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Research Article

# Post-War Environmental and Socio-Economic Crisis and Their Contribution to Youth Migration

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**Abstract:** International youth migration has increasingly become a defining socio-economic challenge, particularly in ecologically vulnerable and conflict-affected regions like the Horn of Africa. This systematic review examines the compounding impacts of the 2020–2022 Tigray war, post-war environmental degradation, and socio-economic crises on youth out-migration in Northern Ethiopia. Adhering to the PRISMA guidelines, a rigorous literature search of electronic databases and gray literature sources published between 2020 and 2026 yielded 43 eligible studies for qualitative synthesis. The findings reveal that the intersection of prolonged armed conflict and severe environmental shocks such as recurrent droughts, land degradation, and the destruction of agricultural and livestock buffers has severely eroded rural livelihoods. Consequently, traditional coping mechanisms have broken down, transforming youth migration from a standard livelihood diversification strategy into an often unmanaged, forced survival mechanism. While remittances offer temporary relief to struggling households, mass out-migration accelerates rural labor shortages, deepens dependency ratios, and exposes young people to the severe hazards of irregular migration. The review highlights critical institutional gaps and emphasizes that sustainable post-war recovery requires integrated policies combining environmental restoration, rural livelihood revitalization, and youth-targeted economic opportunities.

**Keywords:** Climate Change, Environment-Migration Nexus, Livelihood Vulnerability, Post-War, Youth Migration.

## 1. Introduction

Across the globe, international youth migration has become a defining feature shaping global discourse through its profound social, economic, and political ramifications [1]. The International Organization for Migration [2] estimates that there are approximately 281 million international migrants, constituting 3.6% of the world's population that reached unprecedented levels even a midst the disruptions of the COVID-19 pandemic.

In Africa, and particularly the Horn of Africa, these drivers are acutely present. The region hosted approximately 23.6 million forcibly displaced people by the end of 2024, driven by a combination of persistent conflict and climate change-related disasters such as floods and droughts [3]. The continent continues to experience significant cross-border movement, often irregular in nature, fueled by systemic economic upheaval, high youth unemployment, and a mismatch between educational outputs and labor market demands [4].

This intersection of conflict and ecological instability is nowhere more evident than in Northern Ethiopia. The interrelation between environmental changes and the socioeconomic crisis, a phenomenon increasingly central to the migration of Tigrayan youth, is recognized as the environment-migration nexus. This issue is particularly critical in regions where the economy is largely dependent on environmental resources [5].

In the rural regions of Tigray, this nexus is felt most directly through the lens of subsistence livelihood, with agriculture and pastoral activities as the major sources of income, making the inhabitants highly vulnerable to environmental changes such as drought, land degradation, and rainfall variability. Environmental stress has also been exacerbated in Tigray because of climate change and land degradation. Drought, soil erosion, and reduced agricultural productivity have had a profound impact on rural areas. These environmental issues limit the income-generating activities of youth and make households more vulnerable. Consequently, migration has become a common response for youth in search of employment, education, and improved living conditions in cities or other parts of the country [6]. Youth constitute a large percentage of the population in Ethiopia, alongside limited employment opportunities, especially in rural areas. Rapid population growth, lack of access to land, and unemployment are some of the economic pressure factors that drive youth to migrate. Environmental degradation further worsens these conditions by reducing agricultural productivity and food security. In this case, environmental issues can combine with economic and demographic factors to influence youth migration decisions [5].

In Tigray, for instance, environmental shocks such as droughts and irregularities in the rainfall pattern have consistently undermined affected agricultural and pastoral activities. These changes not only pose a threat to food availability, but they have also eroded the economic well-being of rural communities. Thus, youth have been compelled to migrate in search of alternative economic opportunities. Migration, therefore, acts as a coping mechanism enabling a response to environmental shocks, which helps households to diversify income sources, mitigate their economic activities, and minimize the effects of environmental shocks [6]. However, youth migration has significant implications for communities, both positively and negatively. On the one hand, youth migration can benefit households and positively influence the community by sending remittances that improve local economic conditions. On the other hand, youth migration can negatively influence the community, for instance, by leading to shortages of labor in rural communities, overstretching the resources available in urban centers, and exposing young people to the dangers associated with irregular migration [7].

