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# Climate change as a trigger of language extinction: Strategies for language reclamation and revitalization

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Received Date: December 14, 2025

Revised Date: February 25, 2026

Accepted Date: February 28, 2026

## ABSTRACT

**Background:** This article examines language extinction caused by climate change and crises. These factors are related to migration and the forced displacement of indigenous communities. Efforts to curb language extinction include language reclamation and revitalization. **Methods:** This study uses a semi-systematic review approach that includes quantitative and qualitative data. The categorized data cover keywords such as language extinction, climate change, migration, as well as language reclamation and revitalization. The materials are then systematically filtered and organized to ensure continuity between the conceptual frameworks and findings. **Findings:** Language extinction occurs rapidly in various parts of the world, especially in regions with abundant diversity. Nevertheless, this language extinction brings a unifying strength. Indigenous communities and experts then formulate ways to reclaim and revitalize endangered or extinct indigenous languages. **Conclusion:** The efforts of language reclamation and revitalization ultimately provide society with autonomy, freedom, strength, pride, identity, and an inseparable sense of belonging. **Novelty/Originality of this article:** The novelty of this article lies in the way of preserving and protecting language through cultural festivals. These festivals bring together various indigenous communities to celebrate cultural diversity.

**KEYWORDS:** climate change; language extinction; language reclamation; language revitalization.

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## 1. Introduction

The world is facing a language loss crisis that matches or even surpasses the rate of biodiversity loss (Bromham et al., 2020). Language extinction is a global issue with devastating implications for societies around the world (Lavender Forsyth, 2025). The world's linguistic diversity is currently recorded at more than 7,400 languages, and 30% of them are estimated to be no longer in use by the end of this century (Cámara-Leret & Bascompte, 2021). Since 1992, United Nations Educational, Scientific, and Cultural Organization (UNESCO), has been monitoring the world's languages and publishing the Atlas of the World's Languages in Danger (Nelson et al., 2023). The extinction of languages will increase at least threefold over the next 40 years. That means by the end of the century it is estimated that at least 1,500 languages will no longer be spoken. A third of them are only a few that are documented or even completely undocumented (Bromham et al., 2022).

Several regions have been designated as "hotspots" for the loss of indigenous languages in the future, such as the west coast of North America, Central America, the Amazon

### Cite This Article:

Putri, C. D. C. (2026). Climate change as a trigger of language extinction: Strategies for language reclamation and revitalization. *Critical Issues of Sustainable Future*, 3(1), 52–66. <https://doi.org/10.61511/crsusf.v3i1.2868>

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rainforest, West Africa, the northern coast of Papua New Guinea, and even northern Australia. These areas also predicted to experience the greatest absolute loss of indigenous languages. Furthermore, within the next 80 years, indigenous languages in Borneo, southwest China, and around the Caspian Sea area will also become extinct (Bromham et al., 2022). Meanwhile, more than 300 indigenous languages have been spoken in the United States. Linguists now facing serious concerns that within the next 30 years, only 20 indigenous languages will remain. This concern is not exaggerated, considering that only two dozen Penobscot speakers remain on Indian Island, in the US state of Maine, most of speakers are elderly. While the speakers attempt to teach Penobscot language to younger members of the tribe, these efforts are instead met with complaints stating that the indigenous language is not very useful (Gregory, 2021).

Moving to another region, specifically in urban areas of Vanuatu, in the South Pacific Ocean, Bislama has become a *lingua franca*. Bislama is reported being used by 93% of Ni-Vanuatu youth (indigenous youth of Vanuatu) living in Port Vila, the capital of Vanuatu. Meanwhile, indigenous language are only spoken by 34% of Ni-Vanuatu youth. The results of this study are intriguing, considering there has been a shift from a language that was previously sidelined as a corrupted form of English to the one that is constitutionally recognized as a national language (Lavender Forsyth, 2025). The use of the Bislama language, which threatens linguistic diversity in the Vanuatu archipelago (Lavender Forsyth, 2025), has even been described by the Vanuatu national press as a 'parasitic language' due to its clear role in disrupting the transmission of indigenous languages (Tokona, 2020).

A similar phenomenon occurred in Papua New Guinea, a region that become a home to more than 10% of the world's language diversity. This richness and diversity also encompasses biocultural knowledge. In 2021, study that measuring the skills of 6,190 students—with the 392 regional languages that being speak, equivalent to 46% of the regional languages spoken in Papua New Guinea and 5.5% of the world's languages—showed that only 57.7% of students were fluent in their indegenous languages. Meanwhile, the fluency rate among parents reached 90.8%. Students frequently used the country's *lingua francas*: Tok Pisin and English. The loss of language ability is accompanied by a decline in traditional knowledge of nature. This indicates an uncertain future for languages and biocultural knowledge in the most linguistically diverse place on Earth. Despite this, the vast majority of students (88%) expressed a desire to teach indigenous languages to their children in the future. Another 8% were more motivated by the practical aspects of communication. The rest value language as an essential part of their culture (Kik et al., 2021).

