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Review Article

Effects of Youth Unemployment to Climate Change Mitigation and Adaptation: Evidence from Rural Ethiopia

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Abstract

The existing institutions and legal entities are mainly concerned with the formal and wage employment sector. Employment in the informal sectors despite being huge untapped potential opportunities for youth employability receives minimal attention and a significant proportion of rural youth remain unemployed. This can pose a serious environmental threat to the scarce natural resources, which affect success in terms of sustainable rural development. Quite apart from the negative impact of youth unemployment on limited natural resources, youth unemployment also causes a loss of valuable productive human capital to protect and preserve rural agroecology to minimize or reduce the multifaceted effect of climate change. So, this article aims to investigate the effect of youth unemployment on climate change mitigation and adaptation in rural Ethiopia. Through the systematic review method, this article will analyze and discuss the issues of youth unemployment by reviewing findings, research, policies, and strategies for climate change mitigation and adaptation actions. The finding reveal that as climate action strategies enabling rural youth to engage in diverse range of green job typologies can help to further enhance the potentials of different sectors to contributes for the attainment country's green economy goal as well as global mitigation and adaptation measures. Therefore, creating an enabling environment for rural youths' employability can immensely reduce the negative impact it has on rural scarce natural resources through the so-called green job for youths.

Keywords

Rural Community, Youth, Unemployment, Green Jobs, Climate Change, Mitigation and Adaptation

1. Introduction

The concern of climate change is not something that happened most recent years, rather the earth's climate has been changing slowly over thousand of years, fluctuating regularly through cycles of hot and cold periods. Despite, during the 20th century there has been a sharp rise in global average temperatures as result of anthropogenic climate change and associated climate risks to human health, livelihood, food security, water supply, human security, and sustainable economic growth are also project to increase with global warming of 1.5°C and increase further with 2°C [3]. In spite of the fact that, for the last several decades humanity has increasing its pressure on the global environment beyond what is sustainable while providing invaluable ecological services to the well-being of human society. The resource and greenhouse gas (GHG) an intensive model of development that has adapted and largely followed so fad has led to the occurrence of various forms of environmental degradation across the globe, including decline of scarce natural resource, air and water pollution,

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soil degradation, biodiversity loss, and change in biochemical flows [14]. Though, all these effect either directly or indirectly affect the world of work. Among various scholars there is consensus on the alteration of global climate change has takes place as result of human interference on the sustain well-being of ecological services, as evidenced by the observed increases of global mean air and sea temperatures, the rate of melting glaciers, and global mean sea level. The impact of climate change have caused and will continue to cause multiple impact on natural and human systems, including scarce natural resources and societies around the world [16]. Even though climate change affect everyone across the world, its impact are not evenly distributed either economically or geographically, the third world countries has been the most disproportionately affected due to their inherent vulnerability and difficulties in adapting and mitigating to the effect of climate change [3]. Similarly, its impact are not the same across different age groups, and there are high level of effect on young generation who are distinct from experienced adult.

Though, the youth population are particularly vulnerable to the impact of climate change, at the same time they also have the potential to contribute to climate change adaptation and mitigation measure when they are empowered to become one of the key agent of change [3]. These risks associated with climate change has specific implication for youth employablity, in particular for the challenges of achieving to create sustainable employment opportunities for rural youth social groups of developing countries. Difference in social and economic roles and responsibilities exacerbate the vulnerability of youth, women, migrant, people in poverty, and persons with disabilities of the rural communities to the impact of climate change. These the most disadvantaged vulnerable social group tend to have limited opportunities to access and use resources to adapt and mitigate the concern of climate change, including access to land, financial services, agricultural inputs, the support of decision making bodies, technologies, social insurance, and skill and knowledge training among others [14]. Even though, for the majority of highly growing rural youth much more severe than other vulnerable groups, specifically these who engage and working in the informal economy and rural small business enterprises to recover from the effect of environmental disaster [14, 16]. This disproportionate impacts of climate change on young people today and weak adoption of effective and inclusive adaptation strategies that lacks equal values to the needs of all generations associated to the notion of intergenerational inequity will undermine liveable and sustainable future of young people and the climate. The impact of climate change may together with youth exclusion from adaptation and mitigation actions will aggravate the various obstacles and socioeconomic vulnerabilities will lead to decent work deficit among young people least developing countries. Yet, the introduction of green sector economic strategies to ensure just transition of youth workforce and enterprise development as sustainable development strategies will have invaluable impact and contribution to climate change adaptation and mitigation actions.

