



Urbanization and its Effects on Environment and Socio-economic Sustainability; Evidence from Dire Dawa, Ethiopia

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ABSTRACT

The impact of urbanization on environmental sustainability is a critical issue that requires careful planning and management to ensure positive outcomes. This study aims to assess the effects of urbanization on urban environmental sustainability. A descriptive research design was employed to achieve this objective. Out of nine urban kebeles, five were purposively selected based on their relevance to the study. The sample size consisted of 394 respondents selected from a total target population of 29,932. Both primary and secondary sources of data were utilized, including questionnaires, interviews, observations, and document reviews. Data analysis involved the use of percentages, frequencies, diagrams, and charts. The findings revealed that rural-urban migration was a primary driver of urbanization, leading to rapid urban growth and associated challenges. Sustainable urban development initiatives were found to be inadequately implemented, resulting in the overconsumption of natural resources, improper waste disposal, and deforestation. While urbanization brought positive effects such as job opportunities and improved infrastructure access, negative consequences like informal settlements, crime, and high living costs were also evident. The study highlighted a lack of government focus on urban sustainability, emphasizing the need for increased agricultural development in rural areas to curb migration. Recommendations included stricter enforcement of laws, community training on environmental conservation, and the implementation of sustainable practices such as tree planting and waste recycling. Encouragingly, supporting underprivileged communities to improve their livelihoods was also advised to enhance overall urban sustainability.

Keywords: Environment, Socio-economic, Urbanization

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INTRODUCTION

Urbanization is a complicated phenomenon, with profound changes in land, and socioeconomics including consumption patterns, institutions, and environment (Hana & Pujiati, 2023; Langford et al. 1999; Bai et al. 2014). There is an emerging consensus that urbanization is critically important to international development, but considerable confusion over what urbanization actually is accelerating or slowing development. The spatial concentration and growth of the global population in poor and middle-income countries during the twenty-first century presents important opportunities as well as major challenges (Anahal, 2022; Khanal, 2020). In the developed countries large-scale urbanization has the potential to generate substantial benefits for economic development, social progress and efficient use of natural resources. Urbanization to these countries have positive effect which is attracting attention from governments (Pan et al., 2024; World Bank, 2009; UN-Habitat, 2012, Turok, 2013). This relates to the potential gains for productivity, job creation, and higher living standards from the geographical concentration of population and economic activity. There is growing recognition that urban environments foster entrepreneurial dynamism and facilitate, good social amenities and other economic agents (Nyayieka, 2016; Singh Rai, 2017; Glaeser, 2011). However, urbanization in developing countries with high population densities also exposes countries to sensitive risks of social dislocation and environmental degradation (UN-Habitat, 2014). Especially in Africa when it exceeds the fiscal capacity of the government to fund additional public infrastructure which is very costly and it exceeds the absorptive capacity of the labor economy to provide jobs for the expanding workforce (UN-Habitat, 2013; Buckley and Kallergis, 2014). One of the consequences is the emergence of dysfunctional forms of urban development, which become “locked-in” and complicated to rectify. For instance, overcrowded informal settlements are often difficult to upgrade and reorganize into a more efficient spatial arrangement because of the complex social structures in such communities (Bapari et al., 2017; Regmi, 2018). About 60 % of urban residents in Africa live in overcrowded, under serviced slums and squatter settlements (Kopadze & Jikurashvili, 2023; Thi Truc Quyen et al., 2022). The growth of cities has resulted in increased consumption of resources to meet the growing demands of urban populations leading to the generation of large amounts of waste in cities. Due to weak institutional policies and lack of resources both human and capital, waste management and sanitation in many African cities are in very problematic conditions. Between 20 and 80% of solid waste in African cities is disposed of by dumping in open spaces, water bodies, and surface drains due to inadequate infrastructure (Bera et al., 2023; UNEP, 1999).

Ethiopia is the second most populous country in Africa next to Nigeria with a population estimated at 132.5 million in 2024 of which 22.1% live in urban and peri-urban areas (CSA, 2024). Urbanization is a predominant factor that contributes to ecological, and socio-economic improvement. However, unless it is well planned and managed sustainably, the effect of urbanization alters the socio-economic and environmental component of urban centers. Dire Dawa is the most dynamic town in the

country with its strategic geographic location between Addis Ababa and Djibouti serving as a transit and terminal for the import and export of commodities and services. There are many major industries which are located in the city. Among these Textile mill, soft drink factory, Meat factory, cement factory and Food complex, Drinkwater factory, the new industrial park and etc.

Various studies have been conducted on the effects of urbanization emphasizing its effects on the livelihood of farming communities and the processes. According to Kedir, (2010), urban expansion and its effects on the neighborhood. the study found that the consequences of urban expansion and dislocation faced by the communities include; reduced income, loss of social cohesion, cultural and traditional institutions and interactions being destroyed, dependency, and lack of a permanent source of income. As Yimam (2017), researched urban expansion and its impact on peripheral farming communities: the study revealed that urban expansion had the effect in terms of decreasing farmland, grassland, forest land, water body, shrub land, and bare land. Zebus' (2014), An Assessment of Livelihood and Food Security of Evicted Farmers in Urban Expansion. The study found that urban expansion has negatively affected the livelihood assets possessions that have been used as means of income sources for making a living.

All the aforementioned studies have investigated significant results about the effect of urbanization on socio-economic development. Rapid urbanization in developing countries poses significant challenges to achieving sustainable urban development. While urbanization can drive economic growth and social progress, the unplanned and unmanaged expansion of cities often leads to environmental degradation, resource depletion, and socioeconomic imbalances. By analyzing the trends, drivers, and impacts of urbanization across multiple dimensions - environmental, economic, and social - the research seeks to identify the key factors hindering the realization of sustainable urban development. Despite existing research, none have comprehensively linked the effects of urbanization to environmental sustainability from both negative and positive perspectives. Furthermore, previous research has not adequately explored the role of government interventions aligned with sustainability indicators in mitigating the impacts of urbanization. While urbanization does have spatial implications, there is a notable lack of research on its effects in the Eastern region and semi-arid cities, which present distinct socio-economic conditions. This study aims to examine the complex relationship between urbanization and urban sustainability in the context of a rapidly growing city in eastern Ethiopia. The findings will inform policy and planning interventions to promote more sustainable patterns of urbanization that balance economic, social, and environmental imperatives. Ultimately, the study contributes to a better understanding of the urbanization-sustainability nexus in the developing world context, where the stakes for sustainable urban futures are especially high.

Objectives of the study

- To assess the trends of urbanization in eastern Ethiopia

- To assess the effects of urbanization on the environmental sustainability in the study area.
- To identify the social- economic implications of urbanization in the study area.

2. Literature Review

There is no international consensus on how to determine the boundaries of urban areas or identify when a settlement is ‘urban’, as evidenced by the diversity of national urban definition summaries in the publications of the United Nations Population Division. Some researchers might prefer a simple, standardized definition, based on population size and density criteria, and some countries have adopted such definitions (in some cases with allowances to include commuters living beyond the bounds of the dense agglomeration). In many countries, however, settlements designated as urban are expected to serve certain administrative functions. Administrative responsibilities, and the associated status of urban, are rarely conferred based on physical features alone. Alternatively, some countries have multiple criteria, perhaps including size, density, and administrative level, but also extending to indicators of what could be considered urban employment (e.g. non-agricultural workers), facilities (e.g. higher-level schools), and infrastructure (e.g. street lighting).

2.1 Urban Environment Concepts

Urban environment is a peculiar term that comes from a field of study drawing on both the social sciences and nature – two important scientific epistemologies – without entirely belonging to either one of them. Since it is often considered by researchers to understand the actions and social practices that take place in the urban realm, it may be closer to the social sciences although it also is used in discussions on air, water, soil, climate, vegetation and animal life (Khan & Khan, 2023; Khanal, 2020; Polyakova & Tsurik, 2019). Its main area of application is society found within a space characterized by a dense pattern of development and an intensity of social interactions: this is what is implied by urbanization. It refers to a relatively central, intricate organization of the lived space and can include any area ranging from metropolises, urban centers, semi-urban fringes, neighborhoods, and suburbs, to mid-sized towns. Pointing to the urban environment involves, in essence, the understanding of modified, transformed, disturbed and recreated environments (Bapari et al., 2017; Benna & Benna, 2017). It follows that the study of the urban environment focuses initially on research topics normally restricted to the domain of the natural sciences. Still, at the same time it can describe and analyze actions carried out by social actors. The urban environment is therefore considered from the point of view of social relations, global and local issues, problems that need solving, and outcomes or impacts linked to human activities (Hana & Pujiati, 2023; Singh Rai, 2017).