It is therefore essential to understand the factors that influence youth migration in the context of environmental change. Environmental sustainability, rural livelihoods, and youth employment policies can be useful in mitigating forced migration and strengthening community resilience. Environmental and development policies that incorporate migration elements are also important in the context of post-war Tigray, where environmental stress and youth unemployment remain pressing challenges influencing migration [8] and [6]. However, despite the growing body of literature on migration, limited studies have systematically examined the combined effects of post-war environmental degradation and socio-economic crises on youth migration in the Tigray region. Most existing studies tend to analyze these factors separately, overlooking their interconnected impact in post-conflict contexts. Therefore, this research review aims to analyze and articulate the post-war environmental and socio-economic crises that exacerbate youth migration in the post-war Tigray Region of Ethiopia.

Therefore, the adverse impact of environmental challenges combined with other socio-economic pressures has led to a growing number of people compelled to migrate without adequate support or

planning. Migration is increasingly adopted as an adaptation strategy to environmental stress and socio-economic constraints [9]. However, unmanaged migration can also have significantly negative impacts on migrants, their families, and the community, as well as environmental repercussions for both areas of origin and destination.

Experiencing this youth migration trend, the most recent Tigray war (2020-2022) fundamentally deepened the vulnerability trap for young people. It destroyed irrigation schemes, led to the looting of livestock (a critical buffer for drought) and caused the collapse of urban employment networks. Beyond that, post-traumatic stress, destruction of educational and vocational opportunities, and heightened environmental hardships have created a generation of disillusioned youth [10]. The war crisis also eroded traditional coping mechanisms to environmental challenges by depriving farmers of access to supplementary livelihoods such as beekeeping and artisanal gold mining [11]. If this trend continues, it may lead to long-term socio-economic consequences, including loss of productive labor, increased dependency ratios, weakening of rural economies, and erosion of social structures within communities.

Therefore, the main objectives of this literature review are to critically examine the impact of the 2020–2022-armed conflict on household livelihood strategies in the Tigray region, to systematically identify the war-induced environmental and socio-economic crises precipitated by the war in Tigray and to investigate the institutional and policy gaps hindering post-war recovery efforts and the effectiveness of existing frameworks in mitigating youth out-migration.

## 2. Literature Review

Theoretical framework: To understand why young people move from one place to another, we need to look at things from different angles. The Push-Pull Theory was first proposed by Lee in 1966 and still remains a basic way of understanding migration through opposing forces. Within this framework, the push factors of environmental degradation and unemployment in Tigray are countered by the pull factor of the prospect of a better life in urban centers or overseas. But as [12] point out, this model often neglects the structural constraints and intervening obstacles that determine whether a person is actually able to leave. The New Economics of Labor Migration at the household level does not see migration as an individual effort, but rather as a collective way of reducing risk. Families in ecologically vulnerable areas send their young members to different labor markets so that the household is not fully dependent on local, weather-dependent agriculture.

For a more psychological and structural view, the Aspiration-Capability Framework developed by Carling and de Haas explains that both the intention and the capacity to migrate are required for migration to occur. Environmental crises may engender a desire to migrate in Tigray, but, as [13] point out, many people remain involuntarily immobile because they cannot afford to do so or are unable to do so legally. Looking at the big picture, World Systems Theory connects these local movements with global economic inequality. [13] argue that in areas like the Horn of Africa, people are likely to migrate because of the global economic structure.

Finally, the Environment-Migration Nexus popularized by [5] offers the most complete view for this study. It brings together environmental, economic, and political drivers into one framework. Recent empirical evidence by [4] shows that in the post-war Tigray context, these variables are no longer independent but rather the destruction of infrastructure and environmental disruptions. This research aims to fill the gap in understanding of how these combined factors uniquely affect mobility after war.

