economic factors. They highlighted that there are critical issues for different countries like vulnerability within countries and communities which is based on their economic and political factors. These issues are based on their gender, age, social and political factors, and how they are marginalized by these issues.

Errington (2014) and Munandar (2013), stated that the decline of any language is because of politics, the use of language that is more dominant than the other languages, and the domination of the national language over the language of minorities. Politically the dominant society imposes its language on the minority language speakers and due to this the native language becomes gradually death and lost its importance.

Schindler *et al.* (1996), argue that due to the starting of the economic development in the world, we have been facing the issues of pollutants which disturb the ecosystem. If we neglect these issues it may create a big problem for the world. On the other hand, we have different pollutants that are happening because of the development in which we have acid rain in the forest. Due to this, the plants' regeneration is becoming low and it affects the health of the plants. It also changes the rainfall and global warming happens. The lake and water channel are also being disturbed due to the development and there should be an examination of these issues including deforestation, climate variability, and disturbance for the biodiversity.

3. METHODOLOGY

The current research is a qualitative study on linguistic vulnerability and climate change at the discourse level in the context of the Balti language spoken in Baltistan.

3.1 Data Collection and Analysis Procedure

The data have been collected through interviews, and conversations theming climate change. The data have been analyzed qualitatively through the lens of the constructivist approach employed in discursive practices. This approach determines that knowledge is the production of a productive process in communication. The researchers are not only part of the process but also possesses prior knowledge that influences the method of understanding reality and the research problem.

3.2 Theoretical Framework

This research is based on constructivism and discourse to understand how narratives and discursive practices shape how the climate change M&A approach is perceived. This philosophy determines that shaping the reality is through the rules of discourse itself and those who have the authority and capacity to profess it. This approach does not seek what is the world like rather it seeks how the individuals know the world and from where that knowledge originated, Cresswell, (2013). The current study also explores the linguistic vulnerability being faced by the speakers and linguistic repertoires utilized by the Balti language users in expressing and sharing knowledge about climate change through the lens of the Fairclough Model of Discourse Analysis.

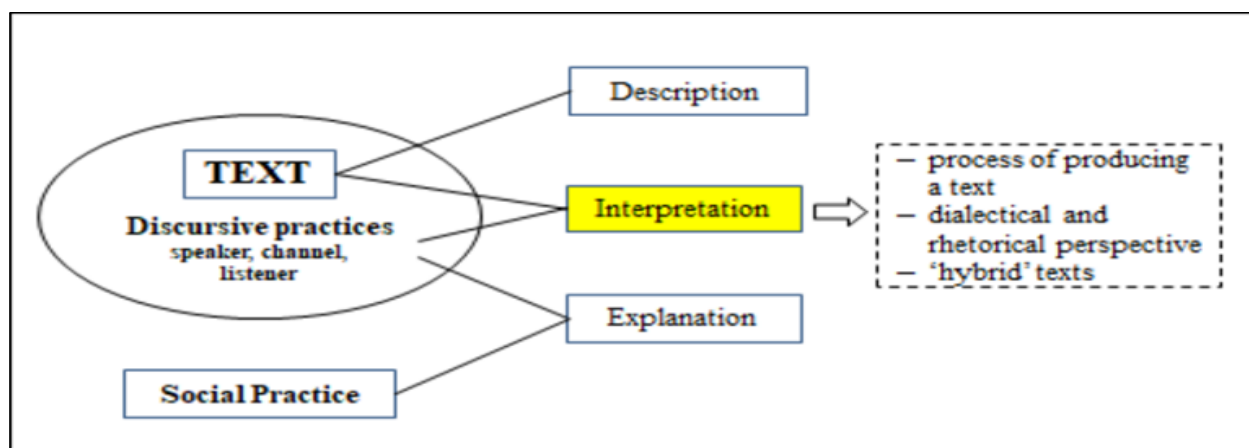


Figure 1: Norman Fairclough Model of Discourse Analysis

3.3 Population and Sample

The Balti speakers belonging to the Skardu, Kharmang, Shigar, and Ghanche districts of Baltistan have been employed as the overall population of the current study. The researcher randomly arranged eight groups of Balti language users from all four districts to talk about climate change using the Simple Random technique. Each group consisted of variant members and numbers (ten, fifteen, twenty, and thirty) of different ages and genders. The participants belonged to different families, castes, classes of society, sects, and areas of the Baltistan region.

3.4 Research Tools

The researcher has used semi-structured interviews, discussions, and conversations in order to collect authentic and reliable data from the Balti language users.

4. DATA ANALYSIS

The researchers, after investigating the data collected from the participants has extracted the most relevant data from the group discussions through the lens of the theory and model employed in the current study.

Extract No. 4.1 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Namzi Fsor lukh	Climate Change

According to the data collected through group discussions in different districts of Baltistan, the Balti speakers use the phrase /Namzi Fsor Lukh/ as a cognate for climate change.