Ethiopia is one of the most youth-populated countries in Africa, and youth account for a large proportion, in 2025, young people aged 14 or above accounted for more than 63% of the entire population. According to government ministry of women and social affair and UNDP national policy brief 2025 there is mounting evidence that young generation face major structural, institutional, political and socioeconomic challenges, and resulted limited participation to the economic development of the country. The youth in Ethiopia is one of the significant assets and untapped human resources that can be effectively utilized for positive national growth. More than 26% of the youth in the country are unemployed [1]. Low literacy, estimated to be 68%, is the major contributing factor to youth unemployment [1]. Despite the country's ambition to achieve SDGs to join middle-income countries in a few years, the 39.8% or less national secondary school gross enrolment rate is a bottleneck for Ethiopia's overall development [1]. Not only the knowledge but also the skills and unique talents of the working-age youth population are vital to determining the national economic growth as Ethiopia's demographic dividend changes [1]. If adequately educated and trained with work ethic, the youth are the ones to represent the critical labor force who will highly contribute to the advancement toward middle-income status.

There is growing evidence that youth unemployment is becoming a bigger issue and challenge than adult unemployment. While young labor participants and adult participants can be affected by similar opportunities and barriers to work, youth may experience these barriers to a greater degree and may also face additional constraints [6, 12]. Barriers to employment and work opportunities on the demand side are often not necessarily youth-specific but can affect job seekers generally [10]. These include the state of the economy, the absence of a business-friendly environment, and infrastructure shortfalls [12]. Young people are particularly vulnerable, however, to demand-side fluctuations during difficult economic times, youth are often the first to be laid off. This hinders their ability to build skills and experience [31]. In the rural parts of the country, the youth group is also more likely to be affected by certain constraints, such as limited employment opportunities, lack of entry-level jobs, inefficient information systems, and weak access to financial services among others.

In rural Ethiopia, the new generation (Youths) does not have first-hand access to rural land to earn a means of living. Access to land from the government by way of distribution or redistribution is a pious option, but the absolute majority of rural youth have to access land from their parents. Which is constrained by many challenges, including limited farmland holding, and lack of agricultural inputs among others. The issue of rural youth unemployment potentially leads to and forces rural youth social groups to ambush and exploit scarce natural resources through cultivating depicted margin and sloppy areas and practicing intensive agriculture. This in turn

aggravates the main environmental concerns of rural communities, including deforestation, loss of biodiversity, desertification, land degradation, soil erosion, drought, flooding, disease outbreaks, and water and air pollution which lead to and aggravate the effect of climate change. So this review article aims to investigate the effect of youth unemployment on climate change mitigation and adaptation of rural communities. Through employing systematic review method, this paper will discuss and analyze multiple related literature to bring new insight and understanding for future researchers, policymakers, and development practitioners and entities.

2. Materials and Methods

2.1. Systematic Literature Review

For this review paper, a systematic review method has been employed. Jesson 2012 suggest that systematic reviews enable a clearly stated purpose, research questions, defined research approach, and appraisal [17]. By following an explicit research methodology the weakness of the traditional approach could be overcome [13]. This weakness may include biases and philosophical mix-ups through heterogeneous sampling [24], or issues related to the quality of assessment. Following this, the following steps have undertaken.

Phase 1: Mapping the field through a scoping review. Defining the inclusion or exclusion criteria for existing literature selection helps focus the relevance of the studies to the topics. For this article traditional literature review has been conducted to scope the amount of relevant materials by identifying the most often cited texts and following up on the reference therein. This gave the first impression of existing knowledge and knowledge gaps related to rural youth unemployment, climate change mitigation, and adaptation action.

Phase 2: Comprehensive search: Here entered into the systematic literature review by using the process described through searches in keywords, titles, abstracts, and concepts using Google Scholar with other combinations of the search terms, including the terms Youth unemployment, rural agroecology, climate change, mitigation and adaptation, decent jobs, green economy, and ecological sustainability. As well as identified the inclusion and exclusion criteria concerning narrative analysis of identified major terms.

Phase 3: Quality assessment: The search was subsequently limited to specific publications related to rural communities, youth unemployment, and climate change in the context of rural communities.

Phase 4: Data extraction. The articles were analyzed along with the nature of the article (empirical or conceptual), analysis method, theoretical perspective, findings or results, definitions or propositions, and quality-related comments have been summarized. To identify the main categories of this article, the strategy was first to obtain a broad understanding of these articles list the keywords of all of the selected articles, and summarize additional keywords by reviewing abstracts, introductions, and findings. By grouping the keywords able to identify first-order concepts. Then continued by grouping these keywords into categories.

Phase 5: Synthesis. After detail goon through the identified empirical and conceptual components, findings, and theoretical proposition synthesis have been made to summarize and discuss the major themes of the article.