Conceptual Frameworks of youth migration and environmental nexus: For the purpose of this study, youth migration refers to the movement of individuals aged between 15–35 years from one place to another in search of better livelihood opportunities. Environmental crisis refers to conditions such as drought, land degradation, and climate variability that negatively affect livelihoods. Socio-economic crisis includes unemployment, poverty, and disruption of economic systems. These concepts are interconnected, as environmental stress often leads to economic hardship, which in turn influences migration decisions, particularly among vulnerable youth populations.

The connection between people moving to other places and changes in the environment is a big topic that scholars and policymakers are talking about. This is especially true in areas like the Horn of Africa where the weather is very unpredictable [5] [15]. Young people moving is not just because of one reason; it is because of things like the environment, money, the number of people, and government decisions that affect them [5].

Environmental changes like not having rain, deserts getting bigger, land not being good for

farming, and weather that is hard to predict have made life difficult for people in the Horn of Africa. Many people there depend on farming and taking care of animals. These environmental problems make it harder for people to make a living and make them more vulnerable, especially the young people in rural areas; this is why some young people decide to move to places.

But environmental problems do not happen alone; they happen with issues like not having enough money, not having jobs, too many people, and governments that do not work well. All these things together decide where young people will move to [5]. In this situation, young people moving to places is seen as a way to deal with environmental problems and also as a way to make a living and survive [16]. Moving helps families because they can get money from places, often from family members who have moved ([17]. At the time in the Horn of Africa, some people move by choice and some are forced to move because of environmental problems, not having enough money, and conflict [15].

Empirical framework: Youth migration in the Horn of Africa is something that is influenced by a lot of things. The environment is one of them. Climate variability and drought are factors that shape the way people move. For example, in Ethiopia and other parts of the region, when there is no rain and temperatures are high, it affects the crops and the animals that people depend on. This means that young people from areas have to move to other places to find work and food [18] [16].

Some studies have shown that environmental problems are making it hard for people to move around in the usual way. This is especially true for people who take care of animals. When the environment is damaged, it disrupts the way people normally move with their animals, and this can lead to people having to move to new places [18].

The environment is not the only thing that affects youth migration. Socio-economic factors are also very important. Many young people do not have jobs. There is not enough land for everyone. This means that people are poor and have to move to places to find work. In Ethiopia, for example, the land is divided into pieces, and it is hard for young people to find jobs that are not related to farming [19]. This is why many young people move from areas to cities or even to other countries.

Conflict and political instability also play a role in youth migration. When there is not water or land for animals, it can lead to fighting, and this can force people to move away. This shows that environmental and political factors are connected [15].

The effects of youth migration are not all the same. On the one hand, when young people move to places, they can send money back to their families, which helps them to have more income and to have different ways of making a living. On the other hand, migration can also lead to problems like brain drain, where the smartest and most educated people leave, and families are separated. It can also be very risky for migrants, especially if they do not follow the rules and procedures [5].

Recently, some researchers have started to see migration as a way for people to adapt to climate change. When people move to places, it can help them to deal with the problems caused by environmental stress [16]. However, for migration to be a way to adapt to climate change, people need to have access to resources, support from institutions, and safe ways to move.

Youth migration in the Horn of Africa is an issue that involves many factors, including environmental, socio-economic, and political factors. There are still some gaps in what we know about this topic even though a lot of people are studying it. Most of the time, researchers look at either the environment or the economy. They do not look at how these two things are connected. We also do not know enough about how young people are affected because they have different problems and opportunities than other groups of people. The Horn of Africa is an example of a place where we need to know more about what is happening at the local level.

This study is trying to fill in these gaps by looking at how the environment and the migration of people are connected, including what causes it, what happens because of it, and what it means for people who make policies. The youth migration and environment issue is very important. This study is focusing on the youth migration-environment nexus. The study will look at the youth migration-environment nexus and how it affects peoplee.