Extract No. 4.2 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Climate changi lukhsing Nati tajurbaat na mushahidaat kun	Our experience and observation regarding climate change

The above extract shows the linguistic vulnerability of the Balti language as there are four words from Urdu and English. The words /climate and change/ have been loaned from English whereas /tajurbat and mushahidat/ have been loaned from Urdu. The words /lukhsing, nati, na, and kun/ are Balti words which are linking words, not the thematic words of climate change. The core words used in the extract are from other languages which are the extreme instances of the linguistic vulnerability of Balti language causing climate change.

Extract No. 4.3 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Legina sat song	Explanation of global warming

According to the above extract, there is no word or phrase to express the concept of the English word/global warming/. The participants are trying to express the concept of global warming but due to linguistic vulnerability they could not use a suitable Balti word or there is no lexical word to express the concept.

Extract No. 4.4 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Waqi saal ba saal mosami tabdili ongen yot	Indeed, the temperature is increasing.

As per the above extract taken from the interview discussions, two out of seven words i.e. /ongen, yot/ have been used from the Balti language and the rest of the three words are from the Urdu language which shows the vulnerability of the Balti language in terms of climate change discourse. The words /waqi/, /saal ba saal/, /mosam/ and tabdili/ have been borrowed from the Urdu language as the participant could comfortably express her views about climate change in multilingual mode at the discourse level.

Extract No. 4.5 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Glacier pigilayi songsy chuh ongen yot	Glacier melting causes sudden flooding.

According to the above extract, there are two parallel linguistic issues. The first issue is that the participants could not find words to express /glacier melting/ and the second issue is that they could not express the impact of climate change in Balti language. The Balti phrase /chuh ongen yot/ used by the participants is an attempt to express the concept of flooding.

Extract No. 4.6 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Khi torot, Bya torot, Sa torot, Nang torot	Regional weather change concept from December to March

According to the above extract taken from the discussion data collected from all the districts of Baltistan, the Balti language has unique term-based expressions and vocabulary starting from December to March. /Khi Torot/ starts from December 21st to 15th January which means that the weather is bearable for the animals like dogs. /Bya Torot/ starts from 16th January to 1st February which means that the weather outside is bearable for the birds like hens and chickens. /Sa Torot/ starts from 2nd February to 25th February which means that the temperature on the ground increases making the routine weather bearable and suitable for cultivation. /Nang Torot/ starts from 26th February to 15th March which means that weather or the temperature becomes bearable inside houses for human beings to live. These concepts are believed and perceived by the individuals in the Balti community.

Extract No. 4.7 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Kalimal na hyu hyu si khlung khyonet pa	The use of Kalimal and blowing or whistling of /hyu hyu/ would bring aeration

In Baltistan, after the harvest is done, people collect all the crops on a dry threshing floor. This dry threshing floor is called /Khyool/ in Balti language. In the middle of it, a dry wooden pole is thickened. It is called Khyul Shing. This Khyul Shing remains there until it rots. No grass can grow in the threshing floor, nor can any flower sprout on the pole. A dry pole has neither roots nor flowers. The only function

of this pole is that once a year, oxen, horses, etc., are tied to it in a row and the crop is crushed under their feet on all four sides so that the crop is thoroughly crushed and the grain and straw are separated. After complete threshing, it is tossed in the air to separate the chaff from the grain. Aeration is also necessary during this process otherwise people would wait for several days for aeration. Sometimes people also install taweez (amulet) that blows the wind from any direction and in case the wind does not blow, the flower of Kalimal is hung on the dry pole. It is said that after hanging the flowers of Kalimal on the dry pole, the wind blows and at the same time a whistle is played in a special head called "hew hew" by rounding the lips and the wind reaches there from anywhere and the difficulties of the landowners are eased. It can be a myth for the world but it has been a traditional belief of the Balti people.

Extract No. 4.7 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Namkhor Hltanmo	A traditional and mythical Balti musical chorus to seek rain from the god

According to the participants from the Balti community, the Balti people would organize a musical chorus in the mountains when they face dry weather, especially during spring to seek rain from god. This traditional practice was known as /Nam-khor Hltanmo/ throughout the region. The ancient Balti people believed that when nature or god was angry with the creatures, especially human beings, god would stop rain to destroy their crops. Therefore, they make nature or god happy and consequently, the god would accept their traditional repentance in the form of the mythical music or song or Rgyang-khlu (epic song).

Extract No. 4.8 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Hрмаq Bang	A collective Azan as a public invocation to stop heavy rain

According to the above extract, /Hрмаq Bang/ is a local religious practice in the Balti community to invoke God to stop heavy rain as it destroys their crops and livelihood. Hрмаq Bang is a Balti phrase; /Hрмаq/ means public or collective and /Bang/ means proclamation for prayer (Azan). When heavy rain continues for weeks or months, the Balti people start Azan in chorus, and in groups from each house, street, and roof. They believe that after the collective Azan, God feels mercy and stops rain and protects them from any impending flood or hazard.

Extract No. 4.9 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Mosami tabdili wajah si glaciers kun pakayi songfa chokh yot	It seems that due to climate change, the glaciers have been melted.