2.2 Theories of Urbanization

Suburbanization theories

It means beyond the city” thus it refers to peripheral areas of large cities around the world (Bodo, 2015). As cities grow, they expand towards outskirt areas and thus

peripheral or suburban areas develop and grow. Cities expand towards peripheral areas due to high density, increasing urban land prices and pollution. It is the responsibility of urban government to provide basic amenities in these areas as these suburban areas may not necessarily have a separate political unit (Regmi, 2018; Bodo, 2015).

Theory of Self-Generated Urbanization

This theory suggests that urbanization occurrence requires two separate conditions, which are the generation of surplus products that sustain people in non-agricultural activities (Hawley, 1981) and the achievement of a level of social development that allows large communities to be capable of working successfully alone (c). The changes that resulted in urbanization took place simultaneously in the Neolithic period when the first cities emerged in the Middle East (Bodo, 2015). The theory holds that rural-urban migration was a source this form of urbanization, as people began to migrate to the cities for factory jobs (Childe, 1950). Industrialization was identified as the driver behind the exodus movement of people from rural settlements to urban areas.

Modernization Theory

It was prevalent and influential theory from the 1950s to the 1970s. The theory asserts that urbanization results from the introduction of new things and innovations within society through industrialization, technological application, information penetration, and cultural diffusion ((Nyayieka, 2016; Childe, 1950). Considering urbanization through the lens of modernization. Thus, the application of technology is seen as the main driving force of urbanization in the society. According to Bodo, (2015); industrialization rather than capitalization is often seen by scholars in this tradition as having a major impact on the transformation of third-world societies.

Migration Theories

Migration can be both a problem and a solution for various urban regions. See some migration theories

Buffer Theory of Migration: The buffer theory of migration states (Singh Rai, 2017) that “the workers who are imported on a temporary base due to creation of shortfall of laborer will return” However, it is not appropriate to make such an assumption that laborer will go back. Migration cannot be applicable always as an adjustment mechanism. Hence, the Buffer’s migration law is not true (Anahal, 2022; Pan et al., 2024).

Neo-Classical economist: Argues that the main reason for labor migration is wage difference between two geographic locations. These wage differences are usually due to labor demand and supply in specific geography (Bera et al., 2023; Qian & Eslamian, 2022; Sivakkolundu & Sujatha, 2018).

Push and pull factors theory: The push and pull theory is based on various push and pull factors. Push factors are those things/ factors that are unfavorable about the specific area that one lives in and hence push them to move away from that particular area. Pull factors are those things that attract one to another area due to various reasons push factors can be less employment opportunities, natural disasters, war, pollution, poor, housing, etc., and pull factors can be better employment

opportunities, better living conditions, healthy environment, etc (Bera et al., 2023; Turok & McGranahan, 2013).

2.3. Trends and process of urbanization

Urbanization is an increase in the number of people living in towns and cities. Urbanization occurs mainly because people move from rural areas to urban areas and it results in growth in the size of the urban population and the extent of urban areas. These population changes lead to other changes in land use, economic activity, and culture. Historically, urbanization has been associated with significant economic and social transformations. For example, urban living is linked with higher levels of literacy and education, better health, lower fertility and a longer life expectancy, greater access to social services and enhanced opportunities for cultural and political participation (Polyakova & Tsurik, 2019). However, urbanization also has disadvantages caused by rapid and unplanned urban growth resulting in poor infrastructures such as inadequate housing, water and sanitation, transport and health care services. In 1960, the global urban population was 34% of the total; however, by 2014 the urban population accounted for 54% of the total and continues to grow. By 2050 the proportion living in urban areas is expected to reach 66% (Kalhor & Mahdisoltani, 2015).

Urbanization in Ethiopia

Urban Ethiopia is increasing in multiple forms: population growth, number of cities, densification of big cities, and urban land expansion (Yimam, 2017). Addis Ababa had only one city, with over 100,000 when Ethiopia conducted its first census in 1984 (CSA, 1984). Three cities joined this group in 1994: Dire Dawa, Adama, and Gondar, while Addis Ababa became 12 times greater than the next largest city, Dire Dawa (CSA, 1994). The number of secondary cities with a population more significant than 100,000 increased to 11, with four towns with a population greater than 200 thousand (ibid). In 2015, the number of cities with a community greater than 100,000 and 200,000 increased to 19 and seven, respectively. In general, urban centers in Ethiopia are characterized by the primate city of Addis Ababa, a few cities with a population ranging between 100,000 to 500,000, and many small towns with a population size of fewer than 5,000 (Arup, 2016). Addis Ababa is home to a quarter of Ethiopia's urban residents and is ten times bigger than the second-largest city of Adama in 2015 (ibid). Rapid urbanization can be attributed to many factors such as rural-to-urban migration, the formation of new cities, the growth and expansion of existing cities, and the natural growth rate of the urban population (Nixon et al, 2007; World Bank, 2015). People from the rural sector migrated to the urban sector for a livelihood because of higher employment opportunities, higher wages, better lifestyles, etc. in urban areas.

Higher productivity in urban areas, more employment opportunities, a better lifestyle, etc. attract more firms and people towards urban areas. Large-scale migration from rural to urban areas increases the urban gross domestic product (GDP) and economic growth rate, which in turn helps to reduce dependency on agriculture and poverty in rural areas. Cities' contribution to GDP is significant, reaching 38 percent of

GDP (UNDP Ethiopia, 2018). Besides, the growth rate of large and medium cities and small urban centers is increasing in size (Yimam, 2015) and political influence (Tesfahun, 2017). Such cities as Hawassa in the south, Dire Dawa and Harar in the east, Mekelle in the north, Bahir Dar in the northwest, and Adama in the country's central corners are not just growing faster. And these cities are deemed potential corridors for future urban Ethiopia with more substantial metropolitan areas in their respective regions (Arup, 2016; Tesfahun, 2017). The secondary cities that mainly constitute the regional administrative centers benefitted from infrastructure and related investments that followed their designation as provincial capitals (Tesfahun, 2017). The above discussion indicates that Ethiopia is experiencing a fast pace of urbanization and a corresponding high contribution to national income from the urban segment. The economy's gradual change is undergoing a predominantly agriculturally based economy into service, and the 'industry' led an urban-centered economy. In a welcome measure, the government has initiated and implemented various urban-related policies and programs to promote Ethiopia's urbanization in recent years. However, the country needs better policies, programs, and schemes in the coming days to promote planned urbanization and to absorb the immense economic potential that urban areas can provide for higher and sustainable economic growth in Ethiopia.