In Indonesia, the data that collected by the Language Development and Fostering Agency in 2019 showed that there are 801 indegenous languages. This number based on the accumulation of languages distribution across 34 provinces in Indonesia. Language vitality status is divided into six categories: safe, vulnerable, declining, endangered, critical, and extinct. Extinct classified are defined as a language that no longer have native speakers. These 11 languages include Tandia in West Papua, Mawes in Papua, Ternateno in North Maluku, and eight languages in Maluku; Kayeli, Piru, Moksela, Palumata, Hukumina, Hoti, Serua, and Nila (Hadi et al., 2020). Meanwhile, a study conducted on Enggano Island in North Bengkulu Regency, also indicates a shift in indigenous languages that is vulnerable to extinction. This is because only about 30% of speakers use Enggano language in daily conversation. Furthermore, observations showed that several Enggano tribal chiefs (also known as Papuki) do not recognize Enggano written by non-native speakers. This situation is caused by the pronunciation and articulation in Enggano languages, which is very different from other languages in general (Grehenson, 2024). As an island, Enggano is isolated from mainland Sumatra. The distance from the provincial capital of Bengkulu is 156 km. Enggano Island also far from other islands, such as Mentawai and Nias. This reality strongly supports the assumption that the inhabitants of Enggano Island possess unique characteristics in terms of cultural and linguistic that significantly different from surrounding islands (Tondo, 2023).

Extinction studies is an interdisciplinary approach emerging within the humanities that aims to explore the meaning and significance of extinction beyond the level of individual species. It aims to discover relationships within the multispecies communities in which extinctions occur (Nelson et al., 2023). Language is inextricably intertwined with culture and identity. It encodes history, catalogs plants and perspectives, and defines society (Riehl, 2023). David Crystal, one of the most renowned English linguists, in his work entitled "English as a Global Language," warns that if only one language survives in globalization, it would be an intellectual disaster because language is not only a means of communication but also a way for us to convey culture, aesthetic values, traditions, folklore, and ideals that have been accumulated over centuries. Abandoning all these valuable values and choosing to switch to a single global language for economic purposes or a more influential language would be a great loss for humanity and its history (Poshka, 2021). Throughout the world, minority languages have been under pressure from regional, national, or global languages because these larger languages are associated with greater social, cultural, economic, and political opportunities compared to local languages (Austin, 2021).

Above all, the death of a language creates a void for the speakers. Grief is a central theme in current discourses surrounding extinction and climate change (Nelson et al., 2023). For native speaker, language extinction trigger feelings of grief and loss that are often equated with ecological grief (Bendell, 2020). Furthermore, the source of this sadness may lie in the close relationship between language and worldview, a lens through which to experience and categorize various things in the world (Nelson et al., 2023). Language extinction has led linguists to urge the scientific community to advocate for public policies that can protect culture, alongside ongoing climate policies (Brown & Middleton, 2024). This is evident in the United Nations (UN) International Decade of Indigenous Languages, which runs from 2022 to 2032. The primary goal is to raise collective awareness of the extinction and the importance of indigenous language diversity in sustainable development (Cámara-Leret & Bascompte, 2021).

Language extinction does not occur suddenly, but rather gradually. There are several factors that linguists identified as a significant role. This article discusses the causes of language extinction, particularly focusing on caused by climate change in various regions. Following this, the discussion continues on efforts for language reclamation and revitalization undertaken to prevent the increasingly rapid extinction of languages, which impacts the survival of living beings.

## 2. Methods

This study uses a semi-systematic review approach, encompassing both quantitative and qualitative data from scientific literature related articles. The combination of quantitative and qualitative data provide a more comprehensive overview of the research topic. This mixed method is also useful for thoroughly understanding complex phenomena, including understanding knowledge, attitudes, and behaviors (Sataloff et al., 2021). This systematic literature search was conducted between October and November 2025 using the following online search engines: ScienceDirect, Google Scholar, Environmental Humanities, Proceedings of the National Academy of Sciences (PNAS), Nature, Wiley, Oxford Open Climate Change, Taylor & Francis Online, and SINTA.

The sources also come from the articles that available in online, such as BBC Indonesia, BBC International, Mongabay, Cermat, Mosintuwu Institute, Roemah Kata, Vanuatu Daily Post, Project Multatuli, Universitas Gadjah Mada Berita Penelitian dan Inovasi, Kaltim Faktual, Inside Climate News, Audubon, Atmos, The Guardian, dan National Public Radio (NPR) News. Sources also come from open access books that available in online, such as Bristol University Press Digital, Cambridge University Press, and the Ministry of Education and Culture (*Kementerian Pendidikan dan Kebudayaan RI*).

