



(RESEARCH ARTICLE)



POPULATION GROWTH AND THE AVAILABILITY OF SOCIO-COMMUNITY INFRASTRUCTURE IN THE CENTRAL ARRONDISSEMENT OF GRAND-POPO, BENIN

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ABSTRACT

This study analyzes the impact of population growth on the availability of socio-community infrastructure in the central district of Grand-Popo, Benin. It is based on a review of existing literature and a field survey of 227 households in the Onkuihoué, Houssoukoué, and Ewe-Condji neighborhoods. The results indicate that 89% of respondents attribute population growth to natural factors and migration. Regarding reasons for settling in the area, 58% of residents are natives, 27% moved for a change of living environment, 10% for work, and 5% for marriage. In terms of water access, 80% of households have a well (covered or uncovered), while 93% use well water for domestic needs. However, 87% of respondents consider access to potable water—whether from pumps, standpipes, or the SONEB network—to be insufficient. Regarding health services, 66% of households rate the quality as "fair," while 19% rate it "quite good" and 15% "acceptable." Furthermore, 88% of respondents report that schools lack perimeter fencing, compromising the safety of students and staff. The study highlights a shortage of water, sanitation, educational, and recreational infrastructure, as well as their uneven distribution relative to population growth. It concludes that increased public investment and improved spatial planning are essential to sustainably enhance the population's living conditions.

Keywords: Grand-Popo, Central Arrondissement, Population Growth, Availability Of Socio-Community Infrastructure

1 INTRODUCTION

Population and the environment occupy a central place among the planet's current concerns (B.L. Moumouni, 2016, p. 7). Population dynamics make population a key element in the settlement and occupation of the globe, reflecting demographic growth. This growth is defined as an increase in population size over a given period.

The world's population is expected to grow by 2 billion people over the next thirty years, rising from 7.7 billion today to approximately 8.5 billion in 2030 and 9.7 billion in 2050. Between 2015 and 2020, Africa's population growth rate rose from 1.9% in the 2002 estimate to 2.2% by 2008, 2.5% in 2012, then 2.6% in 2017, before finally stabilizing at

2.7% in the 2019 report (D. Tabutin, B. Schoumaker, 2020, pp. 169-295). Like other African countries, Beninese cities also experienced extremely rapid population growth after the 1950s. Benin shows rapid urbanization correlated with strong population growth. Its urbanization rate was 38.9% at the 2002 census, reaching approximately 45% at the 2013 census and 47% in 2018, whereas it did not exceed 16% in 1960 at independence (INSAE, 2013b).

The urban environment remains unbalanced in terms of the distribution of socio-community infrastructure in cities such as Cotonou, Abomey-Calavi, Porto-Novo, Parakou, Ouidah, Sèmè-Podji, and Djougou, but also in Grand-Popo. In many towns such as Grand-Popo, there is a problem of spatial coherence with regard to ease of access to community infrastructure. A dysfunction is therefore observed in the urban space, as some neighborhoods lack even a minimum level of infrastructure because spatial planning did not anticipate human settlement, and this has not been corrected over time. As a result, residents of towns and decentralized territories do not all have access to socio-community infrastructure and do not live under better conditions. Yet it is clear to everyone that population growth drives rapid urbanization and increases the demand for socio-community infrastructure that must be met. Beninese towns are no exception to this reality, as they do not always have the capacity and resources needed to address planning and spatial coherence. This is the case of the town of Grand-Popo, through its central arrondissement.

Infrastructure fulfills a vital function in cities and countries, serving as an essential driver of national economic growth that helps to reduce poverty. From a social standpoint, infrastructure provides access to employment and to the health, educational, and social services essential to the well-being of everyone, particularly vulnerable groups (A. Houinsou, 2013, p. 13). Thus, population change entails an increase in the demand for well-being and in the satisfaction of vital needs, as well as the need for socio-community infrastructure. Infrastructure does not appear to be expanding at the same pace as population growth and the needs of the population. The objective of this research is therefore to analyze population access to socio-community infrastructure in light of the population growth of recent decades in the central arrondissement of Grand-Popo, Benin.

The central arrondissement of Grand-Popo covers an area of approximately 50 km² and is bordered to the west by the Agoué arrondissement, to the north by the Adjaha arrondissement and a tributary of the Mono River, to the east by the Avlo arrondissement, and to the south by the Atlantic Ocean. It lies between 6°15'36" and 6°19'12" north latitude and between 1°46'48" and 1°52'48" east longitude (Figure 1).

