

Understanding Urban Fragility and Resilience in Kaya, Burkina Faso, Based on the Perceptions of Urban Actors



Martin Alira Awesh^{*}, Tossou Atchrimi

Regional Center of Excellence on Sustainable Cities in Africa (CERViDA-DOUNEDON), University of Lomé, Lomé BP 1515, Togo

Corresponding Author Email: martin.awehalira@cervida-togo.org

Copyright: ©2024 The authors. This article is published by IIETA and is licensed under the CC BY 4.0 license (<http://creativecommons.org/licenses/by/4.0/>).

<https://doi.org/10.18280/ijstdp.191006>

ABSTRACT

Received: 9 September 2024

Revised: 11 October 2024

Accepted: 16 October 2024

Available online: 30 October 2024

Keywords:

actors, fragility, Kaya, perceptions, planning, resilience, urban sustainability

Investigating the fragility and resilience of cities facing crises is an important step towards sustainable planning and development. The study aims to understand the fragility and resilience of the town of Kaya in Burkina Faso, based on the perceptions of urban actors. A field study was carried out using a mixed research method. Focus groups were conducted with 73 stakeholders representing the city's various social groups. Questionnaire surveys were administered to 565 people selected using the quota method. The results show that overcrowding, insecurity, violence, poverty, shortcomings in providing basic public services, lack of dialogue between the authorities and residents, and exposure to flooding, all weaken the city. Social groups such as women, the elderly, people living with disabilities and internally displaced persons are more likely to identify marginalization, inequality and injustice as signs of fragility. Despite the difficult situation, people have confidence in their authorities and consider that the presence of the state and humanitarian actors in the area, natural resources, economic activities, traditional values and social cohesion are the pillars of resilience. Fragility and resilience lie in the relationships between social groups and between communities and their environment.

1. INTRODUCTION

Among the reasons for the low legitimacy of public authorities in sub-Saharan Africa are the inadequate and inappropriate responses given to the aspirations generated by the transformations brought about by the rapid urbanization of the continent [1-7]. This form of urbanization on the African continent is largely informal [3, 7]. This reflects the limited capacity of local and state public institutions to keep pace with urban growth [8]. Bryceson [6] cities that are unable to meet their inhabitants' vital needs for food, water, health, sanitation and security can rapidly disintegrate. In fragile contexts, the population's trust in the state erodes rapidly, as does trust between social groups, and violence becomes more frequent [9]. In addition, social and spatial inequalities are markers of fragility [10].

Knowledge of internal and external threats is of paramount importance in mitigating failures in various areas of city functioning [11]. Cities with a proven inability of the state to ensure the security, prosperity and well-being of their inhabitants are exposed to social crises that can be violent against public actors and public goods [12, 13]. It is recognized that exploring and understanding the issue of urban fragility enables to suggest ways of improving the living conditions of inhabitants and even the sustainability of territories [14, 15]. Since the adoption of the New Urban Agenda in 2016, social, environmental, economic and spatial

sustainability are dimensions that are imposed on all planning and sustainable development actions in the world's cities [7, 16]. A sustainable city is characterized by the availability of housing and facilities, jobs, social equity and cohesion, environmental protection, best practices in design and local governance, and so on [17]. However, according to the findings, the prospects of achieving sustainable development objectives are becoming more remote for cities in fragile contexts [10, 18].

Since the 1990s, international organizations have developed the fragility approach as a tool to characterize a category of countries facing crises of various forms and guide donor interventions [10, 18-20]. In academic circles, urban fragility is referred to as poverty and precariousness [21] insecurity, conflict and violence [12, 22, 23]. Zhao et al. [24] consider that ecosystem vulnerability and urban risks linked to climate change are manifestations of fragility in cities. In their work on cities born of forced displacement and the creation of refugee camps in Jordan, Alshoubaki and Zazzara [25] refer to fragile cities, alluding to the deteriorated urban quality observed in these environments. Failures in the various forms of response organized by cities in the face of the COVID-19 epidemic revealed a form of urban fragility [26]. The diversity of work on fragility shows that the concept is used to illustrate different urban phenomena.

In the literature, there is a close link between fragility at supranational, national and urban scales [26]. National

fragility is seen as the result of sub-national and supranational fragilities [18]. At the state level, there are two main conceptual approaches to fragility: the approach based on the measurement of state risks and adaptive capacities, and the approach based on the measurement of state functional failures. Initiated by the OECD, the approach by measuring the risks and adaptive capacities of states defines fragility as the combination of exposure to risk and insufficient adaptive capacities of the state, system and/or populations to manage, absorb or mitigate these risks [19]. OECD uses a multidimensional fragility framework that was first introduced in 2016. This framework measures the fragility and resilience of states across political, economic, social and environmental dimensions. This definition of fragility shares many similarities with the definitions used by the World Bank Group [9] and the African Development Bank Group [27]. The Fund for Peace organization, which regularly publishes the Fragile State Index report, measures the fragility of countries by highlighting both the pressures on states and the state's ability to manage these pressures. The functional failure approach is promoted by the German Institute for Development and Sustainability (IDOS). Criticizing the conception of fragility held by organizations such as the OECD and the World Bank, these authors propose an approach to the concept centered on the main functions of the state: authority, capacity and legitimacy [28]. The relevance of studying the fragility of countries and cities goes hand in hand with the study of their capacities for resilience, adaptation, management and resistance in the face of crises [18, 20, 26, 29]. The concept of resilience does not have a consensual definition. For some, resilience refers to the opposite of fragility, for others to the ability of people to tolerate the effects of crises, or to the capacity of states and communities to contain, manage and recover from the effects of a crisis [20, 26].