Phase 6: Write-up and diffusion: The next section addresses the synthesis of the analysis of the articles as literature review, result and discussion of this article.

2.2. Data Interpretation and Analysis

Following data extraction study finding interpretation and analysis from a systematic review is the critical and last step in the review process significantly influence in synthesizing the result of the study.

Phase 5- Synthesis: Relevant identified concepts and supporting sources enable to construct major themes, then analyzed pertinent to the finding of each reviewed article.

Phase 6- Write-up and diffusion: The next section addresses the synthesis of the analysis of the articles as a result and discussion of this article. The Materials and Methods section should provide comprehensive details to enable other researchers to replicate the study and further expand upon the published results. If you have multiple methods, consider using subsections with appropriate headings to enhance clarity and organization.

3. Results

3.1. Agro-ecology of the Rural Community

Around one-third of jobs in the G20 countries directly rely on the the effective and efficient management and use of local agroecology through ensuring its sustainability and heather environment [14]. Most of African countries mainly considered as agrarian community with the majority of its population including rural youth still involved in agriculture as livelihood system. According to institutes of development studies evidence synthesis 2021 around half of Africa's new young job seekers will need to find employment in rural area at least until 2030 [28]. particularly around 60% of SSA youth population is expected to continue to live in rural areas at least for the next decades [28]. In order to do so, many scholars argue that agriculture will play central role in the structural transformation of Africa's economy to alleviate rural poverty as well to improve youth employment. In Ethiopia the world of work of rural communities intimately connected with scarce natural resources and local agroecology. In which the rural communities livelihood deeply tied with the diverse agroecological zones ranging from arid lowlands to humid highlands characterized by smallholder subsistence oriented mixed crop and livestock farming practices.

Even though climate change and other forms of environmental degradation has already caused net negative impact on the livelihood system, jobs and work productivity of young generations. And these impact expected to become more pronounced and intensified in the coming decades [14]. This negative effect of climate change in the form of environmental degradation may have a direct negative effect on rural youth employablity. While considering the relationship between youth job seekers and the concern of climate change at least three key aspects are under consideration in which youth jobs in general rely on the services that ecosystem provides. According to ILO 2018 findings climate change threatens the provisions of many of these vital ecosystem services thus endangers the rural communities jobs depends on it. Secondly both jobs as such and the provision of safe, health, decent working conditions rely on the absence of environmental hazards and ecological sustainability. Thirdly the risks and hazards associated with environmental degradation tend to affect the most vulnerable social groups [14]. Though increases the frequency of extreme weather events generally lead to loss of youth productivity while enhancing the provision of ecosystem services. The most severe impacts are expected to occurs in the economic sectors that are very reliant on highly climate sensitive resource - agroecology and areas frequently afflicted by extreme weather events [16].

3.2. Rural Livelihood and Youth

In the Sub-Saharan African countries agriculture remain the largest and dominant livelihood system and employer of youth. Despite increasing urbanization, projection estimate indicates around half of African new youth job seekers will need to find employment in rural area until 2030 [26]. In fact that the country economy has been gradually transforming towards the services and industrial sectors, and that economy has made remarkable growth, the large share of the population remains dependent on subsistence farming. Most rural smallholders farmers have been facing constraints, including diminishing farmland, crop damage and pest and diseases infestation, insufficient rain, outdated agricultural technologies leading to low outputs with limited market information [29]. These challenges induce youth unemployment in rural area since farmland as a primary source of wealth in rural parts of the country youth generation have limited opportunities to access and use rural farmland in which, the majority of the young population live in rural area where agricultural farming had been traditionally the main livelihood of the people. As the state owns all land in the country, rural communities have been guaranteed to access to land through a law that grants the youth right to access agricultural land for free [27]. Even though most recent years the country face severe farmland scarcity to fulfill the rights of young generation where population densities have become very high and households farm size significantly diminished. Due to this and other multifaceted factors, farmland as a safety net increasingly eroding and landless highly emerging among rural youth [27]. As result, rural youth are facing climate change induced crisis along with shrinking agricultural opportunities, high unemployment, limited productive land access which leads to increased rural to urban migration. Whilst, most rural youth rely on agriculture, land scarcity along with rapid population growth limit their independence to have and establish their own livelihood [26]. In the meanwhile, agriculture also the major source of greenhouse gas (GHG) emission to the environment, the largest user and a significant polluter of water, and can cause both land degradation and loss of biodiversity [26]. Accompanying these factors, the agricultural sectors has enormous potential for greening and creating green employment for youth through adopting climate smart agricultural practices that contributes to its sustainability and improve rural youth livelihoods.