## 3. Methodology

Methods of Literature Search: This research review was conducted following the Preferred Reporting Items for Systematic Literature Reviews (PRISMA). Literatures were mainly sourced from different web of research. Additionally, this review incorporated manual search reports of reputable humanitarian organizations like UNOCHA, IRC, and local organizations to capture reports which are not included or indexed in commercial databases. Literatures written in English, Amharic, and Tigrinya languages were considered. This methodology includes processes of search strategy,

eligibility criteria, screening process, and exclusion.

A systematic literature search was conducted to identify relevant studies published between 2020 and 2026. This time framework was specifically selected to capture findings of the Tigray war which started in November 2020.The search strategy employed using a combination of (AND, OR), and key words derived from the specific objectives and listen key words. Therefore; the primary search strategy was as following; Context search: ("Tigray"OR"Ethiopia") AND ("Post-war"OR" Post conflict" OR" Armed Conflict"OR"war2020). Exposure search:("EnvironmentalCrisis"OR"Ecological damage"OR" socio-economic crisis" OR" Livelihood collapse "OR" food insecurity" OR" economic shock"). Outcomepart: ("youth migration "OR"Out-migration "OR" displacement "OR Livelihood strategies "OR" livelihood strategies "OR" household coping").

Eligibility: the full text records were assessed for eligibility, and a total of records were excluded. The exclusion criteria were mainly either a lack of data regarding the youth population or failing to show clear impacts of migration on livelihoods and environments.

Included: At the end, a total of 43 records, which include authoritative gray literature reports and peer-reviewed journal articles, were considered for review. These studies formed the basis for the qualitative synthesis and were used in the results and discussion sections only.