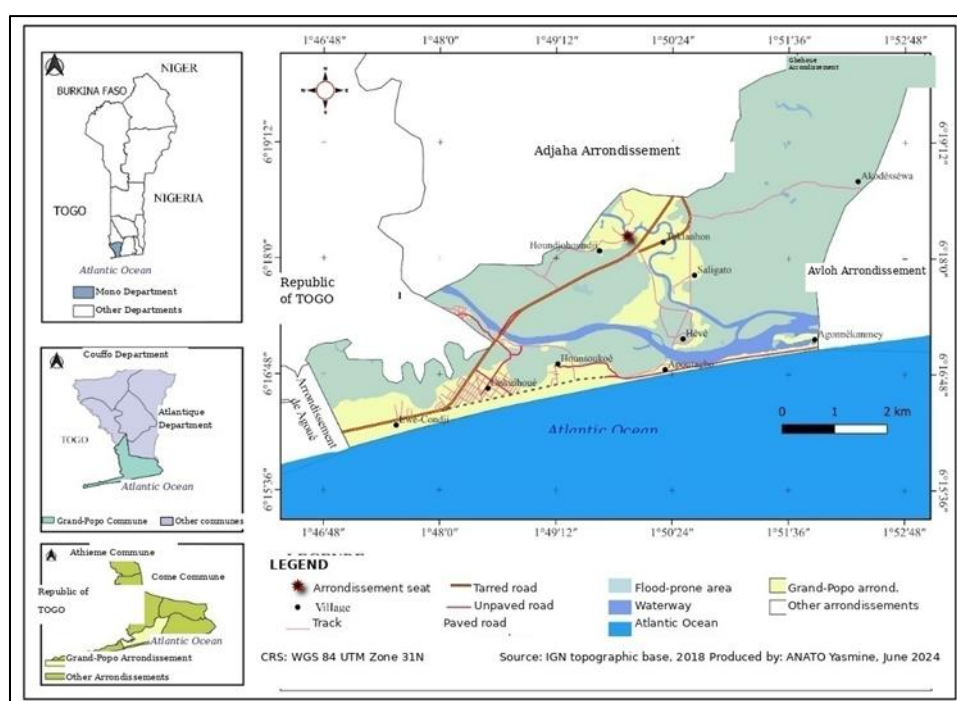


Figure 1: Geographic and administrative location of the Grand-Popo arrondissement

2 METHODOLOGICAL APPROACH

The methods used to collect information combined a documentary review with field surveys in the Grand-Popo arrondissement. For this research, three (3) of the eight (8) neighborhoods making up the Grand-Popo arrondissement were surveyed. These neighborhoods were selected on the basis of their population size and their position relative to the central core. They are the neighborhoods of Onkuihoué, Houssoukoué, and Ewe-Condji. The sample was determined

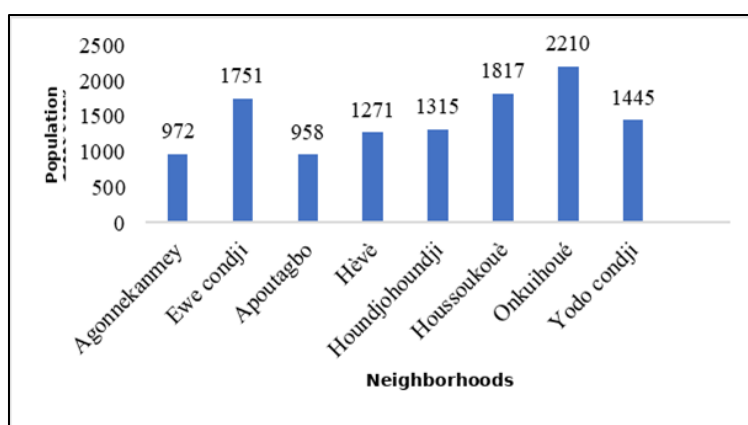
using purposive sampling. Sample size was determined following the formula of D. Schwartz (1995), presented as follows: $\beta = Z\alpha^2 \times pq/i^2$, where:

- β = sample size (β was determined for each neighborhood);
- $Z\alpha = 1.96$: reduced deviate corresponding to a risk α of 5%;
- i = desired precision, set at 5% following INSAE's technique; $q = 1 - p$;
- p = the proportion of households owning land assets in the study area. Accordingly, 227 households were surveyed.