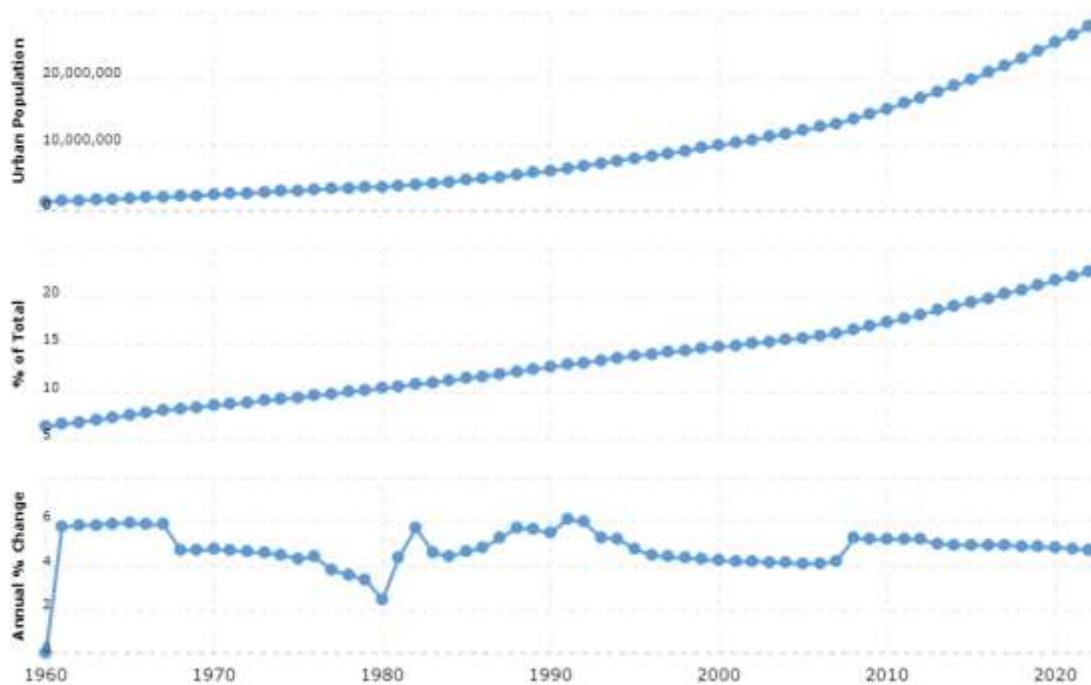


Fig 1. Urbanization Trend in Ethiopia from 1960 - 2022

Empirical studies

According to Hana & Pujiati (2023), Urbanization in Indonesia is a growing trend with both positive and negative outcomes. While it stimulates industrial growth, it also

raises environmental concerns and intensifies competition for jobs, potentially leading to increased crime rates. This study examines the impact of urbanization on Indonesia's environment, economy, and society, analyzing data from 33 provinces between 2010 and 2020 using the structural equation-partial least square model. The results indicate that urbanization negatively affects environmental quality but positively impacts the GDP and theft rates. It suggests a need for environmentally friendly practices and skill development among urbanizing residents to mitigate adverse effects. Balancing economic progress with environmental sustainability and social well-being is crucial for managing the challenges posed by rapid urbanization in Indonesia.

As of Khan & Khan (2023), Climate change has become a major challenge in recent decades as a result of rapid economic growth due to increased energy use and a rise in urbanization. Environmental damage induced by energy use, urbanization, and economic growth can be overcome by technological advancement and good governance. This study examines the effect of urbanization, technological innovations, and economic growth on carbon dioxide emissions in the Belt and Road initiative countries from 2002 to 2022. By using GMM model, the results show that, technological innovations and foreign direct investment raise carbon dioxide emissions however, research and development enhance environmental quality. This study also found that urbanization has a nonlinear relationship with carbon emission where effective governance exert a moderating role in this association. This study provides important policy suggestions for BRI countries.

Bera et al., (2023), critically analyze and summarize the existing literature on urbanization's effects on environmental sustainability. It delves deep into the nexus between rapid urban growth and the subsequent ecological consequences, mapping out the intricacies of this relationship. Drawing upon urban ecology, sustainability science, and socio-ecological systems theories, the review provides a lens through which the multi-dimensional impacts of urban expansion on environmental equilibriums can be assessed. A systematic literature review was conducted, encompassing peer-reviewed articles, reports, and white papers from various academic databases. Inclusion and exclusion criteria were established to ensure relevant and rigorous material selection. This methodology enabled the identification of both direct and indirect environmental consequences stemming from urbanization trends. Urbanization, while integral to societal progression and economic development, has significantly affected environmental sustainability. Key findings include increased greenhouse gas emissions, urban heat island effect amplification, loss of green spaces, and disturbances in local biodiversity. However, it also elucidated the potential for urban areas to spearhead sustainability solutions, provided there is a marriage of policy, innovation, and community engagement. Research,

Anahal (2022), in investigating rapid urbanization and its impact on the environment finds people move from rural to urban areas through the process of urbanization, which results in the growth of cities and towns. While urbanization has led to increased economic growth and development, it has also had a significant impact on

the environment. Rapid urbanization in India has led to a number of environmental issues, including air and water pollution, deforestation, biodiversity loss, and climate change. One of the biggest environmental problems that urban regions in India face is air pollution. The major contribution in air pollution has many sources one of them is the burning of fossil fuels for transportation and industrial uses. The availability of particulate matter in the air can have significant health impacts, including respiratory illnesses and cardiovascular disease. The present paper analyses the impact of urbanization in India and its impact on environment and the strategies that can manage the impact.

Fan et al., (2022), In Southeast Asia, transitional economies have undergone rapid urbanization, reshaping their economic, social, and environmental landscapes. Myanmar, among the least developed in this group, saw urbanization rise from 25% in 1990 to 31% in 2019. However, gaps exist in understanding urban land use changes and their environmental impacts, particularly in cities. Focusing on Yangon, Myanmar's largest city, satellite imagery and historic data were used to track urban expansion from 1990 to 2020. Results show rapid urban growth, often at the expense of farmland and green spaces. Air quality changes revealed a decrease in CO but increases in NO₂ and PM2.5, with PM2.5 linked to population, economic growth, and vehicle numbers. Experts noted additional drivers like Cyclone Nargis and globalization. This study emphasizes the intricate relationship between urbanization, economic shifts, and environmental challenges in transitional economies.

Sarbu et al., (2021), In highlighting the trends determined by the current health crisis. The main research method is the bibliographic study doubled by a secondary documentary analysis that allowed us to identify both the historical evolution of the concept and the detachment of current trends. All these concepts take on a new meaning in the current pandemic context and the trend seems to be man's return to nature and villages, perhaps determined by home isolation as the central method imposed by most countries in the fight against Coronavirus.

Begna (2017), Rapid Urbanization, Squatter Settlements and Housing Policy Interface in Ethiopia, the Case of Nekemte Town. *Journal of Geography & Natural Disasters*. The major finding of the study shows that urbanization process in the study area was very high with high demand of land for housing. The urban population growth was mostly due to the immigration from rural areas to Nekemte town. This is more forceful against the environment of the ever-increasing urban unemployment, poverty, and widening the gap of socio-economic inequalities. In turn, these factors initiate the development of squatting people as an option less option at the study area. As indicated in the result of the study, the problem of squatter settlements was low income, inaccessibility of land for housing due to the government policy, little understanding of the lease policy, unclear urban demarcation or boundaries, and others.

Magigi, (2013), Urbanization significantly impacts food systems, environmental quality, climate change, and agricultural livelihoods in urban ecosystems, shaping their sustainability. Focusing on Dar es Salaam in Sub-Saharan Africa, this study emphasizes

the role of urban agriculture in providing ecosystem services and promoting environmental sustainability. It highlights the connections between environmental justice, urban ecosystem services, and climate change in influencing land governance, productivity, and the city's aesthetic value. Urban agriculture enhances community health services, resource access, and urban environmental sustainability, influencing redistributive land use policies. However, urbanization and agricultural practices also lead to land use conflicts as settlements transition from rural to modern. To address these challenges and improve food systems and environmental sustainability in rapidly urbanizing cities like Dar es Salaam, effective spatial land use planning and management strategies are essential.

Hussein (2013) conducted research on the Assessment of the Impact of Urban Expansion on the Surrounding environment in Jijiga city. The researcher found from his survey, the major cause of urban expansion in the study area is increasing size of the population(33%) and the number one adverse impact of urban expansion on the physical environment is loss of fertile land(52%). the other major problems is inappropriate waste disposal, waste accumulation in the open spaces, flooding, sewerage problems and lack of feeder roads communities in the newly settled area .this results that the area loses its natural beauty, bad odor development from the disposed wastes, Health problems and loss of aesthetic value in the area. The poor drainage system caused accumulation of wastes in front of residential houses and in open spaces, stagnation of water which serve as a breeding ground of insects that has negative consequences on the health of the community in the study area, flooding problems that sometimes because the loss of lives as has been observed during the data collection.