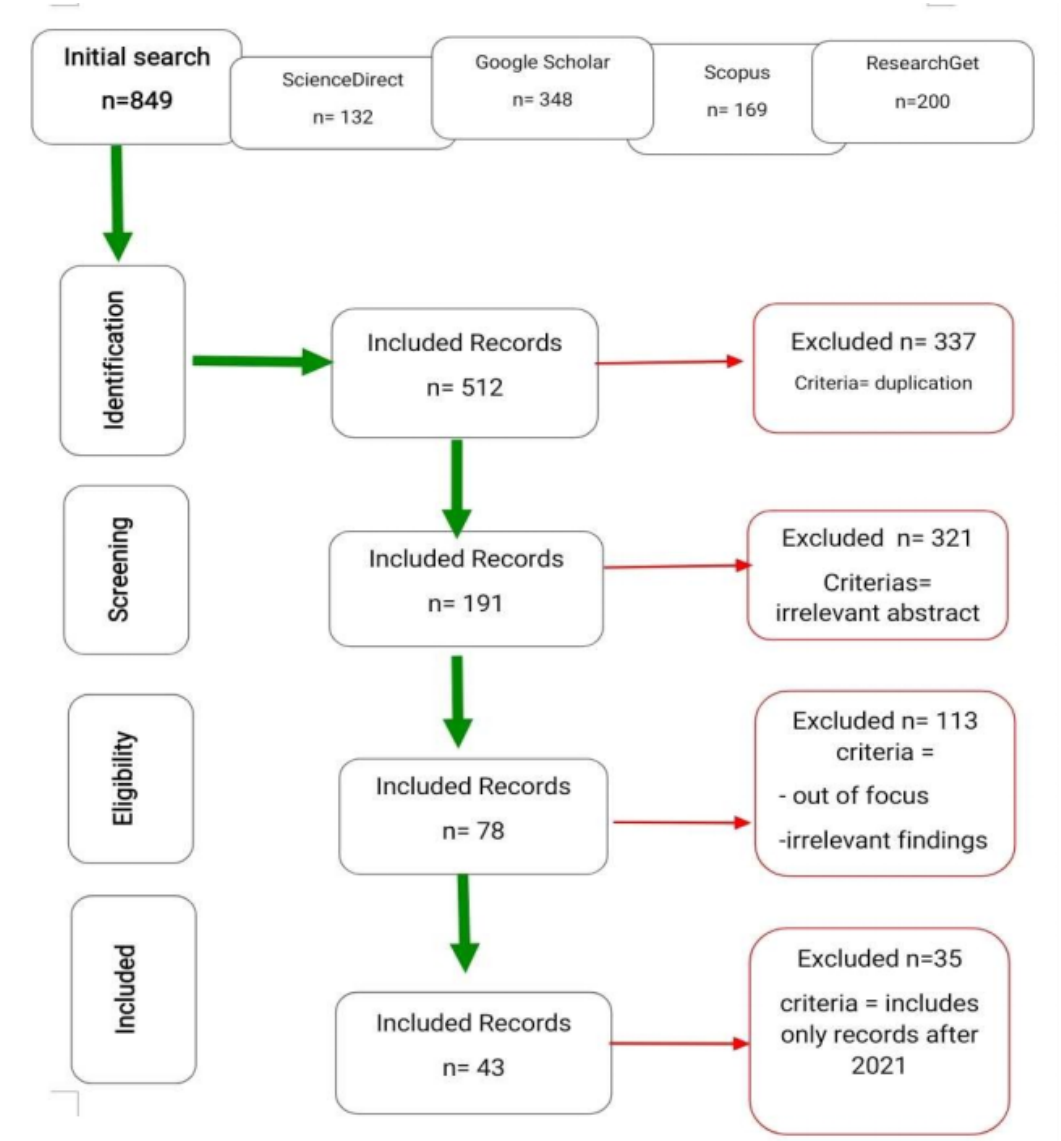



Figure 1. PRISMA Flow Diagram

## 4. Finding and Discussion

### 4.1. Economic Collapse and Unemployment

The economy of Tigray after the war is in very bad shape, in a condition struggling even to recover. This is because many businesses and factories were destroyed during the war, causing many people to lose their jobs. Most people in Tigray depend on farming to make a living. Farming was also badly affected because people had to leave their homes and they didn't have the tools and facilities they need to farm. Many young people are now without jobs and lost other means to make money. The war also made people lose their belongings such as animals and tools for farming. This has made it even harder for people to recover from the war. In the cities, many markets are closed, people have no jobs, and poverty increased. The World Bank stated in 2023 that the war has undone years of progress and made the people who were already struggling even more vulnerable [20].




Source: Manaye et al, 2023 [21]

Figure 2. Woreda, Raya Azebo
(a) Killed Highbred Cattle
(b) Mixing Crop with Oil and Fuels

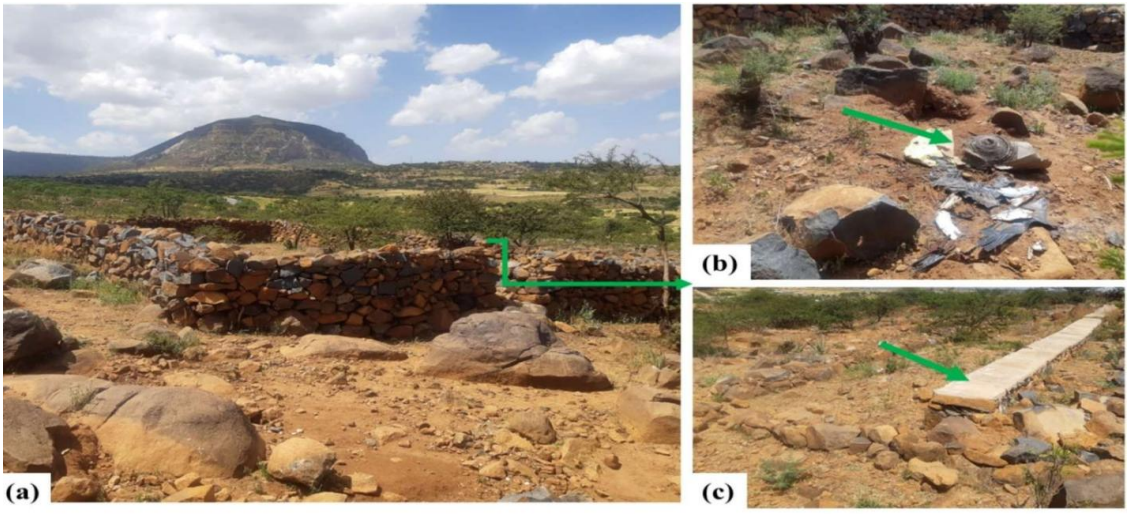
The two years siege and devastating war has left Tigray's economy in a state of paralysis even after the Pretoria peace agreement. Violating the agreement, 40% of Tigray's territory remains under occupation by external forces while people originally settled there are found in IDPs and refugee camps.