The field survey was carried out using data collection tools such as a questionnaire, an interview guide, an observation grid, and a camera.

2.1 Population growth and distribution in the arrondissement in 2025

The population of the study area has evolved over time and across space. The central core has expanded toward the periphery as the population has grown and housing needs have increased. As a result, neighborhoods (Ewe-Condji, Hèvè, Houndjohoundji, Houssoukouè, Onkuihoué, and Yodo-Condji) that had fewer than 1,000 inhabitants at the 2002 census (RGPH3) have since seen their population exceed that figure. Figure 2 presents the distribution of the population in the Grand-Popo arrondissement.

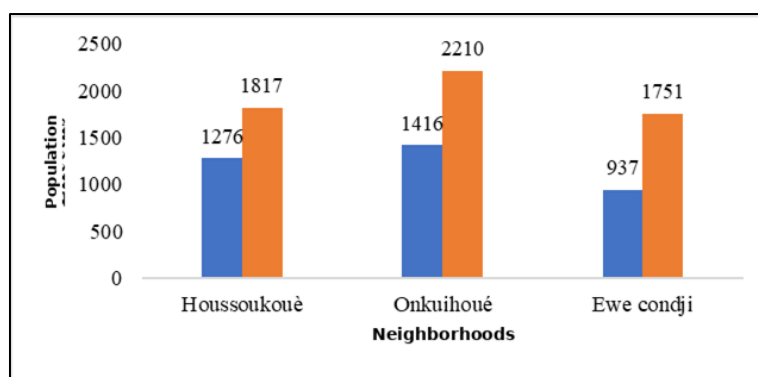


Source: Former INSAE, RGPH 4, 2013, and projection

Figure 2: Distribution of the population in the Grand-Popo arrondissement in 2025

The analysis of the figure shows that the neighborhoods of Onkuihoué, Houssoukouè, and Ewe-Condji are the most populous, with 2,210, 1,817, and 1,751 inhabitants respectively, whereas Apoutagbo (958 inhabitants) and Agonnekanmey (972 inhabitants) are the least populated. The population growth recorded in the three neighborhoods of Onkuihoué, Houssoukouè, and Ewe-Condji is linked to natural factors, migratory movements, and economic opportunities.

2.2 Natural factors



Source: Former INSAE, RGPH 4, 2013, and projection

Figure 3: Population change in Onkuihoué, Houssoukouè, and Ewe-Condji

The natural factors of population growth are births and deaths. According to the results of the 2002 and 2013 censuses (RGPH3 and RGPH4), births far outnumber deaths, which accounts for the population growth observed.

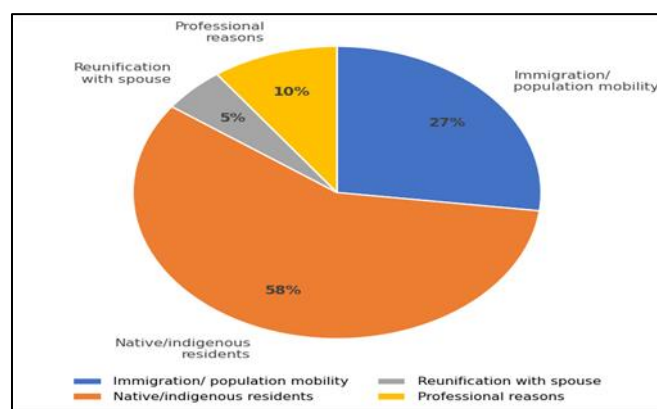
Figure 3 illustrates population change driven by births, particularly in the neighborhoods of Onkuihoué, Houssoukouè, and Ewe-Condji in the Grand-Popo arrondissement between 2002 and 2025.

2.3 Migration

Population growth in the neighborhoods of Houssoukouè, Onkuihoué, and Ewe-Condji is also explained by migratory movements, particularly rural exodus.