The data obtained then categorized into three categories that form the basis of the discussion: indigenous language extinction, the role of climate change in indigenous language extinction, and efforts to reclaim and revitalize indigenous languages. Search

terms included the keywords “language extinction”, “climate change”, “climate migration”, “language reclamation”, “language revitalization”. Keywords based on the process of language extinction caused by climate change, which have a positive impact in various parts of the world.

The recovered material was then systematically filtered using a two-step procedure: title, keywords, and year. The selected articles spans the last five years, from 2020-2025. The process then continued with a detailed text review to avoid citations overlaps. The material then covered a number of regions. Arranged alphabetically, the global scope included the Kenya, New Zealand, North America, northeastern Brazil, northern Ghana, northwest Amazon, and Papua New Guinea. In Indonesia, the regions included Central Sulawesi, East Kalimantan, Enggano Island, Jambi, Jayapura, and West Sumba. This review process is carried out in four phases: designing the review, conducting the review, analyzing, and writing the review (Snyder, 2019).

### 3. Results and Discussion

#### 3.1 *The role of climate change in language extinction*

Language is a vital part of our society and culture. As a system that evolves from our primate heritage, language also serves as a lens through which humans understand, categorize, and build relationships, both among themselves and with other species. Indigenous speakers store a vital information in their languages, such as the topography of rivers, mountains, and forests, as well as an encyclopedia of plant and animal species, including those that are edible and poisonous, and those that can be used medicinally. In this way, language ultimately entangles human relationships with the land and the world beyond the human (Nelson et al., 2023).

This statement aligns with a study conducted by Jordi Bascompte, a researcher at the Department of Evolutionary Biology and Environmental Studies at the University of Zurich, and Rodrigo Cámara-Leret, a biodiversity specialist, in 2021 by analyzing 3.597 plant species that contribute to 12.495 medicinal uses. The findings also indicate that 236 indigenous languages were used in the analysis. These indigenous languages come from three biologically and culturally diverse regions: the northwest Amazon, Papua New Guinea, and North America. Furthermore, the study evaluated 645 plant species and their uses in medicine based on oral traditions in 37 languages and found that 91% of this knowledge exists in only one language (Zanon, 2021). The knowledge of indigenous communities through this linguistic diversity demonstrates the contribution of plants in their surrounding environment to the medical world. The use of plants in medicine is a highly relevant example of the services provided by these ecosystems (Cámara-Leret & Bascompte, 2021).

Various medicines known to originate from medicinal plants include acetylsalicylic acid, commonly known as aspirin. The active ingredient is known to be extracted from the white willow tree (*Salix alba L.*). This knowledge also extends to morphine, which is used in the medical field as a pain reliever. The ingredient known to be extracted from the poppy flower (*Papaver somniferum*) (Zanon, 2021). From that, we finally understand that most knowledge related to medicine is linguistically unique (Cámara-Leret & Bascompte, 2021)

This situation also occurred during a research expedition conducted in Papua New Guinea in 2022. Indigenous people helped scientists from the Cornell Lab of Ornithology discover the black-naped pigeon. This bird was believed to have been extinct for 140 years according to Western science. The black-naped pigeon is widely known as “Auwo” by the indigenous people (McGlashen, 2022). Auwo even appears in the songs used by men to woo the women they want to marry. Jordan Boersma, a bird expert from the Cornell Lab of Ornithology who conducted the expedition, said, "This finding really tells us that the locals will know the birds in this area better than we do" (Zimmer, 2023).

In Indonesia, this uniqueness is shared by the Kajang Indigenous People in Bulukumba Regency, South Sulawesi. This is evident in the community's analogy of forests to human

nostril hairs, which function as filters, preventing various particles, such as dust, pollen, and allergens, from entering the lungs. In the Konjo language, the Kajang indigenous people express, “Antu boronga akppadaji bulu kakmurua,” which means, “The forest is like a nostril hair.” This analogy not only contains local terms, word classes, and meanings, but also explains a profound expression that only found in the mother tongue (Kurniawan, 2025). Furthermore, the power of this language is also evident when it serves as a solution for disaster management. In East Kalimantan, local languages not only function as a vocabulary, but also act as a trigger to revive collective memories of disaster management based on local culture. In this regard, regional languages are recognized and considered useful in helping to break the chain of virus transmission when COVID-19 outbreak (Lauder et al., 2021). Collective memory is a term often used to describe the knowledge within communities that frequently have an oral language without a writing system. This knowledge is passed down between generations and is utilized because it provides benefits to the community. Collective memory also plays a role in preserving valuable knowledge related to past events and ways to address similar issues in the present and future (Tulius, 2020).