3.3. Disparity to the Effect of Climate Change

There are stark inequalities among various social groups, including youth, adult, women, and other most marginalized and vulnerable rural communities regarding the likelihood of suffering from the damage caused by climate change. Even though, climate change affect all rural communities in the country, thus people in poverty, women, youth, migrants, indigenous and tribal people, person with disabilities are the most vulnerable to the negative consequences of climate change [14, 25]. In the meanwhile, these groups can also make an important contribution towards combating the concern of climate change. For instance most indigenous rural communities play a vital role in sustainable management of scarce natural resources through their traditional use and management practice to preserve their natural resources [14]. At the national level, developing countries are confronted with significant risks [16]. The consumption patterns and stages of development of the above-mentioned groups of people and countries mean that their contribution to climate change is relatively low, yet they are the ones having to bear the heaviest burden of its consequences [16]. Like most countries in the continent, Ethiopian demographics are characterized by a significant number of youths, those below the age of 30 being 72% of the population [2] and the most vulnerable social group to the effect of climate change crisis in the country. Rural unemployment is just 5.2% in 2021 (and negligible at 2% in 2013), while the urban unemployment rate is 18% in 2021 (16.5% in 2013). Looking at its gender dimension, female unemployment in 2021 is much worse at 25%, compared to the male which was below half this level at 11%. (Geda, 2022). Thus, notwithstanding the significant disguised unemployment/under-employment in rural areas, which is estimated at 45%, unemployment is primarily an urban phenomenon in Ethiopia [2, 30] The youth unemployment is also found to be higher than the general unemployment rate in the country.

The circulation of narratives about the green economy and sustainable development may be expected to promote awareness among youth about these concepts and the opportunities

they might offer [11]. To the extent that these opportunities are perceived as attractive, they may be expected to deepen young men's and women's interests in work and career opportunities in the green economy.

Based on real existing situations and evidence; In channeling youth and women towards new sources of employment opportunities and ones not premised on the already exceeded natural resource base, employment creation responds to their changing aspirations. It moves them away from perpetuating and untenable dependence on a diminishing natural resource base and protects and preserves the environment from further damage. Despite that, the youth's and women's livelihood conditions and income sources can be also improved and changed for the better under a favorable sustainable environment and tailored green economic development interventions that can bring better access to capital resources as a means of climate change mitigation and adaptation. Nevertheless, unemployment on change climate conditions will have also an impact and could either counteract or further enhance the effect of other drivers. So, to isolate the other driving forces and to mitigate the effect of climate change; needs conduction of research to develop new strategic interventions to protect limited natural resources/environment and mitigate climate change, at the same time also enhance and ensure youth and women employability through jobs creation, and livelihood diversification.

3.4. The Crisis of Youth Unemployment

In many parts of third-world countries, there is growing evidence that youth unemployment is becoming a bigger issue and challenge than adult unemployment. While, the youth labor force and adult participation can be affected either through similar opportunities or barriers to work, despite the youth may experience these barriers to a greater extent and face multifaceted constraints [12, 22]. barriers to youth employment and decent work opportunities on the labor market demand side are often not necessarily youth-specific but can affect job seekers in general [10]. These include the state of the economy, the absence of a business-friendly environment, and infrastructure shortfalls [12]. Even though, during the difficult social, economic, and climate concerns, youth are often the first to be laid off. This hinders their ability to build skills and experience [31].

Rural youth unemployment is closely linked to the state of the economy [23]. there is a greater debate about the role and importance of the national gross domestic product (GDP) on youth employment creation in Africa. According to Anyanwu's 2013 empirical analysis of macroeconomic determinants of youth employment challenges the real national GDP growth has a significant positive effect on youth employment [4]. However, there is consensus in much of the literature on Africa that the poor progress made in the structural transformation of the economy towards modern export-oriented enterprise sectors has resulted in limited economic opportunities and weak youth employment generation. According to Boateng's 2016 study analysis of Africa describes the quality of economic growth - measured by the share of agriculture and manufacturing sectors value added to the total national outputs doesn't bring a positive impact on rural youth employment [31]. The economic growth is largely due to the extraction of limited natural resources and capital-intensive services sectors that do not advance youth labor absorption and employability. There is also a low share of labor force intake in the private sector contrast to Asia and Latin America [6]. Most East Asia countries have undergone a more labor-absorbing transformation with labor-intensive manufacturing and services accounting for a greater share of national outputs and generating sufficient youth employment [10].

Neglection of the youth labor force a core component of the development agenda has not been a focus of economic policies in many African countries but has not been treated instead as a residual outcome of economic policies [12]. Even where policy statements do promote employment, few developing countries promote labor-intensive growth. In terms of rural agricultural policy, the separation of efforts to accelerate agricultural growth in Africa and job creation has undermined the youth generation income and employment for large numbers of young people [8]. Governments have also ignored or undermined the potential of youth enterprises and the informal sector, which could serve as a key area of youth employment creation.