This migration brings urban lifestyles into rural settings without altering the rural character of the area. It stems mainly from the search for housing better suited to family size, as well as to family income. The scarcity and cost of housing in town push urban dwellers to relocate to rural areas. In addition, the advantages offered by the municipality of Grand-Popo—its coastal proximity and the availability of hotels—draw people to settle there, whether for a short or a long period. Geographic location is a major factor behind the migration observed, and the availability of hotels likewise encourages it. Several types of infrastructure are found in the Grand-Popo arrondissement: (i) road infrastructure, (ii) market infrastructure, (iii) water infrastructure, (iv) school infrastructure, and (v) health infrastructure.

Figure 4 presents statistics on people according to their reasons and choices for settling in Grand-Popo.



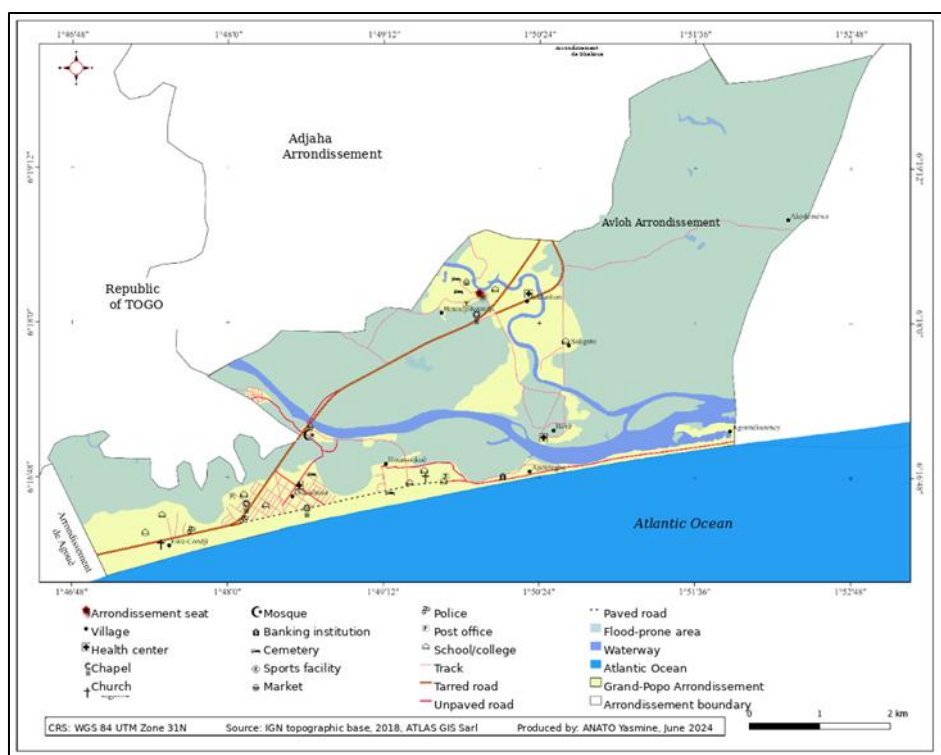
Source: Field work, June 2025

Figure 4: Reasons for population settlement, by percentage

The analysis of Figure 4 shows that four (4) reasons motivate people to settle in the Grand-Popo arrondissement: immigration or population mobility, native origin, reunification with a spouse, and professional reasons. Indeed, 58% of the people living in Grand-Popo are natives, born and raised there. The next dominant variable is a change of living environment (27%). It should also be noted that 10% of respondents settled there for work, and 5% for reasons of spousal reunification. Furthermore, analysis of the data collected shows that those who have moved into the Grand-Popo arrondissement come from the Agoué arrondissement and from Xwlacodji in Cotonou's 5th arrondissement. Many come from Comè, Lokossa, Ouidah, and Adja to settle there for work and because of the area's economic potential, while others do so for marriage.

2.4 Inventory of socio-community infrastructure in the arrondissement

This section analyzes the availability and accessibility of socio-community infrastructure (water points, health center, education centers, leisure centers) in the neighborhoods of Onkuihoué, Houssoukouè, and Ewe-Condji. Figure 5 presents the distribution of socio-community infrastructure in the Grand-Popo arrondissement.



Source: Field survey respondents, 2025

Figure 5: Spatial distribution of socio-community infrastructure in the arrondissement

The analysis of Figure 5 reveals that the Grand-Popo arrondissement has several socio-community infrastructures. Commercial, health, and school infrastructure are recorded, along with leisure facilities, churches, mosques, and others.

2.5 Availability of water points

Analysis of the information collected from the surveyed population shows that the different water sources used are SONEB water, borehole water, and river water. Plate 1 presents the different sources of potable water used by households in the Grand-Popo arrondissement.



