

# Risks related to the environment and population growth in Changalane, 2019 - 2022

## Abstract

This article addresses environmental risks resulting from population growth in Changalane (2019 - 2022). The study was carried out with the aim of analyzing implications of population growth. It was a qualitative and quantitative study and had a case study approach. Data collection involved forty individuals, who were subjected to semi-structured interviews and a questionnaire. The study revealed that rapid population growth had implications in several areas, such as infrastructure, public services and the environment.

**Keywords:** risks, environment, population growth

Volume 8 Issue 4 - 2024

**Daniela Silvestre Januário Biché, Fernando Custódio Titosse, Francisca Langa**

Geographic Education and Geosciences, Faculty of Earth and Environmental Sciences, Pedagogical University of Maputo, Mozambique

**Correspondence:** Daniela Silvestre Januário Biché, Geographic Education and Geosciences, Faculty of Earth and Environmental Sciences, Pedagogical University of Maputo, Mozambique, Email bichedaniela@gmail.com

**Received:** April 14, 2024 | **Published:** July 19, 2024

## Introduction

This article analyzes the risks related to the environment and population growth in the Changalane Administrative Post, Namaacha District, between 2019 and 2022. More specifically, the article seeks to identify the causes that gave rise to population growth in the Changalane Administrative Post, assess the risks to infrastructure, public services, the environment and the community's quality of life, and propose solutions to mitigate the socio-environmental problems caused by population growth in the Changalane Administrative Post in Namaacha District between 2019 and 2022. Its conception was justified by the exploratory study carried out in the Changalane post, the conclusion of which was that the rapid population increase has implications for the various sectors of society and the environment.

For Francisco<sup>1</sup> and Medeiros, (2003) and Vesentini<sup>2</sup> population growth is a demographic concept that designates the increase in the total number of individuals in a population living in a given place, covering various geographical scales, whether a country, a city or a neighborhood.

Alves<sup>3</sup> points out that population growth means an increase in workers and consumers, which encourages the global production of goods and services, which in turn means increased exploitation of natural resources and greater disposal of solid waste, garbage and pollution.

From the studies by Carvalho et al.,<sup>4</sup> population growth has a direct relationship with agricultural production, which in turn drives technological progress through technical-productive improvement and "intensive cultivation" and in itself minimizes impacts on natural resources and biodiversity by promoting sustainable land use.

The analysis of risks related to the environment and population growth in the Changalane Administrative Post affects existing social sectors such as health, education, space occupation and environmental sanitation. The Changalane administrative post, experiencing a considerable demographic increase, feels the need to adapt and expand social services to meet growing demand. The lack of basic infrastructure and adequate resources creates significant pressure on different sectors, compromising the quality of life, environmental

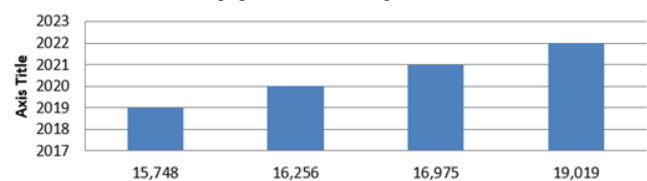
degradation, environmental sanitation and the accessibility of important services.

The study is anchored in the perspective of the reformist theorists and not the advocates of the Neomalthusian theory who advocate a small family model. The solution pointed out by the Neo-Malthusians consists of birth control through contraceptive methods and the dissemination of educational family planning programs (Fontana et al. 2015).

Although the proponents of this theory provide a basis for solving the problem of population decline, in the case of the Changalane Post, it would be necessary to adopt far-reaching social and economic reforms in order to guarantee a balanced demographic dynamic. It is known that as families improve their living conditions, they tend to reduce the number of children so as not to return to the previous situation. The reduction in population growth would come as a consequence of such reforms.<sup>5</sup>

According to Table 1, the region under analysis has experienced remarkable population growth, as evidenced by the data

**Table 1** Evolution of the population in Changalane 2019 – 2022



Source- INE, 2022

Based on the data presented, the administrative post of Changalane in the district of Namaacha has shown notable variations in its population, indicating significant demographic growth. The data shows a steady upward trajectory, from 15748 inhabitants in 2019 to 19,019 inhabitants in 2022.<sup>6</sup>