At the city scale, one of the first approaches to measuring fragility and resilience is based on fragility factors and resilience factors proposed by De Boer et al. [29]. Subsequently, other authors have proposed innovations or adaptations, notably in the choice of measurement indicators [13, 25, 30]. The literature highlights the importance of conducting a fragility and resilience analysis of cities facing crises from a sustainable planning and management perspective. The various models for measuring fragility and resilience have shown the relevance of combining qualitative and quantitative approaches to conduct an objective analysis of a territory's conditions [19, 20, 31]. However, in-depth, up-to-date knowledge of the characteristics of fragility and resilience in African cities is scarce. Available data on the fragility of African cities have focused on capital cities and large towns and are not recent. The literature also highlights the scarcity of studies based on an understanding of fragility contexts from the point of view of inhabitants. The article focuses on the city of Kaya in Burkina Faso. Kaya is a city of secondary rank in the national urban system, which has been undergoing accelerated urbanization since 2019, following the model of crisis urbanization [32]. Since 2019, the city has been receiving an influx of internally displaced people due to the national context marked by a spiral of violence [33]. The study seeks to answer the following question: how are the fragility and resilience of the city of Kaya perceived by urban actors? The study is based on the hypothesis that perceptions of fragility and resilience are linked to the experience of each actor, to relationships between social groups and to interactions between actors and the environment. The research

aims to understand the characteristics of fragility and resilience from the viewpoints of the actors who live and act in the city of Kaya. We argue that a good understanding of the city's fragility and resilience capacities provides a solid foundation for planning a socially, economically, spatially and environmentally sustainable city.

After this introduction, the article is divided into three parts, in the following order: methodology, results and discussion, and conclusion.

2. METHODOLOGY

The purpose of the study is both descriptive and comprehensive. The description of phenomena consists in determining their characteristics and establishing relationships between them [34]. The comprehensive approach seeks to make sense of actors' discourse [35]. The methodological approach consisted of fieldwork that adopted a mixed method. In view of the importance of the national context on the understanding of the local context, the description of the methodology has been organized into five parts: the national context of the study, the presentation of the object of the study, the presentation of the analysis model, the description of the qualitative method of data collection and analysis and finally the description of the quantitative method of data collection and analysis.

2.1 The national context

Burkina Faso is a landlocked Sahelian country in West Africa with an estimated population of 20,505,155 in 2019, of which 51.7% are women [36]. Urban and local development is based on a decentralization policy in place since 1991. The country has been marked by political instability since the popular uprising of 2014, which led to the fall of the power in place since 1987. After a democratic period from 2015 to 2022, the country was ruled by military regimes following two successive coups d'états in January and October 2022. The security situation has deteriorated sharply over the past decade. The global terrorism index has risen from 0.7 in 2014 to 8.5 in 2023, taking the country from 87th place in 2014 to 2nd place in 2023 [37, 38]. In 2023, some 2,450,000 civilians were exposed to conflict throughout the country [39]. A total of 8,494 deaths were recorded in 2023 linked to the terrorism situation [40]. The economy, heavily impacted by the security crisis, saw revenues from gold mining and agriculture plummet. The rate of vulnerable employment was 72.5% in 2018 [36]. The country is regularly exposed to floods and droughts, which are attributed to climate variability. In 2022, out of a total of 351 communes in the country, 22 communes were affected by flooding, causing damage to 15,566 people [41]. The security situation has led to a humanitarian and social crisis affecting almost 10% of the population. As of March 31, 2023, there were 2,062,534 internally displaced people in the country [42]. A total of 485 health facilities were closed, ransacked or operating at minimal capacity on December 31, 2023 [43].