Nevertheless, this strength and diversity are also under threat. Previous studies on the relationship between language diversity and the classification of medicinal plants have found that indigenous languages with unique knowledge are actually at a higher risk of extinction. This also highlights a dual problem related to the loss of medical knowledge (Cámara-Leret & Bascompte, 2021). In this study, the Americas stand out as a center of indigenous knowledge, where most medicinal knowledge is linked to endangered indigenous languages. The northwestern Amazon, in particular, proves to be a prime example of the dual problem mentioned by Bascompte. Therefore, if a language goes extinct, as may happen to many languages in the Amazon in the coming years, the medicinal knowledge within it also disappears. The complexity of language, which reflects a kaleidoscope of culture and experience, is similar to the nature of non-human species; this similarity even extends to the extinction rates of both, which are at worrying levels (Nelson et al., 2023). Bascompte explained the extinction by saying,

*“Every time a language dies, the voices that speak it disappear, the ways of understanding reality vanish, as do the ways of interacting with nature and the ability to describe and naming the animals and plants.”* (Zanon, 2021)

The main discourse surrounding species extinction, such as issues of agency and responsibility, grief, sorrow, and even hope, also extends to the realm of language extinction (Nelson et al., 2023). The discourse was experienced by CD, a member of the Penobscot Tribe, one of the 574 recognized Native American tribes, and a Preserver of the Penobscot language who has dedicated her life to revitalizing Penobscot language. In 2018, CD mentioned that she felt linguistically lonely,

*“I have been speaking to myself in Penobscot for years. I say it out loud so my ears can hear it.”* (CD, member of the Penobscot Tribe)

Therefore, CD considered keeping a parrot with the aim that at least the parrot could say a few words in Penobscot. Hearing another living being utter words in Penobscot would be better, although CD realized that a bird would not be able to carry on a conversation (Gregory, 2021). The extinction of indigenous languages does not only occur due to interethnic marriages, migration, natural disasters, wars, and the language attitudes of their speakers. More than that, the environment plays a major role in the disappearance of indigenous languages (Kurniawan, 2025). Climate change also contributes to the loss of native languages worldwide, occurring on both large and small scales. Extreme weather events, such as storms and droughts, ultimately force indigenous peoples and local communities away from their ancestral lands and languages, while shifts in the timing of seasons or changes in species distribution render many native words obsolete (Price, 2024). Climate change poses a threat to indigenous languages in vulnerable positions, through

migration triggered by climate (Brown & Middleton, 2024). The relationship between climate change and language loss may be most easily understood by the Sámi people who speak Northern Sámi, a region that has more than 300 words to describe snow in the Arctic language (Price, 2024), at the same time becoming a region that warms four times faster compared to other regions in the world (Hersher, 2022). This climate change has also become a new word in Northern Sámi, which *dálkkádatrievdan*, to describe the current situation in the region (Benke, 2024). As climate change rapidly alters ecosystems, vocabulary that has lasted for centuries is increasingly disappearing from dialects. Extreme weather and rising sea levels are eventually driving mass migrations worldwide, similar to the forced migrations and colonialism that have long threatened the cultures of indigenous peoples in the past and continue to nowadays (Price, 2024). Forced migration occurs when a population is compelled to leave their land and move to new communities, such as neighboring villages, refugee camps, and city centers, making it increasingly difficult to preserve their native language (Riehl, 2023).

Climate change also makes access to safe and nutritious food difficult, including traditional foods that are important for cultural practices. This scenario occurs, among other places, in the semi-arid regions of Northern Ghana and in the upper western regions of Ghana with climate crisis conditions. Specifically, the northwestern region of Ghana has been a high-risk area since the 1980s due to unfavorable agro-ecological environments characterized by fragile soils. The risk and intensity of water scarcity and drought in this region make it challenging for indigenous people to remain in their customary communities. In terms of climate change and migration, as previously discussed, human migration for survival began centuries ago, when people moved to new locations in search of greener environments. Internal migration among these minority linguistic groups eventually affected the integrity of their languages, especially if the migration was individual-based. Migration that caused by climate change also emerges as a major factor contributing to language loss. By comparison, Ghana's total population reaches 30 million people, with the number of native speakers from minority groups being less than 50 thousand (Addaney et al., 2022). This shows that climate change is not merely a pollution problem, but an indicator of how human spirit and culture have become detached from their natural habitat (Bendell, 2020).