Finance is very limited in Tigray and people do not have access to banking services, a constraint that has slowed down the process of rebuilding the region. Many young people do not have jobs and they do not have much hope for the future. When people don't have jobs, leaving to find work somewhere else seems like the best thing to do to survive and have a better life. The post-war socio-economic crisis, specifically economic collapse and unemployment, is a big reason why people are migrating to other places.

### 4.2. Socio-economic impact of Tigray War and its Implications for People's Livelihoods

#### (1) Agricultural Collapse and Food Crisis

The Tigray war (2020-2022) had several impacts on the agricultural sector which then resulted in food insecurity and starvation [22]. Based on the findings of these authors, the war event prevents timely planting of crops and treating of the land to prepare for cultivation, which leads, for instance, to the overtake of weeds over 72% of farmlands in sample study areas. Similar findings by [21] also show that within that war time, various agricultural tools such as plowing materials and irrigation infrastructures have been deliberately destroyed to hinder the sector. Looting, killing of livestock, shelling over agricultural fields, and burning were the main damaging activities. Further, people were denied access to alternative livelihoods like beekeeping and traditional mining [11]. Such complexity reversed decades of development gains which resulted in increasing food insecure families by over 153%. By early 2024, only 14% of food insecure individuals received food aid and child malnutrition reached 26.5%. People were also denied access to off-farm activities such as gold mining and beekeeping, which was mostly practiced by young people [11].




Source: Meaza et al, 2024 [11]

Figure 3. Condition of Bee Keeping Compound within Enda Serawat (Near Werkamba Town):
(a) Deforested Bee Compound
(b) Burned Beehives
(c) Damaged Bee Infrastructure

In Tigray bouseholds participating in gold mining had better food security [23]. As to the findings of [11] gold mining was not easy during the wartime as places were occupied by soldiers and as the mining areas were battlefields. Similar to that, beekeeping is another off-farm ecologically attractive source of income in the region. However, beekeeping sites were destroyed, beehives were burned as there was bombing there, and it is challenged by losses of forage for bees and damage to other important infrastructures.

Therefore, it is obvious that the disruption of the normal agricultural system and off-farms, destruction of irrigation infrastructures, and displacement of the farming community are exacerbating the already existing food insecurity in the region. Such food insecurity is causing beyond the immediate crisis; rather, it could influence the long-term patterns of vulnerability and recovery of the sector [24].

### (2) Collapse of Social Services and Human Capital

#### (2.1) Health System Devastation

Tigray's war systematically dismantled health infrastructure. Nearly 87% of medical facilities were damaged either totally or partially; some of them with estimated loss and damage about $1.69 billion across 657,360 households, and displacement of health officials was another challenge [25] [26]. As a result, catastrophic maternal health outcomes show an increase from 186 to 840 per 100,000 live births. Due to the absence of salary and other war-related crises, health workers were displaced, and vaccinations and emergency obstetric care compounded the crisis. Looting, burning, shelling over buildings, consumable materials, and laboratories were the main deliberate actions on the sector, which ruined it and then increased health risks after the war.