2.2 The subject of the study: the town of Kaya

The study focuses on the urban commune of Kaya in Burkina Faso, and more specifically on the town of Kaya. Kaya is a medium-sized town located 100 kilometers north of

the capital Ouagadougou (Figure 1). The administrative boundaries of the city of Kaya are defined by the city master plan which came into force in 2014 [44]. Kaya's urban character is largely attributed to its important administrative functions. The city is the capital of the Centre-Nord region, the Sanmatenga Province and the Kaya Prefecture. The official surface area of the city of Kaya is 7,383.53 hectares or just under 3% of the communal territory. The built-up urban area covers only 4,295.6 hectares, 43.2% of which is occupied by informal housing (Figure 2). The city is organized spatially according to two types of division. The administrative division into seven (7) sectors with defined boundaries (Figure 1) and

the district division is based on traditional spatial organization. Kaya lies in the Sudano-Sahelian climatic zone, with rainfall ranging from 600 to 700 millimeters and maximum temperatures of up to 45 degrees Celsius [45]. The resident population has risen from 54,365 in 2006 to 121,970 in 2019, an increase of almost 125% in 13 years [46]. In 2019, 37% of the population lived in informal settlements [47]. In March 2023, the city was home to 122,570 internally displaced people because of the country's security crisis [48]. Since 2022, the commune of Kaya has been administered by authorities made up of members appointed by the national authorities [49].

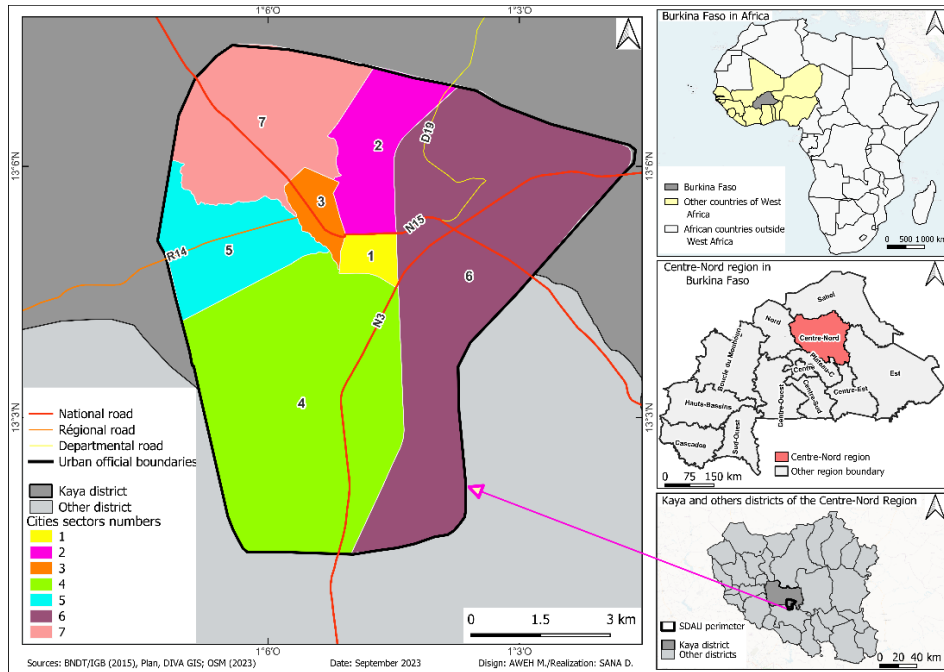


Figure 1. Geographical location of the Town of Kaya

Note: 1. Burkina Faso is located in West Africa. 2. The Centre-Nord region is located in the north of Burkina Faso. 3. Kaya is located in the south of the Centre-North region