3.5. The Tragedy of Climate Change

Climate change is more than merely an environmental phenomenon [19]. Not only are its causes rooted in societal practices, but its consequences also extend far beyond its immediate natural impacts [19]. Direct impacts such as rising sea levels and changes in the distribution of rainfall may make areas uninhabitable, disrupt critical infrastructure, impose health risks, threaten food security, and undermine livelihoods that depend on natural resources. Critically, these impacts are unequally distributed, reflecting variation in exposure to climate change as well as in the extent to which people can adapt to it. Globally, this gives rise to the cruel fact that 'those nations most responsible for emitting greenhouse gases are best positioned to protect themselves [...] whereas nations with the lowest carbon footprint generally possess few resources to do so.

The tragedy of the commons neatly demonstrates that individual actors often lack incentives to take public interests, such as the preservation of the environment fully into account. When their goal is to maximize utility in the short run, it can be entirely rational for actors to exploit collective resources, even when the whole community will eventually suffer. This represents a classic case of a collective action problem or social dilemma with every actor facing incentives not to take any precautionary actions, even though a collective failure to act will ultimately harm everyone’s welfare. The fact that the at-

mosphere is a global common-pool resource makes it especially challenging to avoid overexploitation, as problems related to the atmosphere inevitably transgress boundaries. Moreover, while one could think of a system of tradable emission permits, as exists for industrial polluters, one would run into numerous problems when trying to roll out such a system on a global scale and for all greenhouse gas emissions [19]. One of the key complexities is that the global character of the atmosphere implies that every person on our planet is involved, as potential culprits and victims [19] to the effect of climate change. This makes it practically impossible to agree on common rules, monitor behavior, and avoid free-riding [19]. In addition, people cannot easily observe the effects of climate change in their everyday lives. For example, the rise in global temperatures – one of the prime symptoms of climate change – amounts to 'only' one degree Celsius over the past 50 years [19]. Despite unprecedented rates of biodiversity loss, environmental well-being, and ecosystem service are also negatively affected. Due to the increment of youths and women unemployment rate, loss of and ineffective utilization of valuable productive human capital the effect of climate change further worsens the ecological well-being and its sustainability.

4. Discussion

4.1. Rural Youth and the Green Economy

Among east African countries, Ethiopia is at the forefront of addressing environmental sustainability and climate challenges which driven by its unique geographical diversity and rapidly growing rural population [5]. The 63% of youth population holds immense potential as change-makers in climate action and environmental conservation. Recognizing this, youth-led and youth engaging organizations have emerged as vital contributors to the country journey towards sustainable development, and these initiatives span along with various environmental activities, including the area like renewable energy, climate adaptation and mitigation, sustainable rural development initiatives will have invaluable contribution to the country's climate action.

Even though economic growth and youth educational attainment over the last 15 - 20 years have been increased the concern of rural youth unemployment in the country remain one of the most serious socio-economic and environmental issues [9]. The majority of Ethiopia's youth, around 81% live in rural areas where they face considerable challenges, and they share highly climate change induced shrinking farm plot of family and with parents and other adults resulting in insufficient land access through time [9]. compounding these difficulties, rural youth are disproportionately impacted by poverty and have limited job opportunities with poor infrastructure, financial services, market, human capital and restricted access to land. This rural young people's conditions are the primary drivers of excessive youth unemployment [7, 9]. Despite, government of Ethiopia has introduced several initiatives, policies, and strategies to address these issues faced with multiple constraints to its effectiveness, mainly due to lacks of or week adoption of youth inclusive approaches, measurable target and insufficient consideration of challenges that rural young population faced [9].

It is in the interests of the nation's to ensure that their most productive citizens are employed in useful work that contributes to national economic growth and social development [11]. It is estimated that approximately 122 million young people in Africa's labor force expect to join the labor market, but this is nearly three times faster than the expected rate at which stable, wage-paying jobs will be created across the continent [11, 18]. Furthermore, the new jobs are often of low quality in productive sectors that are adversely affected by climate change. The concept of the 'green economy' is emerging as a hopeful solution to the multiplex challenges of climate change, poverty alleviation, and inequality reduction, while also enabling developing countries to create decent jobs and to accomplish an inclusive economic transformation. The 'greening' of economies is broadly understood as a process through which resources are reallocated from unsustainable production systems to sustainable and regenerative ones that also reduce vulnerabilities and promote human well-being. This transformation is anticipated to create new 'green jobs', and for this reason, it is widely heralded as a solution to the youth employment crisis in Ethiopia.