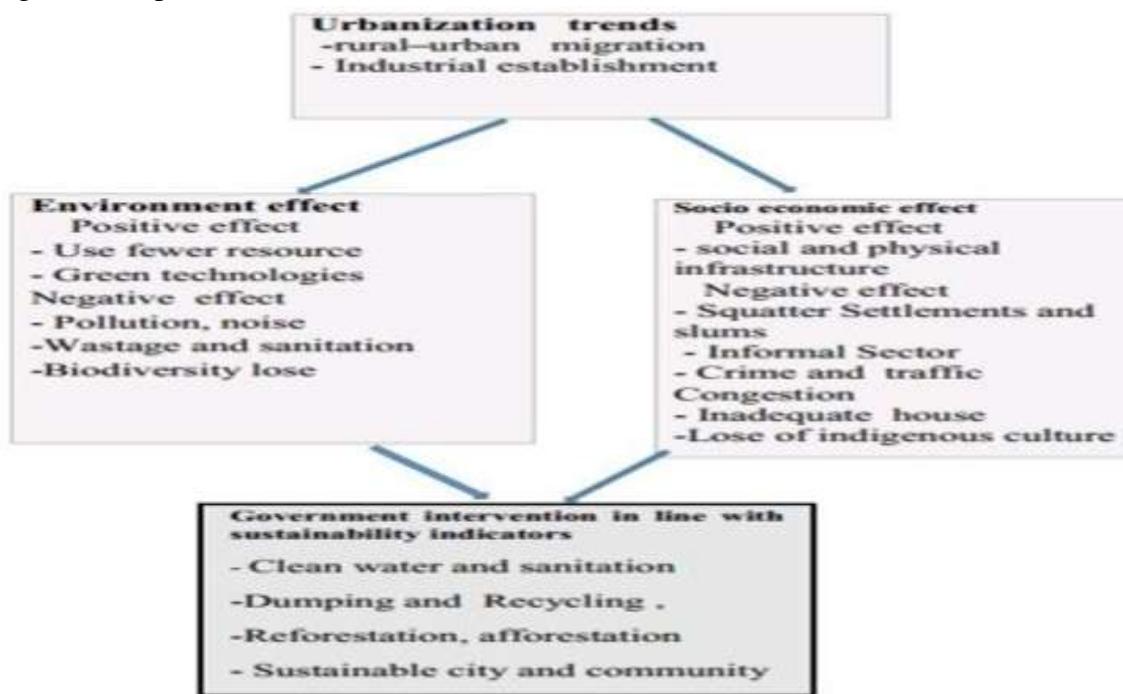
Leulseged et al., (2012), In 2011, a study aimed to investigate the impact of urbanization on peri-urban livelihoods, focusing on land use dynamics, adaptive strategies of communities, and the welfare of displaced households. Remote sensing and GIS analysis revealed a significant increase of 120.93 km² in built-up areas over 24 years, primarily from converting croplands, forestlands, and grasslands. This expansion, characterized by horizontal growth, poses risks to peri-urban environments and livelihoods. Income data from 150 sampled households showed agriculture, industry, and services as key sources of livelihood, contributing varying percentages to total household income. Analysis indicated that factors like age, gender, education, transfer income, and proximity to transport hubs influenced engagement in non-agricultural activities. Fully displaced households, despite compensation, experienced lower incomes and higher expenditures compared to partially displaced and non-displaced ones, leading to unsustainable consumption patterns. The study underscores the need for pre-displacement planning and post-displacement support for sustainable livelihoods in peri-urban areas.

Conceptual framework

Urbanization is related to the movement of populations and resources from rural and suburban areas to urban areas and traditionally has been linked to industrialization, although current patterns of migration toward cities in the developing world (Davis,

2006). Rural-to-urban migration and industrial establishment are the most important factors for rapid urbanization. This rapid urbanization has its own effect on the urban environment and socio-economic conditions either positively or negatively. The study tried to assess the government intervention to make sustain the urban environment by taking in to consideration the principle of urban sustainability. These were clean water access and sanitation, Recycling wastes, reforestation, afforestation, and creating a sustainable city and community from a socio-economic perspective.

Fig 2. Conceptual framework



RESEARCH METHODOLOGY

Research design stands for planning of the methods to be adopted for collecting the relevant data, and the techniques to be used in their analysis, keeping in view the objective of the research and the availability of resources like time and money (Kothari, 1995). Accordingly, from different types of research designs descriptive type of research design was employed for the realization of objectives. Because the descriptive research design is a fact-finding study with adequate and accurate results as it is. Furthermore, it allows describing both qualitative and quantitative approaches (Kothari, 2004). The study prefers to use both quantitative and qualitative research approaches in presenting the primary and secondary data that were relevant and significant to the study. Data was collected from both primary and secondary sources through questionnaires, key informants interviews, and field observation and the study were used reports and documents of the organization, article, journal and different researches as an input. To gather relevant data, the study employed various sample size with

different sampling determination formulas. Yamane's (1967) formula was used to determine the sample size. The study used a 95% confidence interval level and used 5% margin error. The sample size was determined by using the following formula.

$$n = \frac{N}{1 + N(e)^2}$$

n - Number of sample size N- Total population e
 $1 + 29932(0.05^2)$

$$n = \frac{29932}{76} = 394$$

To select sample size from each kebele, the sample was drawn in equal proportions using proportional stratified random sampling, and systematic sample method. The proportionality Sample size formula was, $n_i = \frac{N_i}{N} \times n$. To select each respondent from the targeted population the researcher used a convenience sampling technique.

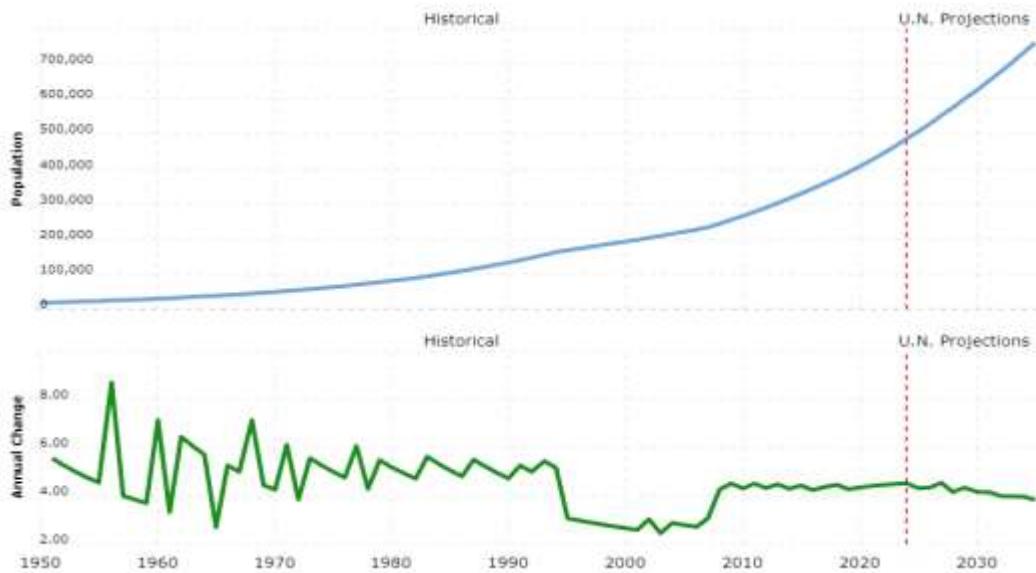
<u>Number of kebeles</u>	<u>Types of strata</u>	<u>Number of households</u> <u>$n_i = (N_i / N) \times n$</u>	<u>Sample size</u>
01	Melka jebdu	<u>$394 * 3117 / 29932$</u>	<u>41</u>
02	Sabean	<u>$394 * 11383 / 29932$</u>	<u>150</u>
03	kezira	<u>$394 * 5210 / 29932$</u>	<u>68</u>
04	Genda kore	<u>$394 * 5515 / 29932$</u>	<u>73</u>
05	Adis ketema	<u>$394 * 4703 / 29932$</u>	<u>62</u>
	total	<u>29,932</u>	<u>394</u>

Sample size proportion to the selected kebeles.