Source: Addis Standard, 2023 [25]

Figure 4. Anurse Removing Debris from Thewar-Damaged Building at Wukro General Hospital Intigray

#### (2.2) Damages in the Education System

The Tigray war has caused 4.2% schools of Tigray to be occupied by IDPs, pracritical challenge hindering the learning process [27]. Out of the total enrollment plan in 2023/24 by the Tigray Regional Education Bureau, only 40% of students were enrolled at schools [28]. It has caused deep psychological and social to students, leading to learning loss, lower motivation among students, and teachers, and inturrupted schoolin which threaten SGD4's 2030 goal of inclusive, quality education for all, and reducing it to an empty pledge [36]. Because of the war, there is a collapse in the education system, and the challenging political environment in Tigray creates psychological trauma, hopelessness, and economic hardships, which challenge the resilience of the youth segment of the population and have a direct impact on their perception regarding the value of education [29].



Source: CITG, 2025 [26]

Figure 5. Damaged Medical Equipment, Medicine, Medical Supplies



Source: Vilalta, 2026 [30]

Figure 6. IDP Families and Children at Primaray School in Mekelle IDP Center April 15, 2021

### (3) Displacement and Livelihood Erosion

The two years siege and devastating war have left Tigray's economy in a state of paralysis even after the Pretoria peace agreement. Violating the agreement, 40% of Tigray's territory remains under occupation by external forces, while people originally settled there are found in IDPs and refugee camps. Therefore, people in IDPs are suffering from humanitarian crises, such as being forced to

survive without adequate food, shelter, health care, and protection [31] [32]. Currently in Tigray, only 18% of youth are employed, while the great majority is fueling marginalization, unrest, and security risks [29]. As to the finding of [29], 89% of youth is lacking extra income, which is driving crime, substance abuse, and illegal migration.

### 4.3. Post-war Environmental Crises in Tigray and its Implications on Youth Migration

The war in Tigray (2020-2022) has left a legacy of profound environmental degradation, directly impacting the livelihoods of rural youth [33] [34] and fueling their mass exodus. In between February 2021 and September 2022, approximately 4% of forest and woody vegetation shows a decline in NDVI [34]. The NDVI-based vegetation cover detection by [33] shows in Abergele-Yechila, Atsbi, and Samre watersheds a decline by 57% from the pre-war 2020 to the post-war 2021, which resulted from deforestation for the purpose of local people's survival, demand for military activities, and the result of disruption in community-based natural resources management practices. Soil and water conservation structures have been also destroyed. As a result, it leads to dramatic reductions in vegetation cover [11]. There was also destruction of terraces and stone bunds combined with the construction of military trenches, which has accelerated soil erosion, resulting in an increase in annual soil loss from a maximum of 11.2 tons per hectare in 2020 to 15.6 tons per hectare in the districts of Atsbi, Samre, and Abergele-Yechila [33].

Currently, because of the post-war related push factors of migration such as political insecurity and unemployment in the Tigray region of Ethiopia, the youth population is intending to migrate outside the country [35]. Destruction of the region's natural resource base has systematically dismantled the rural agrarian economy upon which the vast majority of the region's population is depending [33] [36] These findings are consistent with pre-war study findings in Ethiopia that show land scarcity and environmental shocks as key push factors for migration [37]. The post-war context has radically accelerated environmental pressures and then it has a possibility to return back environmental sustainability. The main post-war environmental challenge in Tigray is that the war has dismantled socio-ecological structures. As a result, devastated farmers have been forced to shift from long-term sustainability to immediate survival, which is creating a vicious circle of continuous decline and displacement of people [34].

The implications are severe. If any urgent intervention is not done, out-migration of youth will not only deprive the future working force, but it could also disseminate the social fabric of the rural community. Therefore, recovery efforts must treat environmental restoration and youth employment opportunities as an inseparable priority of rural communities [33].