In Indonesia, this situation also happens to the Orang Rimba in Bukit Duabelas National Park, located in Jambi Province. An ecolinguistic study conducted by Akbar Kurniawan, a linguist from Universitas Ma'arif Nahdlatul Ulama Kebumen, at the same time serving as a teacher at Sokola Rimba for five years, shows that deforestation also impacts the loss of vocabulary, grammar, customary rituals, traditional knowledge, and other cultural aspects present in the area. The wealth of the Orang Rimba, one of Indonesia's indigenous communities who forage and hunt, in classifying, naming, and managing the forest—which is a form of traditional conservation practiced for hundreds of years—cannot be maintained if this situation continues (Utama, 2025). Both the Orang Rimba and the majority of other indigenous communities in Indonesia not only perceive the forest as a living space and a source of subsistence. Beyond all that, indigenous peoples understand that the forest also fosters ecological wisdom. The mother tongue then reflects that ecological wisdom (Kurniawan, 2025). This risk of loss is ultimately not only borne by the Orang Rimba, but also by other indigenous groups living in and around the forest. The disappearance of living space makes it impossible for the culture that forms the identity of indigenous people to be practiced. This leads to the extinction of the community's existence as fully human beings (Utama, 2025).

Climate crisis also threatens the lexicon of the Orang Kodi in Southwest Sumba, East Nusa Tenggara. This is triggered by difficulties in obtaining plants used to build *uma bokolo* or large houses, such as the *kadimbil* tree, also known as Sumba merbau, then *kahikara* or forest rope, and the *liny*o or *lino* tree trunks. Paulina Maria Yovita Kosat or Jovin, the author of encyclopedia *Kembali ke Uma Bokolo*, explains that when a plant is difficult to obtain because it does not grow well, it contributes to the extinction of some lexicons or vocabulary of the Kodi language. The lexicons that use in *uma bokolo* are threatened with extinction

because the plants that compose them are now difficult to obtain. Unpredictable rainfall patterns have made it hard for *kadimbil* trees to survive when planted. Meanwhile, *kahikara* and *liny* are also difficult to find on Sumba Island. *Kahikara* is only found in the protected forest area of Tana Ndaru in Central Sumba. These limitations also make it difficult for the young generation of Kodi to record the lexicon of materials that use in the *uma bokolo*. They are also unaware of the physical properties of several natural materials. Jovin also noted that the majority of the young generation does not know the meaning of certain natural material lexicons and the construction of the *uma bokolo*, both orally and in writing. In fact, each part of the plant contributes to important indigenous language lexicons (Nuka, 2025).

The linguistic isolation caused by environmental pressures also affected the Balik community in Penajam Paser Utara Regency, East Kalimantan. Sekion, one of the five native speakers, remembering that six decades ago, people still used their ancestral language in daily conversations. In Balik community, language also used as a medium to seek permission from ancestors before collecting forest products that can be used as food sources. Sekion passes this tradition on to his children and grandchildren. He also enforces the obligation to use the Balik language when his family members at home. This threat of extinction occurs as the younger generation becomes rigid in speaking Balik language, with the number of older speakers increasingly diminishing. This extinction is also evident when Sekion relatives are more fluent in dominant language. Moreover, there is a shift from using Balik language to the dominant language while pursuing education. This situation ultimately creates a sense of alienation that erects barriers between generations; the young are not proficient speak Balik, while the elders lose their conversational partners. The distress also experienced by Sibukdin, the Customary Chief of the Balik Tribe. He states that the Balik Tribe is now at a crossroads and must choose: preserve the language and culture of their ancestors or survive amid limitations as the forest, which has long been a source of sustenance and a space for spirituality, continues to shrink. This eventually led indigenous communities to abandon their traditions and focus more on what they could consume in the near future rather than practicing their traditions. As a result, the position of the language gradually reached a worrying point (Almerio, 2025). In situations where their historical language is threatened with extinction, the remaining native speakers certainly bear an unusual burden. This responsibility should not fall on specific individuals, but rather should be the duty of institutions (Poshka, 2021). This series of cases shows that the loss of a language can lead to epistemic poverty (Nelson et al., 2023) which is strengthened by climate change and the crisis affecting forests which have been the living space for the community, a place to carry out culture and use traditional languages.

### 3.2 Language reclamation and revitalization: Redefining living space

The story of language extinction doesn't end here. While the climate crisis is a destructive force, it can also be a unifying force. The gradual loss of languages also provides an opportunity to reorient community narratives. Through their specific knowledge and associated relationships with nature, local minority languages and dialects play a key role in understanding the local context of climate change and biodiversity loss, as well as in designing and implementing resilience and sustainability strategies relevant to ecologically defined landscapes and communities (Couée, 2024). Most of the knowledge is passed down through words, songs, and fairy tales (Zimmer, 2023), as well as audio and video (Austin, 2021) began to be documented. The first audio recording of an indigenous language was recorded in 1890. The recording was of the Passamaquoddy people living in Maine and Canada (Maryniak, 2021).