According to the above extract, the Balti speakers face severe linguistic vulnerability when they express their insights about climate change. In this extract, five thematic words have been borrowed from Urdu and English languages such as mosam, tabdeeli, wajah, glaciers, and pakayi whereas, some linking particles such as /kun/, /si/, and songa chokh yot have been used from Balti language. This is the extreme instance of linguistic vulnerability being faced by the Balti speakers in the Balti speech community.

Extract No. 4.10 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Namzovi si heran kun manzar kun pesh kr raha hy	The climate shows a shocking scenario

According to the above extract, the Balti speakers tend to switch code from Balti to Urdu while expressing their thoughts about the thematic matter i.e. climate change. The Urdu phrases such as /heran kun manzar/ and /pesh kr raha hy/ have been borrowed from Urdu which are instances of code-switching due to linguistic vulnerability in a discourse on climate change.

Extract No. 4.11 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Mosamyati tabdili asraat kun foqpa riaqset.....	The impact of climate change has been started

The above extract shows that three out of five words have been borrowed from Urdu language which represents the impact of Urdu discourse on Balti language. The words /mosamyati/, /tabdili/ and /asraat/ are the core words in this extract whereas foqpa, riaqset have been less or no role at the discourse level. The participants actively expressed their views in a multi-lingual domain in terms of climate change discourse. They feel comfortable and natural to express themselves smoothly borrowing words and phrases from Urdu and the English language.

Extract No. 4.12 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Gopa har jaga greenery yotpana sat mangsay feel gwa metpa	Not much hot spell was felt in the past when there used to be greenery everywhere.

In the above extract, the Balti speaker has participated in climate change discourse in a multi-lingual mode as the speaker has borrowed words from Urdu /har jaga/ and /greenery, feel/ from the English language. If these words are omitted then the discourse in Balti would not be completed as per this extract. The words /feel and greenery/ contribute at the discourse level. The participant is trying to express his views on the impact of climate change in the region as he experienced it in his life.

Extract No. 4.13 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Lekin time pekha khaah tangma met....	But it does not snow on time as expected....

The above extract is an attempt by the participant to express the impact of climate change in the region. The extract reflects his experience that it does not snow in time in the region. The words /lekin/ from Urdu and /time/ borrowed from English have lexical contributions at the discourse level. The phrase /time pekha/ has been used to express the climate change impact in terms of snowfall in the region. Snowfall in the region normally starts in December and ends in February. The participant intended to express that now the winter snowfall does not follow any time as expected by the people.

Extract No. 4.14 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Nala kbhi chuhvi load-shedding thongfa metpa	I have never experienced water load shedding

In the above extract the participant tries to express that he has never experienced a water crisis in his life but linguistically it was vulnerable for him to express in Balti language. The words /kabhi/, /load-shedding/ have been borrowed from Urdu and English languages. Although, /chuh-hrkon/ is the equivalent of the word water crisis.

Extract No. 4.15 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Di Pahari silsileng nu, dingnu chuhvi masla metpa	There was no water crisis in the this mountain range

The above extract shows the impact of climate change in the region. The participant has used /Pahari silsila/ for mountain range and /masla/ for a problem which shows the instances of the linguistic vulnerability of the Baltistan language at the discourse level.

Extract No. 4.16 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Agr mosampo yo khatna, Sibbi na Karachi tarzay zindgi ongma yot ... Satpo bardasht byo balbis kunla mushkil gwet	If the climate changes further, the local community may face severe hot weather like Karachi and Sibbi..... The children would not bear the harsh hot weather.

In the above extract, the participants express their views about the future of the climatic conditions in the region. They are of the view that climate change has left a strong impact on human lives due to the severely increasing hot weather that the children and old people may not bear in the future hot weather. Linguistically, they used words from Urdu /agr mosampo/, /tarzay zindagi/ and /mushkil/. It seems linguistically vulnerable for the participants to express themselves in the Balti language.

Extract No. 4.17 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Climate changi waja si Nati samny chok peda songs	Due to climate change, it was spread in our witness.

The extract “*Climate changi waja si Nati samny chok peda songs*” shows that the speakers are aware of climate change, but use expressions from different languages as 'climate' from English, 'changi' adaptation from English, 'waja' from Urdu, 'samny' from Urdu, and 'peda' from Urdu are evidence for Balti language to be vulnerable.

Extract No. 4.18 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Hazard hai ya khadsha he wo mosmi tabdili ki waja se hai	Hazards or challenges due to climate change

The participant has used the words 'hazard' from English, 'khadsha' from Urdu, 'mosami ki waja se hai' from Urdu. The participant has used the entire sentence as a mixture of English and Urdu which makes the Balti language vulnerable however, the statement shows that the participant is aware of climate change and its causes.

Extract No. 4.19 (*Linguistic Vulnerability and Climate Change*)

Extract	Explanation
Ngataan kuchi science na ngati taleem na jo k ap ki understanding hai, ngnataan kuchi side la yuq, shuru ngatangi chi kha bain, khuloong ongma, charpa ongma, shuwa ongma,	We put science and education aside, which is your understanding, we start with storm, rain, and flood.