Plate 1: Different sources of potable water used by households in the Grand-Popo arrondissement

Photographs: Tchaou, June 2025

Observation of Plate 1 shows that the population uses sources of potable water (SONEB). Photo 1.1 shows a private potable water point within a household. Photo 1.2 shows a water supply point serving all villagers. Information gathered from respondents indicates that about 80% of the population has access to this potable water, drawn from both private and public sources. It should nonetheless be noted that access to potable water for all remains a critical problem within the arrondissement. Photo 1 shows a well whose water is used for domestic tasks.



Photo 1: Well in some households in the Grand-Popo arrondissement

Photograph: Tchaou, June 2025

The photo shows a well in a household. The water is used for domestic tasks, including washing dishes.

2.6 Availability of health centers

Analysis of the information collected shows that the population of the Grand-Popo arrondissement has access to a single health center open to all. Photo 2 shows the health center of the Grand-Popo arrondissement.



Photo 2: Health center of the Grand-Popo arrondissement

Photographs: Tchaou, June 2025

The Grand-Popo arrondissement has one health center. The road leading to it is unpaved and difficult to travel on.

2.7 Availability of education centers

Analysis and processing of the recorded data reveal that not all neighborhoods benefit from educational infrastructure. No school is recorded in Houssoukouè, whereas Onkuihoué has a nursery school and a secondary school (lower and upper cycle), and Ewe-Condji has a primary school and a secondary school. These schools and colleges are public. It should also be noted that private primary schools and secondary schools exist. The following plate shows the condition of the school and the CEG (general education college) visited in Onkuihoué.



Plate 2: Onkuihoué public primary school (2.1) and Onkuihoué general education college (2.2) in the Onkuihoué neighborhood *Photograph: Tchaou, June 2025*

Observation of Plate 2 shows that neither the primary school nor the general education college is secured by a perimeter fence.

2.8 Availability of leisure centers

All the information collected reveals a shortage of public leisure infrastructure in the Grand-Popo arrondissement, and more specifically in the neighborhoods of Houssoukoué, Onkuihoué, and Ewe-Condji. Aside from NONVITCHA square, built a few years ago, other venues such as Villa Kara are privately run leisure facilities. The following plate presents the current state of NONVITCHA square in the Grand-Popo arrondissement.



Plate 3: NONVITCHA square in the Grand-Popo arrondissement

Photographs: Y. Anato, September 2024

Observation of Plate 3 shows NONVITCHA square, built to mark the centenary of this celebration. However, the square is exposed to major sanitation problems. Waste management in this arrondissement is not yet well organized, with waste scattered across the square's esplanade.

In addition to this socio-community infrastructure, there is a market in the arrondissement, located in Onkuihoué. A commercial center is also recorded in the Grand-Popo arrondissement. Photo 3 shows the condition of the market stalls. Many stalls have had their roofs torn off by storm winds and are awaiting repairs that have long been delayed, thereby limiting the space available to vendors.



Photo 3: Market of the Grand-Popo arrondissement

Photograph: Tchaou, June 2025

Observation of Photo 3 shows that the market is in poor condition and functions poorly, whereas its proper functioning should contribute to the mobilization of own-source revenue through the collection of taxes and duties for the benefit of the municipality. Some roofs were damaged by a severe windstorm. Sanitation infrastructure (public toilets) is also present in some neighborhoods of the Grand-Popo arrondissement. Photo 4 shows the public toilets in the Grand-Popo arrondissement. They are poorly maintained, which limits their use for generating revenue.



Photo 4: Public toilets in the Grand-Popo arrondissement

Photograph: Tchaou, June 2025

Observation of Photo 4 shows that the toilets are not maintained and have been abandoned.

Road infrastructure is of several types: paved roads (with interlocking pavers), tarred roads, and laterite tracks. Plate 4 presents the types of road infrastructure available in the Grand-Popo arrondissement.



Plate 4: Road infrastructure in the Grand-Popo arrondissement

Photograph: Tchaou, June 2024

Observation of Plate 4 shows that there are three types of road infrastructure in the Grand-Popo arrondissement: paved roads, tarred roads, and laterite tracks. It is also important to note that during flood periods, that is, when the Mono River overflows, the laterite tracks become impassable. Water floods all the houses, reaching a depth of about 1 m. The residents of Houssoukouè and Onkuihoué therefore use canoes to travel from one place to another.