The tools for quantitative data analysis, descriptive statistics such as percentage, frequencies, diagram and chart were used. Likert scale were used for this study in the data collection instrument. Likert scale is a very popular rating scale for measuring ordinal data in social science research (Bhattacherjee, 2012). Therefore, in this research respondents were asked to rate each item on a Likert-type scale by assigning a value of 1= (strongly disagree) to 4= (strongly agree).

Data Analysis

Fig 2. The trend of Population Growth in Dire Dawa



The population of Dire Dawa City has shown a consistent upward trend from 1950 to 2024, indicating steady growth over the years. However, there have been fluctuations in the annual population change, particularly with a slight decline in recent years. Despite these fluctuations, projections suggest that the city's population growth is likely to continue beyond 2024.

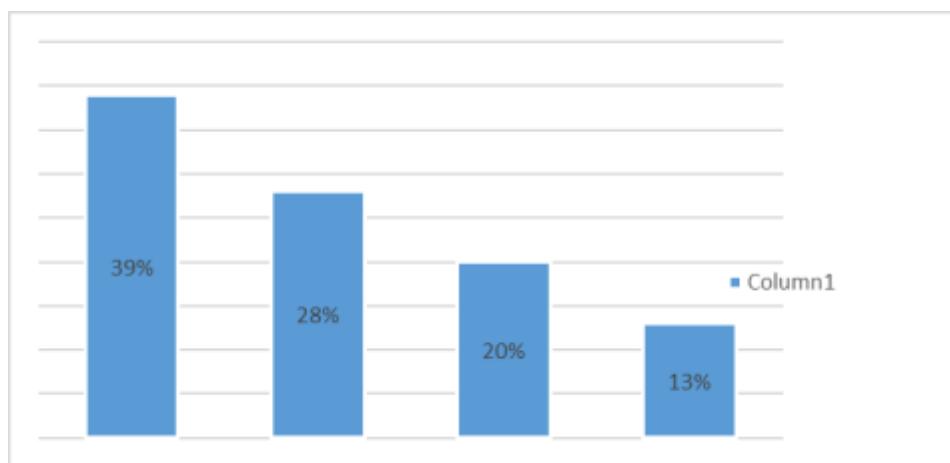
Environmental consequences of urbanization

 **Soil resource:** Moreover, the emergence of small towns mainly along the roads has increased the demand for forest products for purposes of construction and fuel. This leads Vegetation cover and the exposure of the soil surface to the eroding forces of erosion. According to Dire Dawa Environmental Protection Authority reported the issues become critical problem to the city administration and yet still the issue is not solved. Due to consistent urbanization in Dire Dawa there is improper exploration of construction materials like stone which are available surrounding the town. This improper utilization exposed the town to lose different types of soils. this leads to annually about 65,000 tons of human excreta is dumped in the groundwater system and about 10,000 m³ of solid wastes accumulated on three hydro- geologically favorable to pollution areas. The interview which was made with Dire Dawa water supply and sewerage authority expert shows the ever increasing of urbanization affect source of ground water in Dire Dawa. The source of ground water that uses for city administration was sourced from Genda Tesfa. Before it was occupied by the community the ground water found between 50-100 m since there were massive trees. However, after the community settled in this area, the trees get declined. Following the decline of the tree groundwater has dried out and currently to get groundwater it requires digging up to 500m underground. Another studies suggests that rapid growth of urban area

has two basic effects on groundwater resources. Effects on natural recharge of aquifers due to sealing of ground with concrete and pollution of groundwater due to leakage from drainage and, industrial wastage and effluents. To solve the problem and to sustain water resource, Dire Dawa water supply & sewerage authority working on forestation in Genda tesfa area to restore ground water source. In addition to increase water supply they operating in melka 15 potable-water wells built at a cost of one billion Birr with financing from the World Bank and the city administration.

Environment problem as urbanization increases

Figure 4. urban problems to in and to periphery areas



Source: own survey, 2024 G.C.

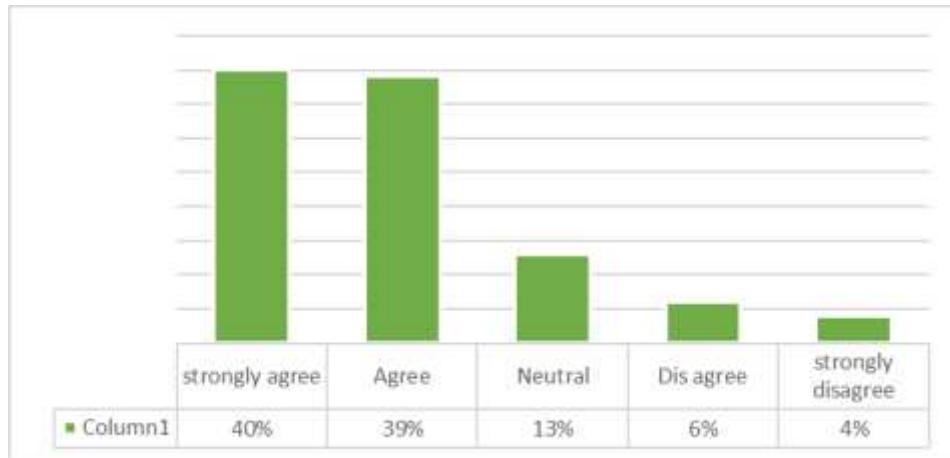
Figure 3 implies that, about 39 % of respondents replied that inappropriate wastes disposal is serious environmental problem and about 28% of respondents said poor urban sanitation whereas about 20% respondents replied that land degradation were common problem in Dire Dawa. While about 13% of respondents said that lack of feeder road. This indicate that the city administration is given little consideration in managing in appropriate waste disposal and urban sanitation. This result is supported with other empirical study. The waste management is not a priority for most governments; they focus on education, the collection of taxes, agricultural services, water supply and health services. However, environmental agencies faced a constraints which include lack of institutional arrangement, insufficient financial resources, insufficient information on quantity and composition of waste, and

inappropriate technology to properly manage urban waste disposal and sanitation.

On the other hand the interview which has been made Dire Dawa urban development senior staff expert described that, the quality of informal settlement area were very low. Since their settlement is illegal their houses are made from wood, mud only for the sake of capturing the land in future. So this areas not well organized and planned which makes difficult to enhance environmental protection and deliver social amenities for the community. In Dire Dawa alongside or verge of all kebele there is consistent informal settlements. Other empirical studies suggested around informal settlements areas people lack access to clean water, adequate roads, public transport, and electricity. In addition to infrastructure deficit some settlements are directly exposed to environmental hazards associated with landslides, flooding, poor drainage, environmental pollution and exposure to various environmental hazards .These challenges create health risks for the residents, often children and women, and threaten their livelihoods.

The interview which has been made Dire Dawa environmental protection senior staff expert described that 4-5 Quintal charcoal were consumed by household. Accordingly, this implies that, the community uses 4-5 Quintal of charcoal per month. Based on this data when we estimate the annual average consumption of charcoal will be 30 Quintal per year for each house hold. This implication shows as urban expansion continuous the amount of wood and trees imported from rural to urban areas is get increase. Therefore the destruction of forest due to human activities affects the environment which creates the problem like drought, flood and land degradation. There are some empirical studies which support the above analysis. According to (Getahun, 2019). Charcoal production for urban energy consumption is a main driver of forest degradation in sub Saharan Africa. Forest degradation associated to charcoal production is difficult to monitor and commonly overlooked and underrepresented in forest cover change and carbon emission estimates. Charcoal is a key source of energy in African urban centers where nearly 80% percent of the population uses it as the mainsource of energy for cooking.

Figure 5. Loss of plant and wild life animals



Source: own survey, 2024 G.C.

As indicated on figure about 40 % of respondents were strongly agreed that indigenous trees species are replaced scanty vegetation and 39% of respondents agreed trees species are now being replaced by new plants like by Prosopis Julio flora. Dire Dawa environment protection authority report (2013) shows, indigenous trees are supplied in to the town for charcoal and construction purpose. Currently most areas changed into less useful grazing areas that turn into bare dusty ground during the dry season. The useful plants disappeared and now replaced by prosopis, Julio flora and other bushes and undesirable species were emerged. Among the disappeared useful trees were wanza, filfile, tsemar, roka, kasil and shola were the prominent. Empirical studies suggested recent global analysis of urban plant and bird diversity found that urban areas eliminate, on average, about one-third of native species existing in the surrounding region. Native species richness declines and non-native species richness increases as one moves from the rural fringe to the urban core with approximately 30-50 percent of the plant species in the urban core being non-native (Dunn and Heneghan, 2011). In addition urban expansion were resulted in a disappearance of wild life which settled near sub urban areas for long period of time. Based on the key informant interview, they said that animals like boar, echidna, pigs, tiger, and others disappeared or migrated to other places as urbanization increased.