## Risk of growth in terms of infrastructure and quality of services

Between 2019 and 2022, Changalane's population almost tripled, which certainly put pressure on the government to restore the

infrastructure that provides basic services, such as sanitation, health and education. Health and basic sanitation services to the population were concentrated and insufficient. As for water services, the Changalane Administrative Post served 19,019 people. This represents an evolution compared to 2019, when the population was 15748, had regular access to this service, but the water supply is deficient. It is in this context that Diniz (2005) considers that high population concentration is a source of degradation of water resources.

The rapid population growth in Changalane has led to the expansion of infrastructure and productive activities (agriculture, animal husbandry, transportation, commerce, firewood cutting, charcoal making, etc.), which has resulted in various environmental problems such as deforestation, fires, soil impoverishment and the loss of biodiversity (Miguel, 2011),

## Materials and methods

The aim of the study was to analyze the risks related to the environment and population growth in Changalane between 2019 and 2022. More specifically, the study aimed to understand the phenomenon and its essence, as well as to intuit its implications or consequences, thus involving the opinions, perceptions and suggestions of the respondents. It was therefore qualitative<sup>7,8</sup> and quantitative.<sup>9,10</sup> The circumscription of the problem referred to a case study, as it focused on the perceptions of the residents of the Changalane Administrative Post.

As a result, the information gathered was based on bibliographic and documentary consultation for theoretical development and for the empirical study, questionnaires and interviews. In order to achieve the study's objectives, a sample of thirty (30) individuals from the community were selected to answer the questionnaire, and ten (10) informants were randomly selected and interviewed, including five technicians from the Municipal Council, two Environmental Managers and three INE technicians, selected for convenience.

The interview focused on questions that had been designed in advance, i.e. it was semi-structured. This allowed for speed and flexibility in data collection. Gil,<sup>9</sup> Marconi and Lakatos (1999) and Richardson<sup>8</sup> reiterate that semi-structured interviews are suitable for understanding the processes constructed by the subjects.

## Results and discussion

The informants/interviewees have been identified with the codes E1 to E10 to guarantee their anonymity. E1 to E5 correspond to technicians from the Namaacha Municipal Council, E6 and E7 to Environmental Managers and E8, E9 and E10 to technicians from the National Statistics Institute (INE).

The analysis of the interview data was guided by answers to the questions that guided the study, namely: (i) How does the Namaacha District Government monitor and evaluate population growth in the Changalane Administrative Post? (ii) What were the main population growth trends observed in Changalane over the last three years (2019-2022)? (iii) What measures or policies have been implemented to promote economic development and environmental sustainability in response to population growth?

Regarding the first question, E1, E2, E4 and E5 stated that in the last three years, the Changalane Administrative Post, located in the municipality of Namaacha, has witnessed accelerated population growth that has raised significant concerns. Both the Municipal Council and the District Government have carried out annual

monitoring and evaluation studies, using projection techniques to effectively understand the dynamics in question.

E6 and E7 explained that population growth is driven by factors such as high birth rates and migration, which has triggered a series of socio-economic and environmental impacts. The need for more housing space, expansion of agriculture and urban infrastructure all contribute to pressure on natural resources, altering the landscape and environmental dynamics of the region.

This statement is corroborated by E8, E9 and E10 who added that the intensification of the use of physical space causes a change in the urban profile of the area. This can result in the transformation of rural areas into urban ones, with potential side effects such as the loss of green areas, increased soil sealing and, consequently, impacts on local ecosystems.

As for the second question, the response from E6, E7 and E8 was that population data for Changalane indicates a consistent increase in recent years, with figures rising from 15,748 inhabitants in 2019 to 19,019 in 2022. Annual growth rates for Changalane were calculated at 3.23% (2019-2020), 4.41% (2020-2021) and notably, 12.03% (2021-2022). The latter period saw a marked increase. The average annual growth for the period analyzed was 6.22%, indicating a considerable expansion of the population.<sup>6</sup>

When asked about the challenges in the demand for public services, E1, E2, E3, E4 and E5 stated that the education sector, for example, is currently facing new demands as more students seek access to education. The need to build schools and hire teachers reflects the pressure to cater for an expanding student population.