### 4.4. Policy Implications: Youth Migration in Post-War Tigray

The review indicates that youth migration in Tigray is a response to intersecting environmental crises, livelihood fragility, and institutional weaknesses. In the environment–migration nexus, migration is both an adaptive strategy and a symptom of systemic vulnerability [5] [16]. Accordingly, policy responses must shift from reactive control measures to integrated, resilience-oriented interventions. A primary priority is the rehabilitation and development of climate-resilient rural livelihoods. Environmental degradation, expressed through drought, soil erosion, and declining agricultural productivity, has undermined household incomes and intensified migration pressures.

Similarly, youth employment and economic inclusion are critically important. Targeted interventions to address high unemployment, limited access to land, disrupted local economies, and access to finance, which are key drivers of youth out-migration, are essential. This review also suggests significant institutional and policy coordination to address existing coordination gaps. Integrating migration agendas into regional development planning and strengthening coordination across sectors such as agriculture, environment, industrialization, education, training, and labor is crucial. Furthermore, reducing vulnerability through strengthening social protection systems is also vital, as conflict has eroded existing coping mechanisms, leaving households exposed to shocks. In sum, addressing youth migration in Tigray requires a holistic policy framework that tackles environmental, economic, and institutional drivers simultaneously.

## 5. Conclusion

This review has revealed that youth migration in post-war Tigray is the outcome of a deeply intertwined environmental, socio-economic, and political crisis exacerbated by the 2020–2022-armed conflict. The evidence synthesized in this review clearly shows that the destruction of livelihoods,

collapse of institutions, environmental degradation, and persistent insecurity have made a convergence to create a pervasive crisis that drives young people out of their communities.

At the core of this crisis lies the disruption of agrarian livelihoods, which has been for centuries the backbone of rural Tigray. The war caused damage to irrigation systems, loss of livestock, and a decline in agricultural productivity. These damages were compounded by climate variability and land degradation, and significantly eroded the economic base of households. Concurrently, widespread unemployment, food insecurity, and the breakdown of education and health services have narrowed opportunities for youth, leaving migration as one of the few viable survival and adaptation strategies. The study further confirms the strength of the environment–migration nexus as an analytical tool combined with other drivers. Environmental stress alone does not trigger migration; rather, it becomes decisive when combined with institutional failure, economic collapse, and social disintegration. Youth are particularly affected due to their limited access to assets, disrupted education, and psychosocial trauma, which collectively heighten both their vulnerability and mobility. While migration generates some positive outcomes, most notably remittances that sustain households, it also carries significant long-term risks, including labor shortages in rural areas, dependency on external income, exposure to irregular migration pathways, and the erosion of local human capital. These dual effects reinforce the conclusion that migration in Tigray is both an adaptive response and a symptom of systemic failure.

Critically, the findings reveal substantial policy and institutional gaps in post-war recovery efforts. Fragmented interventions, weak governance structures, and limited integration of environmental, economic, and migration policies have constrained effective responses. As a result, existing recovery frameworks have not sufficiently addressed the root causes driving youth out-migration. In light of these insights, the study underscores that reversing distress-driven youth migration in Tigray requires a holistic and integrated recovery strategy. Such an approach must simultaneously prioritize: Environmental rehabilitation and climate resilience, Livelihood diversification and youth employment creation, Restoration of education, health, and financial systems, Strengthening of local institutions and governance, Psychosocial support and social cohesion rebuilding.

Ultimately, the future trajectory of youth migration in Tigray will depend on the region's ability to transition from crisis response to sustainable and inclusive recovery. Without addressing the structural drivers identified in this study, migration will continue to function as a default coping mechanism rather than a voluntary and opportunity-driven choice. Conversely, with coordinated and context-sensitive interventions, Tigray holds the potential to transform its youth population from a migrating cohort into a central force for reconstruction, resilience, and long-term development.

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