4.1.1. Youth Unemployment and Environmental Sustainability

The process of agricultural and rural transformation is likely to be shaped by the phenomenon of climate change in most African countries. In 2014 Intergovernmental Panel on Climate Change noted that the current global warning consistently leads to changes in rainfall patterns, occurrence of extreme weather events, including increase in temperatures, drought, flooding, disease epidemic among others [21, 28]. As result of this consequences the efforts to boost agricultural productivity, food security, and rural youth employment are likely to be stymied if an effective and adequate mitigation and adaptation strategies are not adapted. While, across the globe the phenomenon of climate change already impacting all the economies, despite in Africa a number of non-climatic factors makes vulnerable to the effect of climate, including fragile and hazardous locations, lack of access to resources and services, rapid population growth and human mobility, gender inequality, poor health, poverty and others [28].

However, the country - Ethiopia environmental sustainability and climate resilience efforts that have been initiated during the last two decades rooted in a robust set of the the country national strategies, global commitments, and local communities participation. This includes with and central to the key national development policy framework incorporated under Climate Resilience Green Economy (CRGE) strategy; the

long-term low emission development strategy, and National Determined Contributions (NDCs) which provides the foundation to address climate change challenges while fostering to pursue country's sustainable development goals [5]. These national climate action frameworks mainly prioritize and focus on emissions reduction, climate adaptation, and green economic transformation to make the country as a leader in low-carbon development across Africa. The CRGE strategy which is launched in 2011 emphasis on transitioning scarce natural resource use to renewable energy, to ensure climate resilient agricultural practices, reduce carbon-emissions in forestry and transportation sectors [5].

In rural Ethiopia, youth social groups comprise more than half of the population. They are vagarious involved in all aspects of the socio-economic, political, and cultural life of rural communities. They are valuable productive capital both as producers and procreates, and have active potential in the social, environmental, and economic activities of the rural society. However, economic and livelihood opportunities allowed them little flexibility and fewer economic opportunities. On top of that they have had limited access to farmland and other resource, hence lack ample job opportunities to improve their livelihood systems. Moreover, constant fast rural population growth accompanied by a high rate of youth unemployment creates a significant decline in existing natural resources. Despite that, youth unemployment to climate change has a direct and indirect impact on ecological sustainability, it could either counteract or further intensify the effect of climate change. Therefore, isolating the indirect drive of climate change as adaptation and mitigation strategies enhancing youth employment through decent or green jobs will support and ensure sustainable economic growth in rural communities. In channelling rural youths towards new employment opportunities the one not promised on the already exceeded natural resources will protect and preserve the natural resource from further damage. This can be attained through tailoring green economic development strategies and programs that can bring better access to capital resources as a means to climate change mitigation and adaptation actions. Therefore, to achieve the country's commitment made under the Paris Agreement align with the global sustainable development goals (SDGs 13 - climate action) that have been illustrated its dedication to addressing climate and environmental challenges. While, according to CDKN and EWYCA 2025 report along with these climate action national and global frameworks, youth-led and youth centered organizations are significantly emerging as transformative agent of change to bring sustainable development in the rural part of the country, and their engagement can play pivotal role to drive climate action to achieving long-term sustainable rural development.

4.1.2. Youth in the Climate Action

Natural resource dependent rural agricultural based livelihood system represent the biggest youth employment sector. Even though, due to constantly growing rural population along with lack of employment opportunities, involuntarily imposed youth to abuse and exploit scarce natural resources through clearing and burning of forest for farm land, and cultivate most depleted margin and sloppy areas. Further they adopt extraction and collection of pebbles, selling eucalyptus trees, and for making handcraft as source of income. Though limited alternative livelihood support action along with the scarce nature of rural natural resources, farm land fragmentation, lack of climate smart improved agricultural inputs, and youth skill and knowledge gaps intensify their vulnerability to the effect of climate change.

In most rural part of the country the youth generation identified as disadvantage social groups, and lacks required educational and skill training, financial services and other supportive institutional services hinders their employment opportunities. Such challenges with fast rural population growth, decline of natural resource productivity and traditional subsistence agricultural production system youth in general become unable to secure their livelihood system. Although, rural youth unemployment on consistently changing climate condition either counteract or aggravate the effect of other drivers on the sustain well-being of rural agroecology. This in-turn affect the well-being of environmental that worsen and annoy the sustainable ecosystem services to human society. Despite, unprecedented loss of rural biodiversity, loss of the new generation productive human resources significantly undermine the climate change mitigation and adaption actions. Though the young generation needs and demands decent employment opportunities through promoting social equity for overly growing youth unemployment in the rural part of the country.