The above extract contains 29 words in total out of which 10 words have been used from English and Urdu. Out of 10 words, 3 words are from English and the other 7 words are from Urdu. Using so many words from English and Urdu put the Balti language in danger. Including the words related to climate change i.e. 'khuloong ongma' (blowing wind), 'charpa ongma' (to rain), 'shuwa ongma' (flooding) indicates that the speakers have strong knowledge related to climate change.

Extract No. 4.20 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Kha-ston, bakh-ston zerba ngataan la samji onget chi chogo khushi in zerbo Ya'ni yuling khaa ongen chi pagal gwet suk	When we talk about the season of spring, and marriage, we can easily understand how great happiness it is! When it snowed, people used to go

In the extract “*Kha-ston, bakh-ston zerba ngataan la samji onget chi chogo khushi in zerbo*

Ya'ni yuling khaa ongen chi pagal gwet suk”, the speaker has compared snowing with marriage by saying that people used to be so happy when it snowed as they were getting married. The speaker said that it snowed more in the past than in the present which they ascribe to climate change. The speaker's use of the Urdu words 'khushi' and 'samji' with slight modification is an indicator of language vulnerability. It shows that either the speaker's native language does not have vocabulary for the said words or the speaker does not have the Balti words in his/her active vocabulary which, again, is an indicator of language vulnerability.

Extract No. 4.21 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
De khushi cha yud zerbana sning la rahat gwet suk	The happiness of the people was because their hearts used to feel peace when it snowed.

The sentence “*De khushi cha yud zerbana sni la rahat gwet suk*” even if there are words in Balti as 'thatkha' for khushi and 'hutay' for rahat, but the speakers have used Urdu words showing an indication of vulnerability. However, the sentence conveys that in the past people used to be happy when it snowed which shows that now because of climate change and global warming less snowfall is observed.

Extract No. 4.22 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Di xhokhs rism-o-riwaj kun ata ang na kos pi De hawali kha di pura discussion po yo bi dra goin	These kinds of customs/norms have been told by our ancestors which led us to this discussion.

The Balti sentence “*Di xhokhs rism o riwaj kun ata ang na kos pi De hawali kha di pura discussion po yo bi dra goin*” is a good example of code-mixing as words from Urdu and English can be noticed in the same sentence. The compound word 'rism-o-riwaj' and the word 'hawala' are examples of Urdu code-mixing, and the word 'discussion' is from the English language which indicates that whether the Balti language does not suitable alternative, or the speaker does not have the alternative in his/her active vocabulary. In either case, the situation leads to language vulnerability.

Extract No. 4.23 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Balti skati no yo xokh masail kun la, ya to di gopa haan met suk, nagati di chok ongma na ngataa la lafz chi thop met kho la, theek hai ju	In the Balti language, there are no words for such issues (climate change), which means either there were no such issues in the past, or we don't find words just because of their sudden introduction as they are experienced in the present.

The participant is of the view that in the past there were no such issues as climate change or global warming therefore suitable words are, generally, not found in Balti because we usually have words and names for the things which exist in our culture or which we experience. No existence of suitable words for these issues seems to be evidence that their arrival is sudden which the participants ascribe to climate change. Not to speak of having words in Balti for these issues, the participant has not even used Balti for the words 'masaail', 'theek', and 'lafz' from Urdu.

Extract No. 4.24 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Gupa dikha sketpha bary na kha onget pa, gaaang chaget pa	In the past, it snowed too much here which used to turn to ice.

“Gupa dikha sketpha bary na kha onget pa, gaaang chaget pa” entails that in the past it snowed too much which used to remain on the ground for months ultimately changing into ice. The participant ascribes the situation to normal climate conditions. They are of the view that every season used to be on its normal and natural routine which, now, has changed to the extent that it does not snow even when it must.

Extract No. 4.25 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Broq kuni nu kha ishin ongmi waja si kha glacier kuni saakht po mazboot gwet pa de ju	Because of enough snow falling in the mountains, the structure of glaciers used to be strong in the past.

The words 'waja', 'saakht', and 'mazboot' from Urdu, and the word 'glacier' are indicators of language vulnerability in both cases either the language user's incompetence or lack of vocabulary in the language. Meanwhile, the sentence also conveys that in the past glaciers used to be strong and long-lasting because of enough snow falling in the season which entails that now even snow disappears from the mountains in the month of February not to speak of glaciers and strong glaciers.

Extract No. 4.26 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Lekin dosay to ngataa la mehsoos sa goin yud de ju ki climate change mosami tabdeeli gwen zere	But, now, we can also feel that the weather is changing because of climate change.

In the extract “*Lekin dosay to ngataa la mehsoos sa goin yud de ju ki climate change mosami tabdeeli gwen zere*”, the participant ascribes the change in weather in the present to climate change displaying his knowledge about climate change and its causes, but the expressions 'mehsoos', 'climate change' and 'mosami tabdeeli' are the evidence that the language user either avoids using his language, doesn't have alternatives in his language or he doesn't have the words in his active vocabulary. Whatever the case it be, it is an indicator of language vulnerability.