Beyond this socio-community infrastructure, a number of hotel establishments have set up in the central arrondissement, giving it a distinctive tourist appeal.

3 DIFFICULTIES ENCOUNTERED

3.1 Difficulties encountered in accessing water

In Houssoukouè, there are two potable water access points where the population can obtain water for a financial contribution. Currently, only one is functional; the other is closed. One person has been designated to keep the key to the taps, but this person is sometimes away, which hampers the population's access to water. In Onkuihoué, there is only a single village water supply point (AEV) for the residents. This single water point is not sufficient for the entire population. Beyond those living close to the water point, the distance separating more distant residents from the water source is considerable—about 5 to 8 km (according to a village elder interviewed). In Ewe-Condji as well, the population has only a single village water supply point. It should be noted that some residents, depending on their means, have managed to install a SONEB water connection in their own homes.

In addition, the water of the Mono River used by the population is exposed to major problems, such as pollution from residents who use it for their own purposes, which inevitably becomes a source of disease. Well water and borehole water are more widely used by the residents of Ewe-Condji, Onkuihoué, and Houssoukouè living along the coast. It must be noted that, owing to the proximity of the sea, this water has a salty taste, which likewise limits access to water in these areas.

The population therefore faces both an inadequate potable water coverage rate and a shortage of water points, with accessibility depending on geographic, economic, and convenience criteria. According to the coverage standard set by the national potable water supply (AEP) strategy:

- 1 Modern Water Point (PM), or borehole fitted with a human-powered pump, per 250 inhabitants;
- 1 Public Standpipe (BF) per 500 inhabitants;
- 1 Village Water Supply System (AEV) per at least 2,000 inhabitants;
- 1 Potable Water and Sanitation point (PEA) per 1,000 inhabitants.

Table I indicates the number of water infrastructures that need to be provided to residents according to the standards of the national strategy for municipal programming of water supply facilities, in order to achieve better coverage of needs.

Table 1: Distribution of infrastructure to be provided in the surveyed neighborhoods

Neighborhoods	Population	Number of available water infrastructures	Number of functional water infrastructures	Number and types of water infrastructures to be provided
Houssoukouè	1817	2	1	1 PEA 1 BF 1 PM
Onkuihoué	2210	1	1	1 AEV 1 PM
Ewe-Condji	1751	1	1	1 PEA 1 BF 1 PM

Source: Field work, June 2025

The table shows that the water infrastructure available in the surveyed neighborhoods is insufficient relative to population growth. Of the four infrastructures recorded, only three are functional, which limits population access to potable water. The neighborhoods of Houssoukouè, Onkuihoué, and Ewe-Condji all show a need for new water infrastructure (AEV, PEA, BF, and PMH). This shortfall places considerable pressure on existing facilities and compromises the satisfaction of residents' needs. These results highlight the need to strengthen investment in water infrastructure to keep pace with population growth in the central arrondissement of Grand-Popo.

3.2 Difficulties encountered in accessing education centers

Among the difficulties encountered by the population in this respect, the main one is the rather long distance separating homes from education centers. In addition, according to 88% of respondents, the school and the general education college are not fenced. This exposes both students and staff to major problems, such as a lack of concentration during lessons, the disappearance of belongings, and exposure to sun and rain, among others.

3.3 Relationship between population growth and the availability of socio-community infrastructure in the study area

Population growth is a major issue facing the world today, one that is more pronounced in developing countries. It produces both positive and negative effects. When well managed, it can benefit the country, the department, the municipality, and even the arrondissement, as is presently the case in the Grand-Popo arrondissement, where it can help improve the population's living conditions. Socio-community infrastructure must therefore expand at the same pace as the population. When population growth is not well managed, however, it creates inequalities in the distribution of socio-community infrastructure as well as shortages of such infrastructure. There is therefore an urgent need to put in place a policy for anticipating and managing population growth in the Grand-Popo arrondissement. These aspects should be factored into the municipality's Annual Work Plan (PAT) every year. It is also urgent for the State to take steps to strengthen local governance policy within municipalities and arrondissements, and particularly within that of Grand-Popo.