On the basis of rural youth existing situation evidenced from multiple sources, channeling the young generation towards new employment opportunities the one that not promised on already exceeded scarce natural resources bases will respond their changing aspiration instead of perpetuating their dependence on diminishing rural natural capitals. This will also isolate other driving forces. That favor rural environmental sustainability and can tailored green economic development to climate change mitigate and adaptation actions, through creating enabling environment for youth employablity at the centre of sustainable economic, social, and environmental well-being in the so called "green economy". Which significantly contribute to attain sustainable rural development in the country.

4.2. Impact of Youth Unemployment

In the rural communities of Ethiopia youth makes up the majority of its population, and they face significant barriers to employment. And several factors contribute to the high rate of their unemployment in the country including like land scarcity due to population pressure, lack of rural job opportunities, infrastructure, minimal access to education and skill training restrict their ability to find stable livelihoods. As result many rural youths are unemployed or migrate to urban centers in

looking for jobs. This high rate of young population unemployment in the country can lead to serious effects to socioeconomic sustainable development and contribute to decline in living standard, access to necessities like shelter, education, and healthcare, as well increase social instability [9, 20]. According to most recent literature unemployed youth in the rural parts of the country face higher risk of poverty, food insecurity and malnutrition, and without stable sources of income they struggle to afford their daily basic necessities for survival [9].

Though this high level of youth unemployment become one of the critical issues that rural communities face today. While the labor force grows with an increasing proportion of youth social groups natural resources become inadequate to absorb the new labor market entrants. Economically it leads to labor market instability, loss of productive human capital, and increased welfare costs. Indeed, the concern of youth unemployment is not only the concern of the youth social group, it is also the concern of the entire rural society. Which brings stress to society and ecological well-being. Unprecedented rates of biodiversity loss, accompanied by a decline in environmental well-being and ecosystem services youth unemployment further affect climate change mitigation and adaptation actions. Creating an enabling environment for youths through climate-smart business opportunities will reduce energy and raw materials consumption in rural communities. This will limit greenhouse gas emissions to the environment, as well as protect and restore ecosystem services. Creating employment opportunities for youth through the expansion of climate-smart business opportunities is a way to deliver adequate and effective climate extension services to rural communities.

Natural resource-dependent rural communities are more severely vulnerable to the effects of climate change. Loss of potential human capital will negatively affect ecological sustainability. Along with the effort to reduce environmental degradation through fostering innovative natural resources productivity will create and enhance youth's employability like green jobs, climate-smart enterprises, and soon. Improving or promoting green jobs for youths in rural communities will be the backbone for the attainment of low-carbon emissions and a climate-resilient economy. This will create a response to the youth generation as an alternative pathway to attain sustainable social, economic, and environmental development.

4.3. Sustainable Development Through Decent Jobs for Youths

The country abundant natural resources are increasingly affected by interconnected factors of population pressure, agricultural expansion, rapid urbanization, climate change and environmental degradation [15]. The country's large population is impacting the sustainability of almost all of its natural scarce resources. As result the rural parts of the country faces critical environmental challenges, including, soil erosion, deforestation, recurrent drought, desertification, and land degradation, loss of biodiversity and wild species [15]. Further, efforts to enhance the country economy through new industrial development brought additional pressures to the well-being of the environment. All of which intensify country's vulnerability to climate-related hazards and shocks across the rural communities. This climate induced situations has led to loss of soil fertility, decreased vegetation cover, unsustainable agricultural practices and influence other environmental obstacles to bring sustainable development in the rural area.

However, in recent years, the idea of green jobs become a base for sustainable development. Green jobs are central to responding to the global challenges of climate change, economic development, and social inclusion. These green activities involve greater care for the environment in a way that lays the foundation for ecological transformation and will create economic agent specifically the youth social groups to change their behavior, production, and consumption, as a result, it increases environmentally friendly business opportunities. Youth employment creation under green jobs supports the production and productivity of natural resources and improves investment in the stability of ecosystem services. Generating more decent jobs for youth promotes the three major components of sustainable development; economic growth, social cohesion, and environmental sustainability.