In the same vein, Amaldo and Muanamoha<sup>11</sup> consider that a rapid expansion of the population leads to the need for additional investments in the area of education and can make it difficult to achieve the goals in the area of education, whether in terms of coverage or levels of school success.

Likewise, health services are seeing an increase in the demand for medical care, resulting in the need to expand facilities and improve the health infrastructure (hospitals, health centers and clinics).

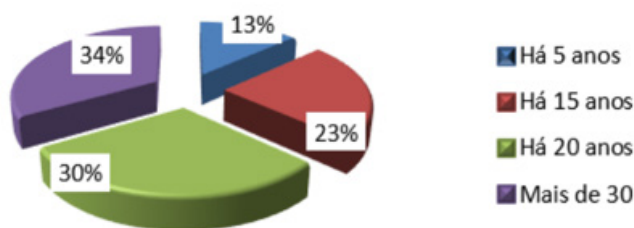
The rapid growth of the population can hinder the availability of health workers necessary for effective coverage of the population's needs.<sup>11</sup>

Still on the same question, E6 and E7 replied that "with more residents, waste production has increased a lot, highlighting the importance of effective waste management to avoid environmental problems. Sustainable urban planning becomes a necessity, balancing economic development with environmental preservation and the community's quality of life."

As for the third question, E1 and E5 stated that customized strategies are already being implemented for Changalane, namely: sustainable urban planning, solid waste management, biodiversity conservation and environmental monitoring.

The analysis of the data from the community questionnaire was guided by the answers to the following questions: (i) How long have you lived in Changalane? (ii) How do you describe the population growth in Changalane over the last three years (2019-2022)? (iii) What implications has the population growth had on Changalane?

As for the first question, Graph 1 shows the respondents' answers as to how long they have lived in Changalane.



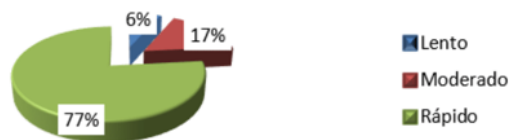
**Graph 1** Length of residence in Chagalane post.

Source Authors/ 2022

The graph shows that 4 members of the community (13%) said they had lived there for 5 years, 7 members (23%) said they had lived in the post for 15 years, 9 (30%) said they had lived there for more than 20 years and 10 (34%) said they had lived in the district for more than 30 years. After analyzing the survey data, it was concluded that the respondents who have lived there the longest are aware of the history of the Chagalane Post, and are unanimous in stating that there have been changes over time, significant events and development.

The second question sought to understand how the population of Chagalane has grown over the last three years (2019-2022). Graph 2 shows the respondents' perceptions.

#### Percepção da população local sobre o crescimento populacional em Chagalane



**Graph 2** Community perception of population growth.

Source Authors/ 2022

The majority of informants (77%) said that growth had been rapid in Chagalane. And this rapid growth is due to demographic events, namely migration and a high birth rate.

In addition to precipitating demographic growth, the aforementioned demographic events also result in the disorderly occupation of space, crime, unemployment, saturation of public services: education, health, public safety, among others.

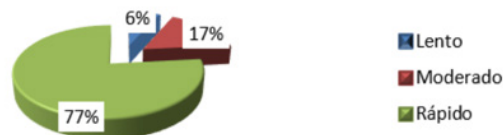
A minority (6%) of respondents perceive that "there is growth, but it is slow". This less alarming perspective may be influenced by specific experiences or a different interpretation of local demographic data.

The widespread perception of rapid growth suggests the need for territorial planning and infrastructure development that are aligned with the expectations and needs of a growing population. According to Ferraz (2008) the community, by being aware of and attentive to demographic changes, can play a vital role in making decisions and initiatives aimed at dealing with the challenges. He explains that local authorities, in coordination with the community, must think of sustainable and inclusive strategies to deal with the demands in housing, public services, employment and other needs. A considerable proportion, representing 17% of respondents, indicated "moderate

growth". This shows a diversity of opinions within the community about population growth in Chagalane.