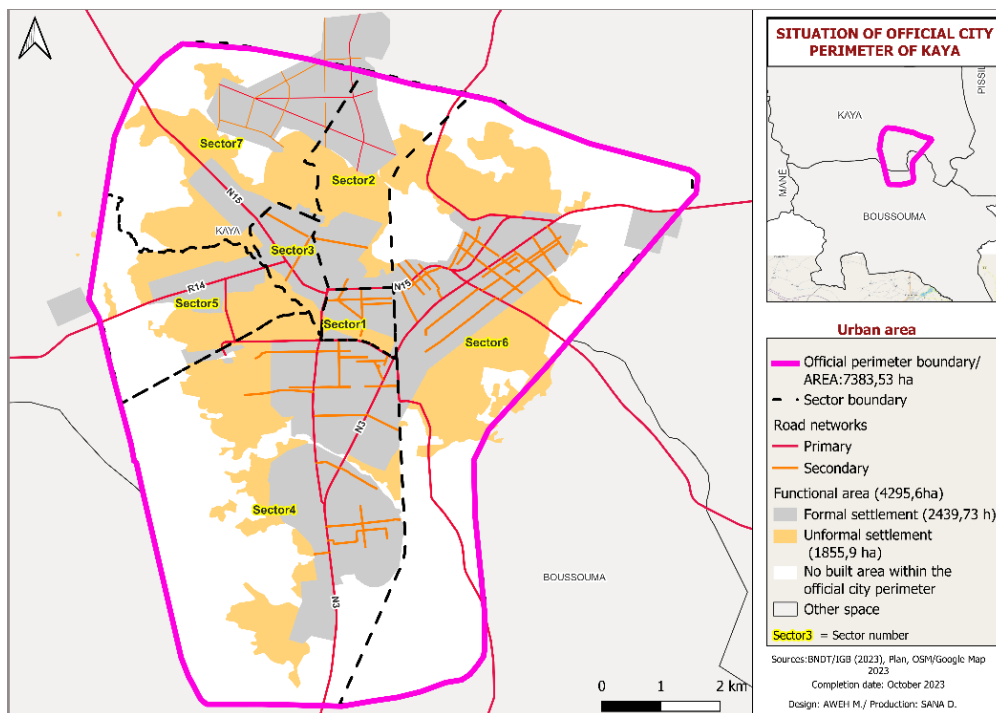


Figure 2. Urban land use in the city of Kaya

2.3 Analysis model: Fragility and resilience as social and spatial facts

Fragility and resilience as social facts are concerned with the conditions of human society and the relationships between people in society. It is interesting to study a fact as a social fact as soon as we consider that its explanation or understanding stems from a social cause [50, 51]. From this assertion, it is possible to understand the fragility and resilience of a city by studying the representations of individuals and the relationships between the city's social groups. A spatial fact derives from interactions between people and the environment and is relevant to be analyzed at different scales [52, 53]. By positing urban fragility and resilience as spatial facts, it is relevant to bring the spatial dimension into the understanding of the phenomena. Social space [54] offers a theoretical framework for studying socio-spatial facts from the point of view of different types of actors. According to Lefebvre [55] social space as a social production is understood by deciphering spatial practices (or perceived space), which

reveal the spatial organization and functioning of the city, representations of space (or space conceived by authorities and professionals) and spaces of representation (or space experienced by inhabitants). At the heart of the understanding of urban space, and therefore of its fragility and resilience, lies the social actor in interaction with the other actors in society. Di Meo and Buléon [54] propose approaches for classifying the actors who produce the city (Table 1).

Based on this theoretical framework, fragility is defined as the combination of exposure to risk and the inadequacy of social actors' capacities for adaptation and resilience. Risk is a situation characterized by the probability of an imbalance or breakdown in relations between social actors, or between social actors and their environment. Adaptation, management and resilience capacities bring together the resources and practices that actors put in place to re-establish equilibrium or recover from the effects of disruption. The analysis grid for fragility and resilience is based on the following five dimensions: political, security, economic, social and finally environmental and spatial.

Table 1. Classification of actor types in the city

Classification of Actors According to Di Meo and Buléon			Fourchard's Classification of Actors	
Endogenous	Transitional	Exogenous	Public	Private
Native, resident. Environmental conditions affect life	Between endogenous and exogenous	Distant from the environment. Makes decisions about the environment that do not directly affect his life	State and local authority representatives active in the environment. They may be transnational, national or local	Individuals, companies or communities. They are generally local but can be national or transnational

Source: [54]

2.4 The qualitative method of data collection and analysis

The qualitative method used the focus group interview technique. The interviews took place between September and November 2023, including the time required to obtain administrative authorizations, and to inform and obtain the agreement of the participants. The focus groups were conducted in the local language (Mooré) and focused on two questions. Firstly, *what are the signs that indicate the risk of a breakdown in relations between actors in the city, or in relations between actors and their environment?* Secondly, *what are the signs that relationships between actors and between actors and their environment are solid?* Six focus group sessions were organized on the premises of Kaya town hall. Care was taken to minimize outside influences on the exchanges with each group. The composition and size of the groups are shown in Table 2.

Socio-demographic and spatial criteria such as: gender, age, place of residence (considering all 7 administrative sectors of the city of Kaya), actor status (public/private), residence status (resident host/internally displaced person), and housing formality were used to select participants. Participants were identified in consultation with Kaya local authorities. Invitations were sent to targeted participants, specifying the purpose of the interviews and the voluntary and anonymous nature of the exchanges. Focus group data were recorded on smartphones, and notes were taken on kraft paper in the presence of the participants. The collected material was then transcribed onto Word and analyzed in two stages. The first stage involved theoretical coding of the material, identifying words and expressions that made sense in relation to the theoretical corpus. However, to limit the risk of circularity [35], rigor was applied to the fidelity of the participants' expressions. The second stage involved bringing context into play to

deepen understanding of the perceptions collected [56].

Table 2. Composition and size of focus group participants

Group	Men	Women	Total Workforce
Seniors and people living with disabilities	6	5	11
Authorities and public officials	11	2	13
Residents of informal settlements	10	5	15
Residents of formal housing zones	8	7	15
Internally displaced persons	5	5	10
Women's organizations	0	9	9
Total	40	33	73

Source: The authors

2.5 The quantitative method of data collection and analysis

The questionnaire survey consisted of collecting participants' answers to questions concerning the political, economic, security, environmental and spatial, and social dimensions of the city. The dimensions and variables selected for the questionnaire are based on the theoretical framework and concepts of fragility and resilience defined in section 2.3. For each dimension, the choice of the variable for the questionnaire is based on two criteria: firstly, the variable puts into perspective the interactions between urban actors or the interactions between actors and their environment, and secondly, the variable enables us to measure a relevant indicator of fragility and resilience dimensions. The variables selected for the questionnaire are presented in Table 3.