Extract No. 4.27 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Xarmo se zeret gopa thomet kha tanget pa dosay di gari na, tractor na, truck na, karkhana na, ara machine na di gama ongfi waja si kha asal tasawur po ngati muashiray nu do yud de ju, di gama ongfi waja si ka khaa tangma xat fin.	Our elders say that in the past it snowed too much here in Skardu Baltistan, but now it is the people's perception that because of cars, tractors, trucks, factories, and machines, it does not snow that much.

In the above extract, the participant ascribes climate change to be a consequence of using different means of transportation i.e. cars, tractors, trucks, factories, and machines. They are of the view that because of these transportation resources and factories, neither snows in winter nor does it rain in summer. To convey the idea, the participant has used 47 words in the extract of which 10 words are from Urdu and English language.

Extract No. 4.28 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Kha tangma xat pa na glacier kuni sakht po kamzor songfin doi waja si ka choshkun goin yud pin, chogo taswur chik do in muaashray nu	As it snows less, the glaciers are melting with the passage of time resulting in a lack of water. It is also a dominant perception in the society.

The participant claims that it is a dominant perception in society that a lack of snowfall results in glacier melting which ultimately causes a lack of water. They attribute it to be cause of climate change. The participant's comment shows that they are aware of climate change and its causes.

Extract No. 4.30 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Climate changi hawaly nu ek to gupi apongi zeret suk rgun pu rgun songset, byar pu byar songset	Regarding, climate change, elders used to say that the summer season has become too hot and the winter season too cold.

The ancestors used to opine regarding climate change that climate change has made the summers too hot and it has made the winters too cold. The extract shows that the speaker has awareness about climate change but he does not find an alternative in his native language.

Extract No. 4.31 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Ngataaa la de wakh la khaa ongma na ehmiyat chaan met suk, dosay pichlay char paanch sali bad la na mehsoos gwar yakset	We didn't have any importance of snow falling in the past as it snowed enough, but, now, since the last four/five years we feel the importance of snowing.

Using the words 'ehmiyat', 'pichlay', 'chaar/paanch', 'mehsoon' and 'saal' from the Urdu language is a threat to the language being used by the participant, however, the participant seems to be aware of climate change and its impacts as he emphasizes on importance of snow falling.

Extract No. 4.32 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Khaa si chi bet ju zerbana khaa si glaciers piglayi raftar po ek limit chigi nu duk pin na	The advantage of snowfalling is that it maintains the glacier melting to a specific limit.

Indicators of language vulnerability can be found in the extract above in the form of the use of words from Urdu i.e. 'piglayi', 'raftaar', and the use of words from English i.e. 'glacier', and 'limit' are indicators of language vulnerability. Highlighting the importance of the glaciers and snowfalling shows the awareness of the participants about climate change and its impacts.

Extract No. 4.33 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Gopa gros pi wakh la chu ongmin , mirgos pi wakhla chu chat pi	In the past, water flowed when we needed it and when it was not needed, it used to stop.

In this extract also the participant highlights the importance of snow, ice, and glaciers by describing the water-flowing phenomenon in need and its stoppage when it was not needed. The participant's utterance shows that because of climate change, the said phenomenon has now changed.

Extract No. 4.34 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Dosay ngati ariyo la gros pi wakh la chu ongma, mirgos pi wakh la chu miongma, dosay gros pi wakh la chu ongma met ju, mirgos pi wakh la chu gaty onget, ongfo yu mosami tabdeeli	In the past, water used to flow in the canals when it was needed and it used to stop when it was not needed. But now when we need water, it stops, and when we don't need it, too much water flows in the canals.

The participant describes a diverse phenomenon of water in the present. When the participant says that in the past we had water in canals and streams when we needed it, it shows that everything was normal and followed a natural way, but now because of climate change, it has turned into a diver's situation. We don't have water in canals when we are in dire need of it whereas too much water can be noticed flowing in the canals and streams when it is not needed. It reveals that climate change has changed every natural phenomenon into a threatening situation. The participant's response shows that he/she is aware enough of climate change and its impacts on nature.

Extract No. 4.35 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Gopa barf bhaari ziada songsy na nagnu na bahir byungma nen metpa.	It would be very difficult to go outside during snowfall in the past due to heavy snowfall.

The above extract reflects the impact of climate change in the region that it would be very difficult to go outside during snowfall in the past due to heavy snowfall. On the other hand, the extract shows instances of severe linguistic vulnerability as words such as */barf bhaari/*, */ziada/* and */bahir/* have been borrowed from Urdu which has deep contributions at the discourse level. Either the speaker did not have the required linguistic data or he/she could not easily express his thoughts in Balti language in terms of climate change.

Extract No. 4.36 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Habas na satpo high songfikhana sans khwang lenma nenmet	We cannot even take breaths due to harsh hot weather and suffocation.

The above extract shows the impact of climate change especially increased hot weather has affected the people in the region as the experiences of the participants. They faced severe hot weather and suffocation in the past few years. The data shows that the Balti speakers face linguistic vulnerability while expressing their climate change-related experiences. Words such as */habas/*, */high/* and *saans/* are borrowed words from the Urdu language. These three words are purely related to the climate change impact that the participant wanted to mention but due to vulnerable linguistic issues at the discourse level, he could not utilize the required linguistic resources.