Figure 6. Drainage facilities are misused by households
ditch seido, sabian



Source: own survey, 2024 G.C
observation, 2024

Field

Figure shows, about 36 % of respondents were strongly agreed and about 46 % respondents agreed that the drainage facilities were misused by the households. However 18% respondents were dis disagreed on miss-use of drainage facility by the residence while the remain is neutral. This indicates that majority of respondents were agreed drainage facilities misused by residence. The interview which is made, particularly with Dire Dawa city administration, sanitation and beautification expert answered that growth of population were become a challenge to manage wastes released from the community. The community were not placed the wastes in to appropriate location rather they throw into openditch. During holiday Skin, horn and other parts of animals slaughtered by households thrown on public road and open ditch .this is activity become common character in Dire Dawa. Putting wastes in to ditch protect not to flow water resulted from flooding when it rains which creates mere. This mere creates diseases like malaria, dengue which affect human health. Especially community who were settled to slum areas more affected with this problems since no toilets and septic tank.

Socioeconomic consequences of urbanization

Encouraging consequences

Figure 7 Urbanization as a source of job opportunity

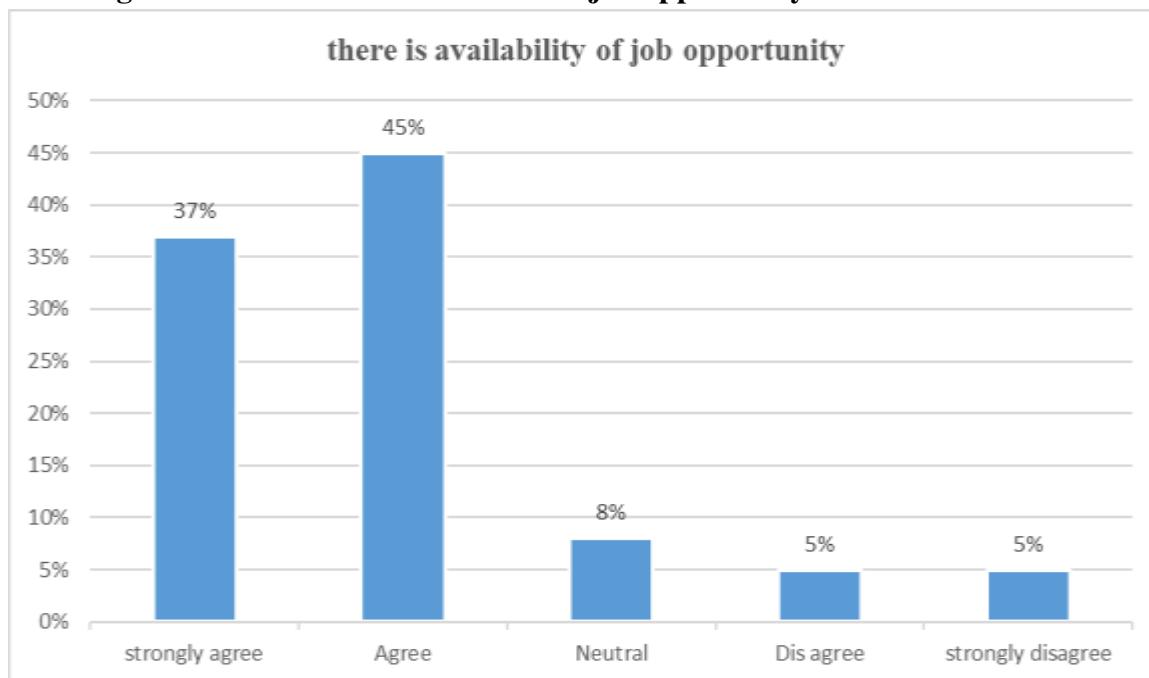
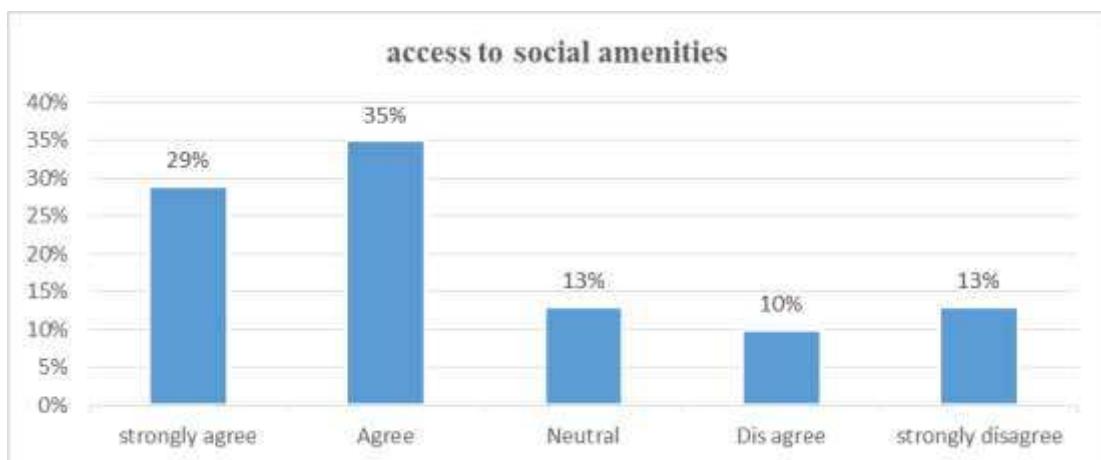


Figure 7 shows that about 37.5 % of respondents strongly agreed, and 44.5% of them agreed that urbanization facilitates job opportunity for the community. About 10.5% strongly disagree while 7.5% disagreed. This manifest that, the majority of respondents agreed urbanization impose the government to create job opportunity. The result of the study shows that, in high urbanization situation, number of jobless become increases. Therefore these jobless become a tools for different groups to against the government and they also engaged easily in criminal activities. The government to avoid this problem it creates different job opportunity by establishing different industries which able to hire those jobless as much as possible. The interview which was made with Dire Dawa city manager, particularly urban development staff expert raised different issues relating to urbanization and job opportunity: The ever growing of urbanization increases number of job seeker. So to create job opportunities, government works in collaborating with private sector, NGO by organizing the job less in to groups to create their own entrepreneur. If this implemented well, a numerous number of industries like factories, trade, will be established. This intensifies the growth and development of the town in poverty reduction. According to the Central Statistical Agency urban employment – unemployment survey report, unemployment rate of Dire Dawa

Administrative is 25.3 percent. To reduce the problem the city administration has taken different action. Private sector were invited to invest in Dire Dawa and the administration organized job seekers by providing financial loans. However, these actions were unsuccessful since there was popular unrest and conflict in the town. Private investor and other association were canceled their business. This create challenge on the city administration to expand investment in to the peripheral area. According to this inquiry, urbanization creates job opportunities however in Dire Dawa urbanization increases number of unemployment rate since there were boundary disputes with neighbor regions to get land for investment.