The sampling frame is a population of 231,000 [46, 48], corresponding to the population living in the town of Kaya at

the time of the survey. From this sampling frame, a sample of 565 people, including 283 women, was surveyed using the quota method, as shown in Table 4. Quotas considered the proportions of social groups in the sampling frame according to gender, age, area of residence (formal or non-formal) and residence status (host resident/internally displaced person). The sample size was verified using the online calculator provided by SurveyMonkey [57] with a confidence level of 95% and a margin of error of 5%. The surveys were conducted in November 2023 in the local language (Mooré). The questionnaire was administered by seven interviewers distributed across the seven sectors of the city. Smartphones were used to administer the questionnaire, and responses were entered directly into the kobocollect application. Surveys were carried out at the respondents' places of residence or work. Individuals were identified at random, considering the quotas to be respected.

Table 3. Dimensions and variables used in questionnaire surveys

Dimension	Variables
Policy	Level of satisfaction with the authorities' management of the commune
Economy	Level of satisfaction with access to electricity
Security	Perception of the State's ability to ensure safety
Environment and space	Perceived frequency of flooding in place of residence
Social	Level of satisfaction with access to healthcare

Source: The authors

Table 4. Sample for the questionnaire survey

Respondent's Social Profile	Respondent's Area of Residence		Grand Total
	Informal Areas	Developed Area	
Woman	89	194	283
Host	44	141	185
IDP	45	53	98
Men	83	199	282
Host	52	158	210
IDP	31	41	72
Grand total	172	393	565

Source: The authors

Note: IDP means: Internally Displaced Persons

To facilitate understanding of the questions posed to illiterate or low-literacy individuals, the visual method was used, with concepts illustrated by images and the use of *smileys* to illustrate mood scales. Data extracted from the kobotoolbox platform in Excel file format were checked for completeness of information collected for each individual surveyed, and for the absence of duplicates. The results obtained for each variable were then presented in figures using XLSTAT software for interpretation.

The methodological approach has a few limitations, inherent in the sampling method for administering the questionnaire survey and the use of focus groups for interviews. While the quota method ensures good socio-demographic representativeness, it is less accurate than probabilistic methods in questionnaire surveys. Also, as respondents were chosen on a voluntary basis, certain opinions could not be identified. As for focus groups, the main limitation is the risk of bias linked to the domination of individual opinions over those characterizing the social group.

3. RESULTS AND DISCUSSION

The results are presented in two parts. The first part presents the perceptions of fragility and resilience obtained during the focus groups. The second part presents the results of the questionnaire survey. These results are followed by a discussion.

3.1 Results

3.1.1 Perceptions of fragility and resilience based on focus group results.

Table 5. Signs of fragility in Kaya according to social groups

Perceptions of Fragility	Social Groups
Overcrowding	Public authorities and officials
Lack of water infrastructure and basic public services (water, streets, health)	Authorities and public service employees; Communities living in informal areas
Overexploitation of public services, particularly basic social services (water, health, education)	Public authorities and officials
Lack of social cohesion between host residents and IDPs	Internally displaced persons; Communities living in informal areas; Communities living in formal areas
Pressure on natural resources (trees, land and water)	Public authorities and officials
Conflicts, land disputes, misunderstandings	Public authorities and officials; Communities living in informal areas; communities living in formal areas; Women's associations
Lack of state authority, anarchy, disorder	Communities living in informal areas; Elderly people and people living with disabilities; Women's associations
Climate change, drought, floods	Public authorities and officials
Insecurity, violence	Elderly people and people living with disabilities; Communities living in informal areas; Communities living in formal areas; Women's associations; Internally displaced persons
Marginalization	Elderly people and people living with disabilities; Internally displaced persons; Women's associations; Communities living in informal areas
Lack of respect for elders and traditional values	Communities living in informal areas
Lack of trust between communities	Communities living in informal areas; Internally displaced persons
Injustice	Women's associations; Communities living in informal areas
Public property grabbed by a minority	Women's associations; Seniors and people living with disabilities
Poverty, high cost of living	Women's associations
Lack of dialogue between authorities and residents	Community living in informal areas; Communities living in formal areas

Source: Summary of focus groups held on November 17 and 18, 2023 in Kaya

Note: The table shows, for each word or expression (first column), the social groups that identify with it through the discourse of their participants (second column)

Table 6. Perceptions of city resilience factors by social group

Perceptions of Resilience Capabilities	Social Groups
Traditional chieftaincy as a force for social regulation	Public authorities and officials; Women's organizations; Elderly people and people living with disabilities; Internally displaced persons; Communities living in informal areas
Presence of humanitarian actors	Public authorities and officials
State presence (basic services)	Public authorities and officials
Availability of natural resources (gold)	Public authorities and officials
Economic activities: trade, agriculture, hides and skins	Public authorities and officials; Women's associations

Social cohesion
Public authorities and officials; Communities living in informal areas; Communities living in formal areas

Source: Summary of focus groups held on November 17 and 18, 2023 in Kaya

Note: The table shows, for each word or expression (first column), the social groups that identify with it through the discourse of their participants (second column)

The perceptions of the fragility of the city of Kaya according to the focus groups are presented in Table 5. Perceptions of Kaya's resilience is presented in Table 6.