Extract No. 4.37 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Natangi nature po la chi bya mi bya beset, ab nature povi natangla tang ben, mibiyong besna mi gong gwen	We have exploited and tortured nature thus nature has become violent to take revenge as when you practice wrongdoings, bitter consequences are created.

The above extract is the reflection of the concept and the local belief about climate change. They believe that when we torture nature, nature becomes violent in return. They also believe that climate change is the result of our wrongdoings and treatment of nature. Linguistically, the participant faced linguistic vulnerability and used the word */nature/* as there was no word to express it.

Extract No. 4.38 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Climate changi baaring myungla taleem sa met, tarbiat sa met	The people do not have knowledge and training about climate change.

The above extract holds strong linguistic vulnerability of Balti language at the discourse level as the words */climate change/*, */baary/*, */taleem/*, and */tarbiat/* have been borrowed from Urdu and English. Although there are related words in the Balti language for these borrowed words at the discourse level, the participant felt convenient to switch the code from Balti to Urdu and English.

Extract No. 4.39 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Yarna achanak bijli girayi songs Ek lihaz sy kho barbadi sa peda bet, dusri tarh sy kho si zameen po regenerate go chuget	Thunder lightning falls from the sky and as a result, it brings destruction to the lands, other the other hand, it regenerates the lands with fertility.

In the above extract, the participant is familiar with the impact of thunder and lightning that brings destruction to the lands, other the other hand, it regenerates the lands with fertility. The participant has used the words and phrases */achanak/*, *bijli/*, *girayi/*, *ek lihaz sy/*, */barbaadi/*, */peda/*, */dusri tarha sy/*, and */zameen/* have been borrowed from Urdu and English language. There are multiple occurrences of linguistic vulnerability at the discourse level in this extract taken from the group discussion. Some words do not have equivalence in Balti and some words have their Balti expressions but at the discourse level, it seems difficult to express in pure Balti language.

Extract No. 4.40 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Yarna selaab ongmin, thuru thingmin, dekhana yovi kah nadang abaad gwen	Flood comes from the mountains and lie on the land's downside and people will settle down above the flood-affected lands in the future.

The above extract contains two words */selaab/*, and */abaad/* which have been borrowed from Urdu language. Although there are different words in Balti for flood such as */shwaa/*, */rut/*, */shwa rut/*, and */chuh smen/* in the context of climate change at the discourse level the speakers tend to borrow the word */selaab/* from Balti whereas the Balti word for */abaad/* is dead that language users cannot recall or have never used. In the context of climate change discourse, the Balti language seems to be vulnerable as the speakers cannot easily use words from the Balti language. They feel comfortable switching the code or borrowing from other languages to talk about climate change.

Extract No. 4.41 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Jeel ping rdwa tyangmana baarish ongetpa, larango rdabana sa barish gwetpa zeret, skyia ldakhna shadi jaqla barish gwen....	When we throw stones in the lake, it rains. If we kill frogs it rains. If we lick the utensils it rains on our marriage day.

The above extract is a reflection of the local and traditional beliefs of the local community. They believe that if you throw stones in the lake located in the mountains, it rains. If you kill frogs it also rains. If you lick the utensils it rains on your marriage day. These concepts and beliefs are still linguistically practiced in the community. They associate natural happenings and occurring with human behavior in the community. For certain believers, the ecological factors and the climatic causes of rain make no sense on

certain occasions. Linguistically, the participant has borrowed the words /jeel/, /bearish/, and /shadi/ from the Urdu language as these words are generally used and understood by the common language users.

Extract No. 4.42 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Nayi dikha (Kuro Ghanche) chogho medan chik yotpa, mosami tablili wajh sikha do gama skams	We had a vast green land in Kuro Ghanche but due to the extreme climate change, it has withered to become barren.

The above extract shows the extreme impact of climate change on the local community. The participant says that they had a vast green land in Kuro Ghanche but due to the extreme climate change, it has withered to become barren. The participant has borrowed the words /medaan/, /mosam/, /tabdili/ and /wajah/ from Urdu and the English language. The Balti language is extremely vulnerable at the discourse level, especially in the context of climate change.

Extract No. 4.43 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Climate changi wajh si kha myung gawung kun fangsay Skardu fari migration ben yot	Climate change has forced people to migrate from their native villages to safer places like Skardu City.

The above extract shows that climate change has forced people to migrate from their native villages to safer places like Skardu City. It further shows instances of linguistic vulnerability as the words like /climate change/, /wajh/, /gawung/ and /migration/ have been borrowed from Urdu and English.

Extract No. 4.44 (*Climate Change and Linguistic Vulnerability*)

Extract	Explanation
Tana climate changi asraat kuning na bachayi go fari natang la ghanh khsos bya rgospin	In order to combat the effects of climate change, we should work on artificial glacier grafting.

The above extract shows the local knowledge about artificial glacier grafting (ice-stupa) a local concept of glacier grafting. The borrowed words /climate change/, /asraat/, and /bachayi/ show the instances of linguistic vulnerability being faced by the Balti language users at the discourse level.