This revitalization effort aims to protect and promote indigenous languages. Indigenous communities and linguists have worked together to document hundreds of languages and undertake revitalization efforts that have revived languages that were once in decline (Riehl, 2023). That shown when community-centered linguistic collaboration supporting Mexican native languages in California. That efforts ultimately created various programs that encourage language preservation, multiliteracy, social justice, and pride. The

project was eventually named the Mexican Indigenous Language Promotion and Advocacy (MILPA), in collaboration with linguists from the University of California, Santa Barbara (UCSB). The outcomes include documentation of basic vocabulary, analysis of sound systems or phonology including tone, as well as the development of writing or orthographic systems (Martínez et al., 2021).

Meanwhile, the policy regarding the native Mýori or Māori language in New Zealand is categorized as an advanced policy. This is demonstrated by the formulation of a language strategy that includes recognizing Māori as an official language and providing financial support to promote the language. The main focus of this policy involves preschools in Māori language learning. This is carried out with the awareness of parents who are not fluent in the language and decide to give their children the opportunity to learn it. This policy has been successful, not only in New Zealand but also in Hawaii. This also indicates an increase in positive attitudes towards the Māori language by non-Māori communities and becomes part of New Zealand's identity for all its citizens. The situation in New Zealand shows that funding for indigenous language preschools is an effective way to support marginalized languages. This not only provides a space for young migrants to learn the language, but also allows New Zealand children to learn Māori. This demonstrates that if the host country's society, in this case New Zealand, regards a minority language as their own, then treating Māori as a semi-indigenous language becomes much easier to implement (Brown & Middleton, 2022).

This effort also exists in Brazil through indigenous schools that play an important role in preserving language. These schools are held alongside cataloging and revitalization projects carried out by the Karitiana community in Rondônia and the Pataxó in Bahia and Minas Gerais. The presence of these schools is made possible through collaborative work by young people and Pataxó teachers, who study documents and conduct fieldwork that results in the Pataxó Cultural and Language Research and Documentation Project. The language that has been restored and is now taught in several villages is called Patxohã (Zanon, 2021). Furthermore, several research areas and partnerships are also potentially feasible in this effort. Empirical research projects focusing on revitalization programs and strategies can be conducted, including approaches to language centers, the provision of immersion programs, accelerated learning methods, and a Mentor-Apprentice language learning (McIvor, 2020). The Sami community in Finland serves as an example with the establishment of Kielineuvola, which is a 'language nest' program or initiative aimed at revitalizing and preserving the endangered Sami languages by providing language consultation services. Kielineuvola is carried out in an immersive environment, fully involving all members and providing positive support. The languages being revitalized are three minority languages in Finland, namely Northern Sámi, Inari Sámi, and Skolt Sámi. (Pasanen, 2025).

Meanwhile, the Kariri-Xocó community in Northeastern Brazil is currently taking a unique path toward the revival of their own culture and language. This region has a long history of colonial violence against indigenous communities. This is evidenced by a decree issued by the Brazilian Ministry of Agriculture, Business, and Public Works in 1873. The decree served as a public affirmation of colonial power. It declared the extinction of indigenous peoples, languages, and cultures in the Northeastern Brazil region (Nelson et al., 2023). This process described as a cultural elimination that occurred on a larger scale throughout the 19th and 20th centuries in Brazil (Poets, 2021). The Kariri-Xocó community then carried out language reclamation as an effort to strengthen its culture. By reinforcing the traditional regional language, the Kariri-Xocó community collaborates to strengthen their culture. When the community teaches or learns their own language, they do so in an integral, profound, and complete manner. Engaging with the language is their way of affirming identity, bringing the history that shapes them into perspective and reclaiming the way of life. It will anchor the community within itself and strengthens its culture. Furthermore, Nhenety fully embraces the use of digital technology as a tool for language pedagogy and cultural revitalization. She began using blogs in 2008 and later created a dedicated WhatsApp group for language revitalization in 2017. She mentions that words in

the Kariri-Xocó language emerge through an evolutionary process as the world changes. New words with different meanings eventually appear. Indigenous languages play a part in this transformation process, and gradually, indigenous communities renew the vocabulary they possess. Nhenety adopts a dynamic view of language that rejects the prescriptive norms imposed by colonizers. The Kariri-Xocó community also embrace digital technology to disseminate information. This digital technology is also intended for artistic expression and to assist language learning pedagogy (Nelson et al., 2023). In some cases, efforts to revitalize language carried out by community members involve practicing lifelong learning in their homeland by creating new and unique strategies to reclaim their indigenous language (Daniels & Sterzuk, 2022).