3.1.2 Results of questionnaire surveys

The results of the questionnaire surveys are shown in Figures 3 to 7.

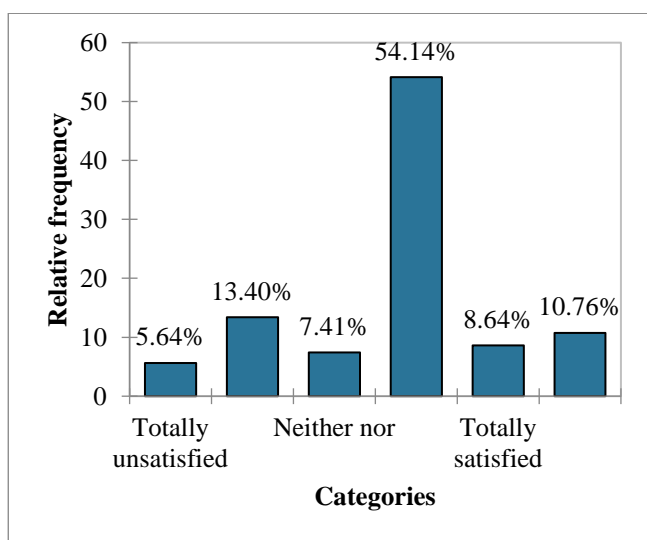


Figure 3. Respondents' level of satisfaction with commune management

Note: More than 60% of respondents were satisfied (including those who were totally satisfied) with the current authorities' management of the commune

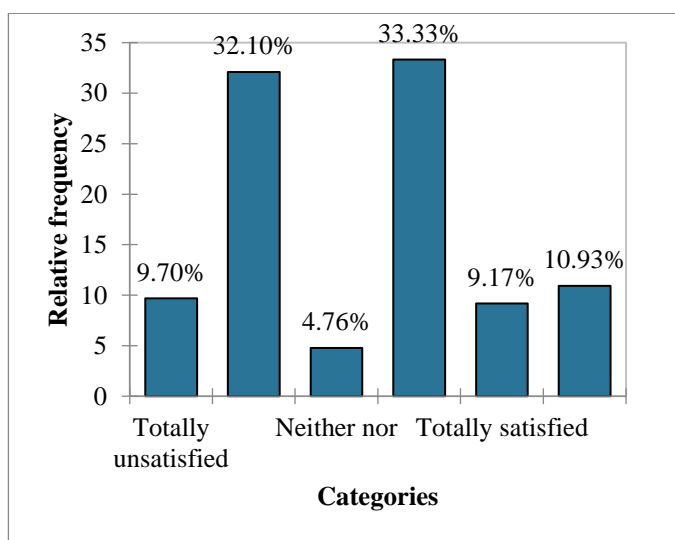


Figure 4. Respondents' level of satisfaction with access to electricity

Note: 42.5% of respondents were satisfied (including those who were totally satisfied) with access to electricity, compared with 41.8% who were dissatisfied (including those who were totally dissatisfied)

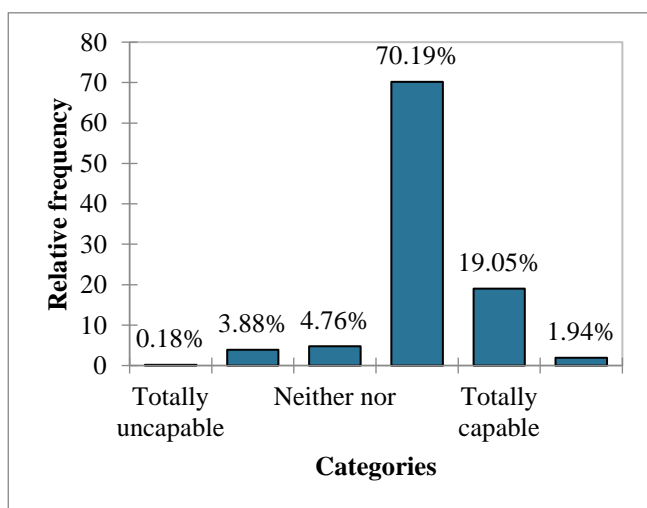


Figure 5. Respondents' perception of the state's ability to ensure safety in their place of residence

Note: Respondents who consider the State capable of ensuring security in their area of residence are in the vast majority, with a relative frequency of 89.24%