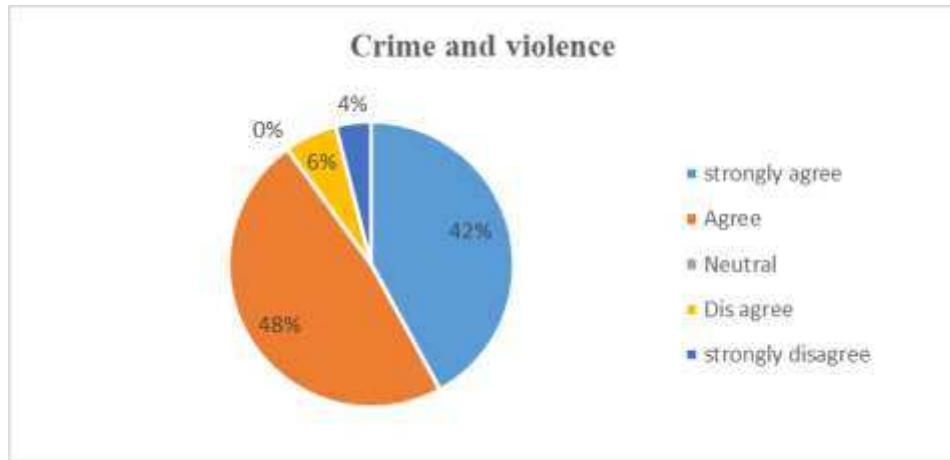
figure 8 Access to social infrastructure



As indicated on figure about 29 % of respondents were strongly agreed and 35% of them agreed that urbanization facilitates access to social amenities like education, transport, electricity and health service and internet service. Whereas 26% of households strongly dis agree and 10% were dis agreed on the access to social infrastructure. So the study conclude that a community who settled to urban areas more beneficial in terms of all different infrastructure facilities than non- urban settlers.

Adverse consequences on socio-economic sector

Figure 9. Victims of crime and violence as increases unknown people



Source: own survey, 2024 G.C

Figure shows that, 42.5 % respondents were strongly agreed and about 48% were agreed they are affected by crimes and violence as unknown person increase in the town. About 9.5 % of themdis agreed that no victims of crime as urbanization increases. This indicate that the majority of the respondents agreed that, there were victims of crime and violence as new people settling in the town. The interview which was made, particularly with Dire Dawa city urban development senior staff said that there is high crime due to unknown people are increased in the town. Currently very organized robbers like pickpockets, shoplifters which were become common in the city administration, which were absent before in Dire Dawa. Field observation result shows there are new person who are settled outside home by making their own booth near public residence areas or corridor. It is difficult to identify whether they are genuine poor or robbers. So these groups have unknown mission and still they are great dread for the community since they haven't formal residence place. This creates threat and social security sustainability problem on the community. According interview made with Dire Dawa city manager office, urban development senior staff expert elaborated that rural migrant were more exposed violence and crimes. This is due to, from different part of the region many peoples come to Dire Dawa city. These migrants leave their home land with hope to getting conducive life condition. But actually they faced difficult challenge. However dr studies suggested that women and elder are disadvantaged in urban areas in terms of access to land, labor, access to formal credit markets and insurance markets. They do not tend to apply for loans because they do not dispose of collateral such as land or otherproperty.

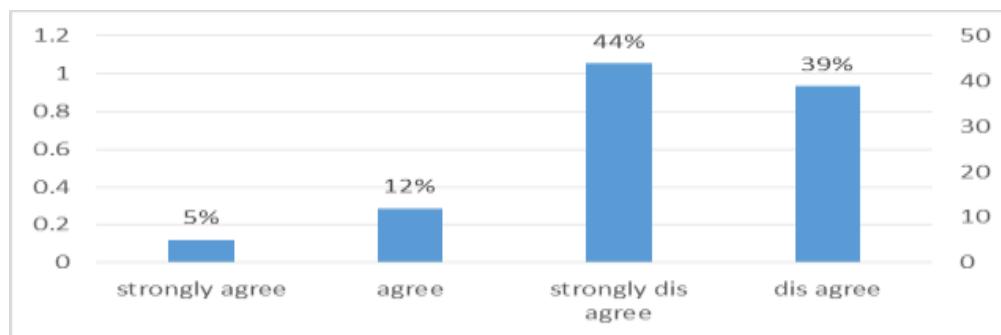
In addition, about 90% of respondents strongly agreed that urbanization leads to declines in the Indigenous cultural practices of the community that they have before. Urbanization have an

opportunity to exchange culture and experience between the societies. However particularly the increment of urbanization affects the good cultural practice of the society in terms of dressing style, tolerance, norm and value between the communities since new faces are increases from time to time. With regard to the nature and extent of the impact of globalization on cultures, the researcher argues that the negative effects of globalization have been much more than its positive effects on Ethiopian cultures. Personal assessment reveals here that, if pressing measures are not taken, perhaps Ethiopian cultures such as language, food style, religion and history, dressing style, monogamy, etc. will soon run into extinction. Therefore, it can be argued that some of the 'old' and 'good' culture of the nations is threatened by Western values and norms (Getahun, 2019).

Government intervention on urban environment sustainability problem

Sustainable urbanization requires that cities generate better income and employment opportunities expand the necessary infrastructure for water and sanitation, energy, transportation, information, and communications; ensure equal access to services; reduce the number of people living in slums; and preserve the natural assets within the city and surrounding areas.

Figure10. **community urban sustainability awareness**



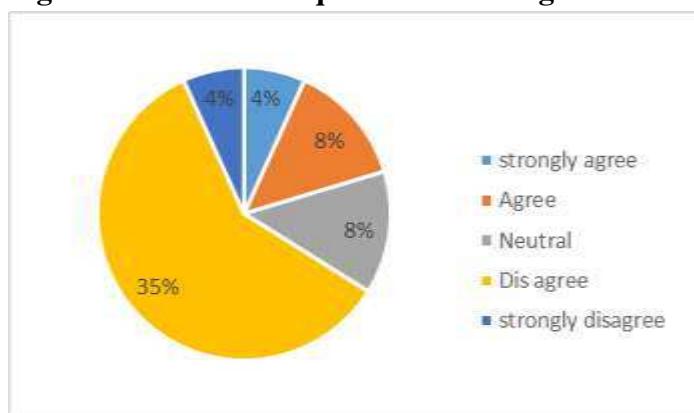
Source: own survey, 2024 G.C.

The analysis of the figure highlights a notable discrepancy in perceptions regarding the provision of urban sustainability training by the city administration of Dire Dawa. According to the data, only a small fraction of respondents (17%) felt that such training was adequately provided, with 5% strongly agreeing and 12% agreeing. In stark contrast, a substantial majority (83%) felt disagreeing that the city administration offered urban sustainability training. This disparity reflects a broad consensus among respondents that the Dire Dawa city administration has not effectively delivered urban sustainability training aimed at raising community awareness. The lack of perceived

training suggests that there has been minimal focus on educating the community about sustainability practices, which could be integral to enhancing urban green spaces. In conjunction with this finding, the reference to other studies, such as those by (Yimam, 2017), underscores the significance of urban parks and forests in urban planning. These green spaces are crucial not only for recreational and aesthetic purposes but also for their positive impacts on physical and mental health. The current lack of focus on sustainability training may, therefore, contribute to a broader issue where the potential benefits of urban green spaces are not fully realized due to inadequate consideration in planning processes.

Regarding to the implementation of planting trees, they are tree near residence area. This indicate that there is good reforestation and afforestation activities in the Dire Dawa city to achieve sustainable development goal. According to Dire Dawa forest, environment and climate change authority report shows, as part of the 'green legacy' campaign, the Dire Dawa City Administration and residents have planted some 202,000 seedlings during the launch 2019 campaign. Ethiopia has mobilized to plant 200million seedlings in a single day. The final figure of seedlings planted surpasses 353 million, 633 thousand, and 660 in a space of 12-hours' time. It was achieved and surpassing the planned and achieved more than 353 million specifically for Dire Dawa which belongs to 258,993 in plants a single day. In the plantation campaign, all residents participated as a group or individually. A good example, Beyan is a Dire Dawa City resident who was rescued after being taken away by the flood in 2006. "The accident happened due to a lack of protection nature especially the forest. The accident may not happen and there was a possibility of minimizing the injury" said Beyan. In July 2019 when all Ethiopians campaigned to break the world record by planting 200 million seedlings in 12 hours, He alone planted 2,000 seedlings within 5 hours. "Now, my focus is on planting indigenous trees like Wanza, Zigba, and Besana as they are big trees and stay for many years, he said.