5. CONCLUSION

In order to collect data from the Balti speakers, the participants were asked multiple questions (semi-structured interviews) in the Balti language. The interview questions were designed in three languages i.e. English, Urdu, and Balti for the successful communication between the researcher and the participants. After extracting, explaining, analyzing, and interpreting the qualitative data collected from the Balti community, the researcher has reached to following results.

5.1 Climate Change Perception

As per the data collected through group discussions, it has been revealed that the participants had varied concepts regarding climate change according to their personal and collective beliefs and perceptions. While expressing their views about climate change they switched the linguistic codes from Balti to English and Urdu. Although, they used the Balti word /Namzi Fsor lukh/ for climate change, (see Extract No. 4.1) for further details. The Balti community experienced four seasonal spells from December to March in the past, (see Extract No. 4.6). They have Balti words and concepts for those spells. They faced linguistic vulnerability while expressing their insights about climate change in the Balti language. So, they fluently expressed their thought using Urdu and English language.

5.2 Impact of Climate Change on Daily Life

The data collected from the participants show that the Balti community is badly affected by climate change, (see Extract No. 4.12, 13, 15, 16) for reference. The Balti speech community has had climate change perception for centuries as the Balti phrase */Rgun po rgun song shik, ghbyar po ghyar song shik/* reflects the sense of climate change awareness. Currently, they are affected by climate change as they observed that the winter has become bearable as compared to the previous years and the summer has become unbearable. The participants faced vulnerable situations while expressing their thoughts and experience in Balti language, (see Extract No. 4.12, 4.03, and 4.04). The results revealed that climate change has forced the people to migrate from their native villages to safer places like Skardu city which creates further issues for the local government and administration.

5.3 Local and Traditional Knowledge and Practices

According to the data collected through group discussions and interviews, it is evident that there are different traditional and local knowledge and practices about climate change in the local community. The Balti community practices mythological techniques to deal with the impact of climate change, (see Extract No. 4.06, 4.07, 4.08, and 4.20). The Balti people have traditional beliefs about climate change and its consequences and causes. While expressing their belief and practices about climate change, they faced linguistic vulnerability that without using words and phrases from English and Urdu, it would not be possible for them to share their knowledge and beliefs.

5.4 Climate Communication and Language

According to the data collected through interviews and discussions, there are vulnerable instances of linguistic issues being faced by the Balti community. They could not express their ideas, thoughts, and knowledge using pure Balti language. The reason behind this phenomenon is that the Balti language does not have the capacity to meet the climate change scientific knowledge. Therefore, the participants simultaneously changed the lingual code from Balti to other languages. It would not be possible for the Balti speakers to express their thoughts and views about climate change in the Balti language unless academic, ecolinguistic, and environmental concepts are created in the Balti language. The senior Balti speakers faced many issues in taking part in climate change discourse as the Balti language does not have certain linguistic resources to meet climate change discourse and communication, (see Extract No. 4.02 to 4.42). The study reveals that climate change forces people to migrate and migration leaves a strong impact on the linguistic and cultural resources of the Balti community.

5.5 Community Response and Adaptation

According to the interview and discussion data collected from all the districts of Baltistan, there is no immediate response to combat climate change in the community or they do not know about their possible contribution and responses. No participant shared views or thoughts in terms of the community response and adaptation. However, they were of the view that climate change is due to our malpractices with nature and the natural world and that we have been violently exploiting natural resources. The participants were of the view that they have adopted industrialization and commercialization which cause carbon emissions. The changing lifestyles and social behavior of the local people are the core factors of exploitation of natural resources and also deforestation, and pollution.

5.6 Role of NGOs and Government

According to the data collected from the diverse participants from Baltistan, the government and the NGOs are contributing to combating climate change such as plantation and anti-pollution activities. The participants had less idea about the role of these two stakeholders or they could not talk about it due to linguistic vulnerability. In response to a question asked regarding climate change knowledge, they said that the Balti language does not have the required linguistic data to debate climate change and scientific knowledge.

5.7 Climate Change Challenges

According to the data, the participants shared different views about the challenges they have been facing for the last many decades. The participants were of the view that in the past they did not have to face any problems regarding the availability of clean drinking water and water for irrigation as it used to snow up to five to five feet in winter, even though they had to face challenges in terms of transportation, communication, and other business activities because of heavy snowfall. Their views on climate change show that the weather in summer, now, has become unbearable as it is extremely hot. On the other hand, the weather has become moderate in winter which the participants ascribed to a paradigm shift in climate change.

5.8 Future Climate Change Scenarios

The participants' discussions indicate a threat to the future as they claimed that no radical steps are being taken at the local level by the community to overcome climate change and the impending challenges people may face. No measure is being taken for water preservation, overcoming climate change may cause water scarcity, insufficient yields of crops, and an energy crisis in the future. Their discussions also indicate that the region may lose all the natural beauty and glaciers that it would be vulnerable for livelihoods during the summer.