Even Though, in recent decades the country's achieve remarkable growth in gross domestic product (GDP), it has not been accompanied by sufficient employment creation to young population and wealth has not been equally distributed that leads to large scale youth unemployment and inequality mainly due to the impact of climate change induced vulnerability. To deal with the negative consequences of climate change and creating a large number of decent jobs for growing youth population are two of the major challenges facing the African continents [26]. However, the concept of green economy which is broadly understood as an economy that results in improvement of human well being and social equity, while significantly reducing environmental risks and ecological scarcities emerged as a potential solution to tackle these multiple challenges. Transforming green economy will create green jobs to increase youth's opportunities in the future of work [26]. This two folded transition along the lines of climate change adaptation and mitigation actions can tackle both simultaneously. On the one hand it involves making the economies more resilient to the effect of climate change, while on the other has it requires investments in renewable energy and more sustainable productions processes to reduce carbon-emission to the environment [26]. So both of these tracks of the green economy transition requires not only large scale investment either from government or non-government developmental entities, but also require active labour force, in which green job considered as essential to make a significant contribution to climate change adaptation and mitigation measures despite it has wide range of contribution to the cli-

mate action, sill much is unknown about what actually constitutes a green jobs and has thin scientific evidence base towards youth green employment [26]. As well policies and programmes are often not sufficiently well informed by new knowledge emerging from research and development practices. Therefore, addressing these issues require consistent scientific inquiry, restructure economic and social and climate policy, and strategic framework through concerted efforts by a variety of stakeholders, including policy makers, private and public sectors, and academic institutions.

5. Conclusions

The inability of the rural youth to engage in productive and climate-adaptive green business, including in the low-carbon sectors (agriculture, energy, and forestry) aggravates the main environmental concerns of rural communities such as deforestation, loss of biodiversity, land degradation, a decline of farmland productivity, and recurrent drought. The critical shortage of arable farmland and lack of alternative livelihood systems make the youth more vulnerable to the effects of climate change and lead them to engage in environmentally unfriendly non-farm activities, including cutting trees - selling firewood and charcoal, temper extraction, and soon. In many cases, the rural youth social groups lack adequate support from public and private development entities which results in undesirable change in the fabric of social, economic, and natural environmental challenges. The significant effect of youth unemployment or matured youth job seekers is that their skills and knowledge tend to be lost over time, particularly as they are more likely to experience longer periods of unemployment. This will have a direct and indirect impact on rural ecology sustainability. Which can be fostered through promoting innovative ecological preservation to enhance their employability. So the youth exclusion from climate change mitigation and adaptation action requires a collective response from a wider range of developmental entities, to create an enabling environment for youths to engage and participate in the required climate measures. Youth engagement in the public sphere has a direct implication for the economic, environmental, social, and political wellness of rurality. In fact without the establishment of effective development approaches toward youth concerns it further culminates youth marginalization from their active involvement in climate mitigation and adaptation actions. Therefore, developing and implementing appropriate youth employment creation policies, strategies, and programs within the framework of low-carbon development as a future carbon/green finance strategy to reduce the environmental or ecological risks of youth unemployment needs to be a prior issue for the attainment of sustainable rural development.

Abbreviations

ILO	International Labour Organization
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
UNDP	United Nation Development Program
SDG	Sustainble Development Goals
USAID	United State Agency for International Development
GDP	Gross Domestic Product
CDKN	Climate and Development Knowledge Network
EWYCA	Ethiopian women and Youth Climate Assembly
CRGE	Climate Resilience Green Economy
NDCs	National Determined Contributions
IOM	International Organization on Migration

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Author Contributions

Seid Ahmed: Conceptualization, Data curation, Formal Analysis, Methodology, Resources, Validation, Writing – original draft, Writing – review & editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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Biography

Seid Ahmed has wide range of academic and professional foundation and aspiration towards social research particularly on climate resilience, livelihood based climate change adaptation, food security, social and economic policy analysis, resilience building, gender, youth and women, social equity, child protection, disaster risk management, social protection, migration and displacement, and Indigenous knowledge system and practices among other. He is well equipped professional with nearly 10 years of expertise in diverse thematic field, including resilience building, food security, disaster risk management, climate change adaptation, economic empowerment and employment creation, and access to clean energy, water and forestry program. He has immense experiences in performing and excel tasks in meticulous attitude and wide spectrum of an integrated multi-sectoral community based projects and programs while worked for non-governmental organizations, including Ayuda en Acción, Vita Impact, Save the Children International (SCI), International Development Enterprise (IDE), and Agri-service Ethiopia (ASE). Indeed, Seid played significant role in underlying and managing project teams, coordinating, planning, implementing, monitoring and evaluation, reporting and reviewing projects and programs activities are the major areas of specialization among others. As far as educational background he accredited his first degree in Sociology and Social Work with honor second upper class, and has master degree in Sociology from Hawassa University, Ethiopia.

Research Field

Seid Ahmed: Climate resilience, livelihood based climate change adaptation, food security, social and economic policy analysis, resilience building, gender, youth and women, social equity, child protection, disaster risk management, social protection, migration and displacement, and Indigenous knowledge system and practices among other.