Figure 11. Solid and liquid waste management



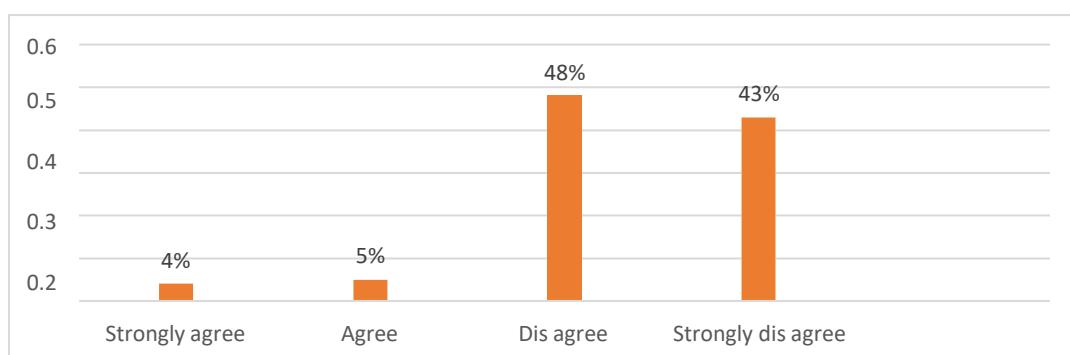
Source: own survey, 2024 G.C

The figure indicates that only 4% of respondents strongly agreed and 8% were neutral about the presence of solid and liquid waste recycling processes. About 45% strongly

disagreed and 35% disagreed that such recycling processes exist for new production. This means that around 80% of respondents believe there is no effective waste recycling in Dire Dawa city. The results suggest that the city administration does not adequately focus on waste recycling, which is crucial for urban environmental sustainability. A key area of concern is the management of solid and liquid waste in institutions such as health facilities, hotels, and restaurants, which generate large amounts of waste. Effective waste management in these institutions is currently inadequate, and the regulatory authority is responsible for raising awareness and providing training on this critical issue.

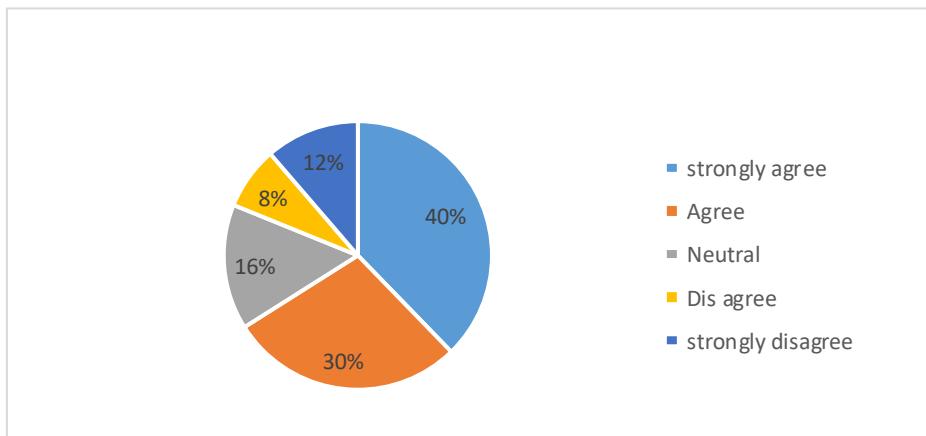
From my observation, the majority of the areas of the city have no garbage for the community on ~~the~~ road. This shows there is no facilitated garbage box by the government for the community in which wastes are stored. So, if the community throws waste everywhere, this affects the sustainability of the urban environment quality. Besides the challenges to solve the problem, different strategies have been taken by the city administration. To collect the wastes 16 unions which have 835 members were established. Dire Dawa sanitation and beautification (May 2020) report shows 1450 Baja solid waste and 8700 m³ liquid wastes collected per month with cost of more than 1 million. However due to high population increases in Dire Dawa the deployed human resources, car, and garbage not sufficient. Still the capacity of the unions to collect the waste were below 50% which requires high improvement. City administration undertaking different actions to solve the environmental problem. They established dechatu water shed project which it cover from Dire Dawa to kersa -Lange -kulubi with in collaboration Oromia regional state and Haramaya University. This project is expected to solve the flood that flow from kersa, Lange to Dire Dawa. To control the solid and liquid waste the municipal facilitated different material coordinating with dire dawa water and sanitation authority. They collect the solid waste like plastic and sold to another factory to re produce any other product or the some product. Consequently to collect the waste, the city administration bought 3 scavator, 3 Scania, 3 freight car and 4 small car. Currently all thus equipment's are deployed to different kebeles to collect the waste.

Fig 12. Culture and heritage preservation



Source: own survey, 2024 G.C.

Figure about 91% respondents were dis agreed on the culture of the community is protected from bad globalization. This indicate that the majority of respondents agreed their values and norm are dominated by non-indigenous culture. From this the study believe that the city administration is not working well on cultural protection from unwanted globalization to sustain their indigenous culture and custom which is considered as sustainable city and community. Figure 13. No financial support for poor social groups to sustain their life



Source: own survey, 2020 G.C

About 70% of respondents agreed that there were no financial subsidies from the city administration to support economically poor social groups while 20% of respondents agreed that governments delivered the subsidy for these poor groups. This shows the city administration doesn't offering any support for low-income groups to sustain their life. Among the criteria of a sustainable city and community, financial subsidy for under-poverty communities is the major requirement. The interview made with key informants shows: there are a mass number of poor community who needs financial subsidies to survive their life. However, there was no financial support from the government for these communities. But only some NGOs, charity organizations and individual personal support were available.

CONCLUSION

In the study on the impacts of rapid urbanization in Dire Dawa, the findings reveal a complex landscape shaped by rural-to-urban migration, demographic shifts, and environmental challenges. The city's population growth exceeding projections underscores the urgency of addressing infrastructure and land acquisition issues. Vulnerable groups are

disproportionately affected by poor living conditions and limited access to services, emphasizing the need for inclusive urban development strategies. Environmental impacts, including soil and groundwater degradation, waste management issues, and inadequate green spaces, call for sustainable urban planning and heightened environmental awareness. The study highlights the importance of effective waste management practices and government attention to mitigate environmental risks and improve residents' quality of life. While urbanization has brought job opportunities and improved access to services, challenges like rising rental prices, informal settlements, and social issues persist. The study underscores the importance of addressing housing affordability, infrastructure development, and social services to create a more inclusive and sustainable urban environment. The study underscores the dual nature of urbanization in Dire Dawa, emphasizing the need for comprehensive urban planning that balances economic growth with environmental sustainability and social equity. Addressing the challenges posed by rapid urbanization requires a multi-faceted approach that prioritizes infrastructure development, waste management, and support for vulnerable populations to ensure a more resilient and inclusive urban future.

The study recommends specializing in a diverse array of services centered on environmental sustainability and urban development. Their comprehensive offerings cover essential aspects such as providing clean water and sanitation solutions, implementing effective waste management practices including recycling programs, spearheading initiatives for reforestation and afforestation to enhance green spaces, and undertaking projects dedicated to fostering sustainable cities and communities. By focusing on these critical areas, the company strives to play a pivotal role in shaping a greener and more sustainable urban environment. Through their expertise and initiatives, they aim to address pressing environmental challenges, promote eco-friendly practices within urban settings, and contribute to the overall well-being of communities. By emphasizing clean water access, efficient waste management, green infrastructure development, and sustainable urban planning, the company endeavors to create a positive impact on the environment and society at large. Their holistic approach underscores a commitment to fostering environmental stewardship, promoting resilience in urban landscapes, and building a more sustainable future for generations to come. By integrating these services and principles, the company works towards creating healthier, more livable urban spaces while actively contributing to global efforts towards environmental sustainability and urban resilience.

Future studies could delve into longitudinal assessments tracking urbanization trends in Dire Dawa, conduct comparative analyses with other Ethiopian cities, explore community engagement's role in urban planning,

evaluate existing policies, investigate innovative solutions, assess climate change resilience, study green infrastructure benefits, analyze social impacts on vulnerable groups, and explore smart city technologies' integration. These avenues offer opportunities to deepen understanding, improve urban sustainability, and inform policy and planning interventions for more resilient and inclusive urban development in Dire Dawa, Ethiopia.

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