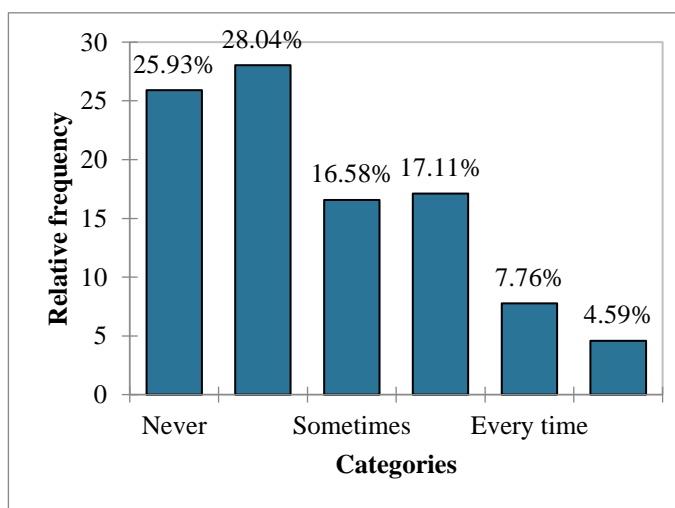


Figure 6. Frequency of flooding in the place of residence according to respondents

Note: More than half of respondents (51.97%) say they have never experienced flooding in their place of residence or have rarely done so. On the other hand, 41.45% of respondents have experienced flooding, 7.76% of them on a regular basis

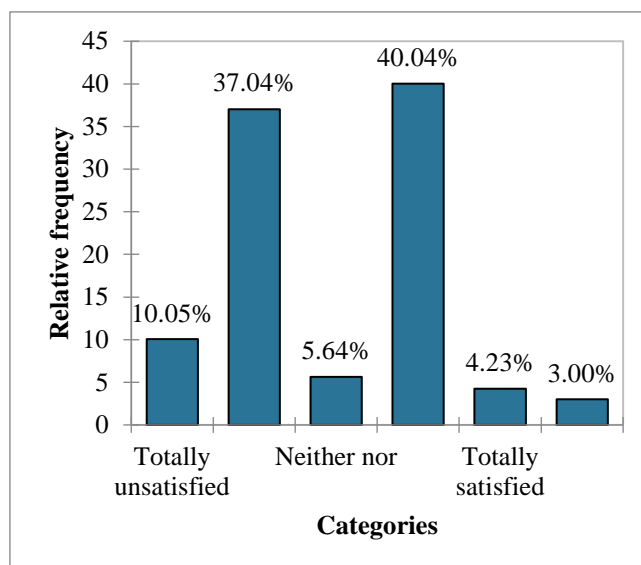


Figure 7. Respondents' level of satisfaction with access to healthcare

Note: 1. Dissatisfied respondents (including those totally dissatisfied) are more numerous among respondents with a relative frequency of 47.09%. 2. Satisfied respondents (including those totally satisfied) come second with a relative frequency of 44.27%

3.2 Discussion

3.2.1 Fragility and resilience reveal the conditions of society

Differing perceptions of the political context. The results of the interviews show that anarchy, disorder and the weak authority of the leaders and the lack of dialogue between the authorities and the population are signs of fragility. These perceptions are expressed by three social groups: communities living in informal settlements, the elderly and people living with disabilities, and women's associations. These social groups, labelled as weak or marginalized in society [58], are more likely to perceive the weakness of state authority and the effects of lawlessness as factors that can lead to social breakdown. The results of the questionnaire surveys reveal a paradoxical situation. Most respondents (54.14%) felt that management of the commune by the current authorities was satisfactory. This inconsistency with the views of certain social groups could be explained by the specificity of each data collection method and the sensitivity of the theme addressed. Individual perceptions differ from collective perceptions about the sensitivity of the theme of public authority. Collectively, individuals feel confident in denouncing the weaknesses of the state, whereas individually, they are less critical. Resilience at the political level is based on the mediating role that participants attribute to traditional powers in society.

A difficult social and economic context. The results show a social context marked by overcrowding in the city, overexploitation of public services, social tensions and crises of trust between citizens and between communities. Against a backdrop of national insecurity leading to a large influx of internally displaced people into the city, the image of an overcrowded city emerges in the consciousness of its inhabitants. In a logical sequence, this overcrowding leads to the overexploitation of public services, rising social tensions and crises of confidence in society. These perceptions are shared by groups of respondents and corroborated by individual perceptions. Indeed, more respondents were dissatisfied with access to healthcare and electricity. The marginalization, inequality and injustice felt by women, internally displaced people and people living in informal settlements highlight imbalances linked to gender,

geographical and ethnic origin. The results show that, despite these factors of fragility, the actors recognize the availability of natural resources (gold and land), economic activities such as trade, agriculture and the manufacture of hides and skins, the presence of the State and humanitarian organizations, and social cohesion as pillars of resilience and adaptation to the difficult context.

A security situation marked by violence and insecurity. Insecurity, violence and conflict were perceived as markers of fragility in the group interviews. These perceptions are shared by all groups, revealing the widespread nature of the phenomenon. Despite this difficult situation, the results of the questionnaire surveys show that, individually, almost 90% of respondents trust the authorities created by the military coup to ensure their security. Traditional authorities appear to be actors who reinforce resilience, particularly in conflict management.