After the language was published on blog and WhatsApp group, efforts continued with establishing language schools and classes. That initiative held by Idiane, Nhenety's niece, in 2018. She raised funds to build a language school. During the COVID-19 regional quarantine, Idiane taught online classes for children. She also continued to lead language lessons for adults, attended by members of her own community as well as other indigenous communities via WhatsApp. Idiane and Nhenety design their own pedagogical materials, creating alternative learning spaces led by the Indigenous community, independent of the Brazilian state curriculum. This language is also expanding as members of the community use Kariri-Xocó in more sociolinguistic contexts. A female handicraft seller at the market in this study said that speaking in Kariri-Xocó language is an important marker of identity. She even explained that speaking Kariri-Xocó already shows that she is an indigenous person, without needing to wear paint and feathers on her body (Nelson et al., 2023).

In line with the spirit of the Kariri-Xocó community, the Sengwer indigenous people in Kenya are also doing something similar. Milka Chepkorir from the Consortium for Community Conserved Areas and Indigenous Peoples, who coordinates efforts to preserve the living spaces of local communities and indigenous peoples in Kenya, explained that a language can only survive if it is spoken. In the context of understanding Sengwer environment community lives, Chepkorir explains that the extinction of their community's indigenous language is the first step towards losing their identity. The Sengwer people living in Embobut Forest, suffer from forced evictions from their ancestral land. In Kenya schools, speaking Sengwer or other indigenous languages is considered uncivilized and can be punished. This causes discourages the younger generation from learning their indigenous languages. Chepkorir notes that this loss of language is closely related to the erosion of their connection with the environment. The community understands that and strives to revitalize the knowledge they possess. This begins by creating materials related to indigenous language learning, then recording videos featuring the remaining elders talking about Sengwer culture, and inviting these elders to sit with children during school holidays to learn traditional ways of life. The purpose is to nurture a new generation of Sengwer language speakers who understand their identity, their relationship with the forest, and how to care for it (Zimmer, 2023). This aligns with the factors that encourage the use of indigenous languages in communication by living and interacting with older generations who are fluent in speaking their historical language (Bromham et al., 2020).

In Indonesia, the documentation is carried out by the young people of the Balik community in Sepaku, North Penajam Paser, East Kalimantan. They have been compiling the Mini Encyclopedia of the Balik Ethnic Community since 2023. This documentation is done by recording every vocabulary still used by the Balik community in daily conversations. The recording is carried out with native speakers who can distinguish original Balik language vocabulary from words that have been mixed with other languages, such as Dayak and Paser. While compiling the mini encyclopedia, they also discovered that the number of Balik people has decreased by 2.000 individuals, with the population amounting to about 5% (Almerio, 2025) or equivalent to 100-150 people (Mitha, 2025), out of the total population in Penajam Paser Utara, the number of speakers has drastically decreased. The recording efforts successfully collected as many as 2.000 vocabularies, which have been verified by the remaining speakers. In addition, they also documented proverbs in the Balik language. All of these documentation results were published in a 198-

page in November 2024. This encyclopedia also serves as a marker of the Balik community's struggle to preserve their mother tongue. Even though the book has been published, Balik youth clearly do not want to stop taking action. Most recently, they are compiling a dictionary of the Balik language with translations in Bahasa and English, with a target completion of five years. Balik community has also established customary schools, communal spaces where the community can learn and start using their ancestral language (Almerio, 2025).

Meanwhile, the publication of encyclopedias has also been carried out on the culture and language of the Orang Kodi in Southwest Sumba, East Nusa Tenggara. After this encyclopedia was published, Language Office contact the author to compile a Kodi language dictionary (Nuka, 2025). Moving to Jayapura, specifically to the village where the Namblong community resides. Organically, the indigenous women of the Namblong established the Indigenous Women's Organization (Organisasi Perempuan Adat or ORPA) to address the issue of the extinction of their language. This extinction was inseparable from the prohibition of using their native language when their area was designated as a military operation zone. ORPA then established a cultural school that teaches future generations to better understand their culture. The learning process is also enjoyable because it includes forest exploration. During the exploration, participants have to collect the fruit of the genemo tree and its bark to make a *noken* bag. Throughout the forest exploration, all participants are required to use their mother tongue. This process is carried out to further unite humans and the forest as inseparable entities (Wibowo, 2023).

The enthusiasm to preserve and record is also shared by Abdurrahman Balie, an 84-year-old Pamona language speaker (Siruyu, 2023) in Central Sulawesi. Abdurrahman Balie, affectionately called Ngkai Balie, which means Grandpa Balie, wrote a Pamona language dictionary that he translated into Bahasa. Ngkai Balie wrote the dictionary in a large notebook in his small hut, which had no electricity. Before completing the Pamona dictionary, Ngkai Balie first compiled a collection of Poso folk tales, known as *Laulita* in the Pamona language. That collection contains 12 folk stories from the four major ethnic groups in Poso Regency. Ngkai Balie then photocopied the collection on recycled paper, made covers for them, and donated them to the regional library. He did not stop there; he actively traveled around villages, either on foot or by using motorcycle taxi services, to campaign for the use of the Pamona language. For the spirit and hard work demonstrated, Ngkai Balie was then awarded the Mosintuwu Award 2018 in the category of language tradition guardian (Hasan, 2022). The effort made by Ngkai Balie in writing this collection of folklore was previously recorded as being carried out by Nicholas Adriani, a Dutch linguistics expert who lived in Poso until the end of his life. In 1932, Adriani published a book titled *Bare'e Verhalen* or *Laolita nTo Pamona*, which documented 150 *Laulitas*, ranging from tales about the formation of Lake Poso, the relationship between humans and nature, to natural disasters (Mokonio, 2020).