6 RECOMMENDATIONS

As per the findings of the study, it is recommended that future researchers further deeply explore this area of study to find further linguistic issues. The policymakers can work on the preservation of the Balti linguistic resources in terms of climate change. Ecolinguistics experts can work for the enrichment of Balti vocabulary and terminologies related to climate change. Curriculum designers can include content in Balti language which inculcates climate change knowledge and practices. The government can play its role in decreasing migration which causes bigger Balti linguistic issues and cultural loss. It further suggests that local knowledge and practices can be incorporated to preserve indigenous languages like Balti. The media stakeholders can also contribute at a major scale by inculcating climate change, Balti linguistic, and cultural resources through their media houses such as TV channels, radio programs, dramas, and talk shows in the Balti language.

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REFERENCES

- Bacchi, C. (2009). *Analyzing policy: What's the problem represented to be?* Pearson Education.
- Barreiro, J. (2021). The language of climate change strategies: An argumentative discourse analysis about integrative climate change mitigation and adaptation strategies in the international sector. (*Unpublished master's thesis or report if unpublished – clarify if needed*).
- Di Gregorio, M., Locatelli, B., Nurrochmat, D. R., Paavola, J., Sari, M., Fatorelli, L., Pramova, E. B., Brockhaus, M., & Kusumadewi, S. D. (2017). Climate policy integration in the land use sector: Mitigation, adaptation and development linkages. *Environmental Science & Policy*, 67, 35–43. <https://doi.org/10.1016/j.envsci.2016.11.005>
- Errington, J. (2014). Indonesian among Indonesia's languages. In E. Tagliacozzo (Ed.), *Producing Indonesia: The state of the field of Indonesian studies* (pp. 185–194). Cornell University Press.
- Foucault, M. (1998). *The history of sexuality: The will to knowledge* (Vol. 1). Penguin Books.
- Fløttum, K. (2014). Linguistic mediation of climate change discourse. *ASp*, 65. <http://journals.openedition.org/asp/4182> <https://doi.org/10.4000/asp.4182>
- Haugen, E. (1972). The ecology of language. In A. S. Dil (Ed.), *The ecology of language: Essays by Einar Haugen* (pp. 325–339). Stanford University Press.
- Kongsager, R. (2018). Linking climate change adaptation and mitigation: A review with evidence from the land-use sectors. *Land*, 7(4), 158. <https://doi.org/10.3390/land7040158>
- Kongsager, R., & Corbera, E. (2015). Linking mitigation and adaptation in carbon forestry projects: Evidence from Belize. *World Development*, 76, 132–146. <https://doi.org/10.1016/j.worlddev.2015.07.003>
- Morse, J. M. (1991). Evaluating qualitative research. *Qualitative Health Research*, 1(3), 283–286. <https://doi.org/10.1177/104973239100100301>
- Munandar, A. (2013). Pemakaian bahasa Jawa dalam situasi kontak bahasa di Daerah Istimewa Yogyakarta. *Jurnal Humaniora*, 25(1), 92–102.
- Nasir, M. H., Habib, A., & Yousaf, M. (2022). Climate change and media representation: A multimodal discourse analysis of Clean Green Pakistan policy from eco-linguistic perspective. *University of Chitral Journal of Linguistics & Literature*, 6(1), 198–211.
- Nerlich, B., Koteyko, N., & Brown, B. (2010). Theory and language of climate change communication. *Wiley Interdisciplinary Reviews: Climate Change*, 1(1), 97–110. <https://doi.org/10.1002/wcc.2>
- Ravindranath, N. H. (2007). Mitigation and adaptation synergy in forest sector. *Mitigation and Adaptation Strategies for Global Change*, 12, 843–853. <https://doi.org/10.1007/s11027-007-9105-7>
- Schindler, D. W., Bayley, S. E., Parker, B. R., Beaty, K. G., Cruikshank, D. R., Fee, E. J., Schindler, E. U., & Stainton, M. P. (1996). The effects of climatic warming on the properties of boreal lakes and streams at the Experimental Lakes Area, Northwestern Ontario. *Limnology and Oceanography*, 41(5), 1004–1017. <https://doi.org/10.4319/lo.1996.41.5.1004>
- Schipper, L. F. (2006). Conceptual history of adaptation in the UNFCCC process. *Review of European Community & International Environmental Law*, 15(1), 82–92. <https://doi.org/10.1111/j.1467-9388.2006.00501.x>
- Stibbe, A. (2015). *Ecolinguistics: Language, ecology and the stories we live by*. Routledge.

- Udasromo, W., Marai, L., Sulistyowati, A., Firmonasari, A., & Astuti, W. T. (2023). The vulnerability of the Javanese language: An analysis of students' competence. *Advances in Social Science, Education and Humanities Research*, 818, 25–31. <https://doi.org/10.2991/978-2-38476-186-94>
- Verchot, L., Mackensen, J., Kandji, S., van Noordwijk, M., Tomich, T., Ong, C., & Palm, C. (2007). Opportunities for linking adaptation and mitigation in agroforestry systems. In *World Agroforestry into the Future* (pp. 113–121). Nairobi, Kenya: World Agroforestry Centre (ICRAF).