The third question asked sought to understand the implications of the population increase in Chagalane Post? Graph 3 shows the impacts of population growth in Chagalane.

#### Percepção da população local sobre o crescimento populacional em Chagalane



**Graph 3** Negative impact of population growth.

Source Authors/ 2022

The results of Graph 3 show that of the 30 community members surveyed, 87% said that rapid population growth had negatively affected the availability of basic public services, resulted in the disorderly occupation of space and irrational use of natural resources, influencing the community's quality of life. A minority of 13% said that the population increase in Chagalane had no negative implications.

Bellaver and Santos<sup>12</sup> agree that a larger population will not only require more food, but also other goods and services.<sup>13</sup>

## Final considerations

One of the study's findings is that population growth in Chagalane is due to an increase in the birth rate and migration. The trajectory of population growth in Chagalane, from 15,748 inhabitants in 2019 to 19,019 inhabitants in 2022, shows a significant increase in population, associated with negative impacts on infrastructure, public services, the environment and quality of life in the community, requiring urgent measures to deal with the phenomenon. Throughout the study, a number of challenges were identified, including:

- I. Significant pressure on existing natural resources, resulting in issues such as deforestation and an increased demand for water and food.
- II. Increased demand for public services, highlighting challenges in areas such as health, education and infrastructure.
- III. Environmental damage, including deforestation, inadequate solid waste management and water contamination.
- IV. Rapid population expansion highlights the urgent need for effective land-use planning to ensure sustainable urban development.

## Suggestions

In order to harmonize population growth in Chagalane with the necessary well-being, it is suggested to those who are entitled to do so:

- I. Develop and implement sustainable territorial planning strategies, taking into account infrastructure capacity and the preservation of natural resources.
- II. Prioritize investment in infrastructure, including water and sanitation systems, transport and public services, to meet growing demand.

- III. Implement education and awareness programs for the local population, promoting sustainable practices and raising awareness of the importance of environmental preservation.
- IV. Establishing effective partnerships between government, academic institutions and the wider community to promote collaborative approaches to solving challenges related to population growth.
- V. Develop and implement policies that promote sustainable development, including incentives for sustainable agricultural practices, proper waste management and environmental conservation

## Acknowledgments

None.

## Conflicts of interest

The author declares there is no conflict of interest.

## References

1. Francisco A. *Demographic Growth in Mozambique: Past, Present... what future?* Mozambique Channel. Maputo. 2010.
2. Vesentini JW. *Geography: the world in transition*. São Paulo: Ática. 2011.
3. Alves JED. Economic demo growth in the Anthropocene and demographic negationism. *Liincem Revista, Rio de Janeiro*. 2022;18(1):e5942.
4. Carvalho AC, Carvalho DF, Castro AC. Analysis of growth population and demographic transition: limits and divergences. *Conjecturas*. 2022;22(2):845–859.
5. Garcia H, Moraes PR. *Geography of population*. São Paulo: IBEP. 2015.
6. INE & MISAU. *Mozambique: Demographic and Health Survey - 2003*. Maputo: National Statistics Institute. 2022.
7. Bogdan R, Biklen S. *Qualitative research in education: an introduction to theory and methods*. Porto: Porto Editora. 1994.
8. Richardson RJ. *Social Research: methods and techniques* (3<sup>rd</sup> edn.). São Paulo: Atlas. 2008.
9. Gil AC. *Research methods and techniques*. 3<sup>rd</sup> edn. São Paulo, Atlas. 2015. p. 1–220.
10. Silva EL, Menezes EM. *Research methodology and dissertation*. Florianópolis. 2005.
11. Amaldo C, Muanamoba RC. *Demographic dynamics and their implications for Mozambique*. Population and Health Gazette No. 02. 2014. p. 1–57.
12. Bellaver EH, Santos ZMQ. Impact of population growth on finite resources. *Revista Extensão em Foco*. 2018;6(1):37–58.
13. Silva JA B, Funtana RLM, Costa SS, et al. Theories demographics and population growth in the world. *In Ciências Humanas e Sociais Unit | SERGIPE*. 2015;2(3):113–124.