4 DISCUSSION

The results show that population growth is indeed occurring, but that the availability of socio-community infrastructure in the central arrondissement has not kept pace. This concern has been the subject of several scientific studies and reflections by various authors. Indeed, the findings of T. Ganhoui (2018) on population growth and housing infrastructure in the Azovè arrondissement (Aplahoué municipality) showed that population increase is driven by natural movements—an increase in the birth rate explained by the fertility rate (5.4 children per woman, compared with 5.5 nationally in 2013 according to RGPH4)—together with declining mortality and migratory movements (with a number of newcomers settling for commercial activities and administrative reasons). Likewise, the findings of R. Houssa (2021) on population growth and needs in socio-community infrastructure in the peripheral neighborhoods of Dèkounbé, Cocodji, and Cocotomey in the Godomey arrondissement show that the population growth observed in these three neighborhoods is due to both natural factors and migration, reflected in the intercensal natural growth rate of the municipality of Abomey-Calavi, which fell from 9.43% between 1992 and 2002 to 6.7% between 2002 and 2013.

The results show that the population does not benefit from socio-community infrastructure in adequate quantity or quality; indeed, certain infrastructures are either absent or insufficient in the Grand-Popo arrondissement. This confirms the findings of B. Dansou (2005, p. 29), who showed that urban dynamics are confronted with major problems of access to infrastructure.

5 CONCLUSION

This research made it possible to analyze population growth and the availability of socio-community infrastructure in the central arrondissement of Grand-Popo, Benin, drawing on socio-anthropological data relating to population change.

Overall, socio-community infrastructure remains scarce and unevenly distributed across the arrondissement, whether in terms of potable water, health care, education, or leisure. Village water supply points are insufficient and fail to cover the population's needs, prompting some households to install their own boreholes. The single health center struggles to meet the needs of the entire population and continues to face major difficulties. Existing education centers—nursery, primary, and secondary schools—are in a deplorable state, and the only available leisure center is poorly maintained. Addressing these gaps will require stronger public investment and more effective territorial planning to durably improve the population's living conditions in the Grand-Popo arrondissement.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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Disclosure of conflict of interest

The manuscript is authored by a single author. There are no conflicts of interest.

Statement of informed consent

This research did not involve case studies of individuals. Data were collected through a review of existing literature and surveys of heads of households. Informed consent was obtained from the participants included in the study; all were adults over the age of 30.

REFERENCES

- [1] DANSOU Blandine (2005): *Population Growth and Housing Demand in Urban Areas: The Case of the City of Cotonou*. DESS thesis in Population and Urban Dynamics, University of Abomey-Calavi (UAC), 70 pp.
- [2] GANHOUÏ Tanguy (2018): *Population Growth and Housing Infrastructure in the Azovè District (Aplahoué Municipality)*. Bachelor's thesis in Human and Economic Geography, 55 pp.
- [3] HOUINSOU Auguste Tognidè (2013): *Road Transport Infrastructure and Spatial Structuring in Southern Benin*. Ph.D. thesis, University of Abomey-Calavi, 261 pp.
- [4] HOUSSA Rodrigue (2021): *Population Growth and the Need for Socio-Community Infrastructure in the Peripheral Neighborhoods of Dekoungbé, Cocoloméy and Cocolodji in the Godoméy District*. Bachelor's thesis, 64 pp.
- [5] INSAE (2013a): Recensement Général de la Population et de l'Habitation (RGPH4, 2013): Cahier des villages et quartiers de villes du département du Mono [Fourth General Population and Housing Census (RGPH4, 2013): Directory of Villages and Urban Neighborhoods in the Mono Department].
- [6] INSAE (2013b): Quatrième Recensement Général de la Population et de l'Habitation, Février 2013, Dynamique de la population. Cotonou, 35 pp.
- [7] MOUMOUNI Briksou Laurence (2016): *Population Change and Sanitation Infrastructure Management in the Municipality of Dangbo*. Master's thesis, 80 pp.
- [8] SCHWARTZ Daniel (1995): *Statistical Methods for Physicians and Biologists*, 4th edition. Éditions médicales Flammarion, Paris, 314 pp.
- [9] TABUTIN Dominique and SCHOUAKER Bruno (2020): "The Demography of Sub-Saharan Africa in the Twenty-First Century: Review of Changes from 2000 to 2020, Prospects and Challenges up to 2050." *Population*, 2020/2-3 (Vol. 75), pp. 169–295.