In addition to documentation, record-keeping, establishing schools and native language classes, as well as creating songs, festivals also serve as a means of preserving cultural and linguistic diversity. This has been carried out by the Mosintuwu Festival since 2020. The year 2025 marks the sixth edition of the festival. There are various interesting activities held over approximately three to five days during the festival. These include reciting poems, folklore, and stories in indigenous languages, such as *Mobolingoni*, *Kayori*, and *Malaolita*; music performances featuring musicians singing in native languages play (Amanda, 2022). The cases of language reclamation and revitalization above show that the efforts must be influenced by a positive language attitude. This is generally known as language ideology, which means that the community must genuinely want to use the indigenous language in order for revitalization efforts to be successful (Dołowy-Rybińska & Hornsby, 2021).

The main part of efforts to reclaim and revitalize indigenous languages is not one-dimensional. Various forms and different spaces of use can complement and strengthen both individuals and groups. This is done to ensure that the risk of conducting language revitalization within a narrow spectrum does not occur and to avoid results that are considered artificial and unsustainable (Sallabank & King, 2021). This is also done so that

the challenges during the process of language reclamation and revitalization do not place indigenous language speakers in an emotionally tense situation that could become a painful and silencing experience (Lane, 2023).

Then, discussions regarding language protection are also important in relation to the issue of language extinction. In some regions, this policy has been introduced. In Canada, for example, Bill C-91, enacted in 2019 by the federal government, aims to honor indigenous languages by revitalizing, supporting, and strengthening the languages of the Métis and Inuit peoples. Similar policies have also been established in New Zealand through the updated Māori Language Act in 2016. The act recognizes the Māori language as an official language and regards it as a *taonga* or treasure of the indigenous people (Brown & Middleton, 2024). Finally, the protection of languages, which are an abstract cultural concept, can be carried out in an innovative and potentially effective way. This is achieved through the legal rights granted to the Whanganui River by the New Zealand Government in 2017. This legal rights were declared equivalent to those of a human (Kramm, 2020). Similar legal status can be granted to languages that are expected to create an easier path for obtaining protection (Brown & Middleton, 2024).

#### 4. Conclusions

Language extinction occurs rapidly in various parts of the world. Regions with a high diversity of languages, cultures, and species are at risk of losing a significant amount of knowledge due to this richness. Various factors related to language extinction have been formulated by experts. The main focus of this article is to examine the role of climate change and crises in language extinction worldwide. As a factor, climate change and crises are interconnected with other factors. In these findings, climate change and crises coincide with migration or the relocation of communities from crisis-affected areas to more fertile regions. This relocation eventually leads them to adopt the dominant language and gradually abandon their native language.

Although climate change and crises are often described as destructive forces that wipe out languages, the findings of this article also show that such crises can become unifying forces. This occurs when indigenous communities and researchers strive to reclaim and revitalize languages. Efforts to reclaim and revitalize languages are also creative and constructive because they are tied to history, identity, and the land where indigenous communities live.

These efforts range from recording, documentation, the establishment of classes and language schools, the creation of songs and chants in indigenous languages, cultural festivals, to policies that can protect languages. Ultimately, efforts to reclaim and revitalize indigenous languages with holistic approach, that connecting the unity of historical values, culture, and the land of living, provide communities with autonomy, freedom, strength, pride, a sense of ownership, and identity. This eventually anchors communities within their society and strengthens the culture they possess.

#### Author Contribution

C.D.C.P. (Conceptualization, Methodology, Validation, Formal Analysis, Resources, Data Curation, Writing – Original Draft Preparation, Writing – Review & Editing, Visualization).

#### Funding

This research received no external funding.

#### Ethical Review Board Statement

Not available.

#### Informed Consent Statement

Not available.

## Data Availability Statement

Data available in a publicly accessible repository.

## Conflicts of Interest

The author declare no conflict of interest.

## Declaration of Generative AI Use

During the preparation of this work, the author used Grammarly to assist in improving grammar, clarity, and academic tone of the manuscript. After using this tool, the author reviewed and edited the content as needed and took full responsibility for the content of the publication.

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