Climate change is a concern in the city. Droughts and floods stand out as a sign of fragility, according to the focus group results, particularly among authorities and public service employees, and people living in informal settlements. The surveys revealed that flooding concerns some respondents to varying degrees. Among respondents, 7.76% claim to experience flooding every year, and 17.11% claim to have experienced flooding several times. Urban disorder and the weak authority of the public authorities highlighted during the interviews are factors that expose some residents to the consequences of flooding.

3.2.2 Similarities with several previous works, but also specificities

The results of the study establish the link between fragility and lack of trust between social groups, as highlighted by the World Bank authors [9]. Manifestations of fragility such as poverty and precariousness [21] insecurity, conflict and violence [12, 22] and manifestations of climate change [24] also emerged as perceptions of fragility by Kaya inhabitants. In comparison with the fragility and resilience factors identified by De Boers et al. [29] similarities and specificities are noted, as shown in Table 7.

Table 7. Comparison between De Boers et al.'s fragility and resilience factors and the results of the study

Fragility Factors		Resilience Factors	
According to De Boers et al. [29]	Study results	According to De Boers et al. [29]	Study results
Rapid, irregular urbanization	Overcrowding	Better incomes and social equality	Economic activities, trade, agriculture, natural resources
Social and income inequalities	Marginalization, inequality	Microeconomic security and social protection	
Poverty	Poverty	Essential services	Presence of government services in the city
Unemployment	-	Effectiveness of police and justice services	Presence of government services in the city
Shortage of police and justice services	Overexploitation/absence of public services	Social cohesion	Social cohesion
Real and perceived insecurity	Insecurity, violence	Dynamic associative organizations	Traditional chieftaincy
Exposure to natural hazards	Climate change, exposure to flooding	Strong state-community cooperation	State services in town

Source: The authors based on the work of De Boers et al. [29] and the results of the study

The results show, however, that unlike the World Bank analyses [9] in the case of Kaya, people's lack of confidence in their authorities does not appear to be a manifestation of fragility, despite the situation of insecurity, poverty, social inequality and lack of public services. The influence of the massive arrival of internally displaced persons on trust between communities and the feeling of insecurity is in line with the conclusions of Alrobaee et al. [59] who assert that homogeneous societies are safer and that, conversely, the penetration of foreigners increases the risk of crime. The results highlight that traditional practices can be valued for the resilience and sustainability of territories, as shown by the work of Gharios [60].

Comparing social group's perceptions, the results reveal differences between public actors (mostly exogenous) and other endogenous actors. Public actors' express perceptions that are more in line with their own ideal of the city, and more detached from their own experience. Endogenous actors express their experiences, fears and frustrations to a greater extent. These results confirm the theory of Di Meo and Buléon [54], who differentiate between endogenous and exogenous actors in their relationship to the environment.

4. CONCLUSION

To address the scarcity of knowledge on the fragility and resilience of African cities, particularly those living in contexts of insecurity and massive presence of internally displaced persons, the study set out to understand urban fragility and resilience based on the perceptions of actors living in the city of Kaya, Burkina Faso. Drawing on the approaches to measuring fragility and resilience available in literature, the approach was based on a field study combining qualitative and quantitative methods to better grasp the perceptions of actors in the city of Kaya.

The study sheds light on the effect of rapid, forced urbanization on the fragility of a medium-sized city, manifested in the overexploitation of public services, social tensions and a crisis of trust between communities. The marginalization, inequalities and injustice felt by women, internally displaced persons and people living in informal settlements highlight the imbalances linked to the gender, geographical and ethnic origins of citizens. The study also shows that fragility does not automatically affect trust between

populations and their authorities, even though these authorities have emerged from a coup d'état. The study provides in-depth data and analysis on how the citizens of Kaya interpret the complex situation in their territory. Ultimately, the results show how the experience of each actor, the nature of relationships between social groups, social values and the effects of the environment on society help to understand the characteristics of fragility and resilience in the city of Kaya.

The results highlight the factors on which public authorities and development partners must act to strengthen city resilience, reduce fragility and prevent situations of dislocation. Economic functions, the presence of the state, traditional power and natural resources remain the pillars of resilience for populations. The confidence expressed by citizens in their authorities shows that, in a fragile context, non-democratic public authorities can be legitimate and deserve the trust of development partners.

The results of the study also provide an innovative approach to analyzing the fragility and resilience of developing countries medium-sized cities, which are characterized by often lack disaggregated, up-to-date statistical data. To gain an in-depth understanding of a city's fragility and resilience, we need to use both statistical data and the views of city stakeholders, using both qualitative and quantitative techniques. It is important to compare the points of view of the different groups of players to obtain an overall picture of the urban context.

The study results enable us to formulate concrete recommendations for urban planning and management that are more sensitive to fragile contexts. Firstly, an approach to urban planning that reinforces social inclusion should be promoted. In this respect, urban public spaces such as green spaces, streets, urban parks and playgrounds are recognized as vectors of social inclusion and are a priority in this approach. In addition, urban planning must make room for informal economic activities, which occupy a large proportion of the population in fragile contexts. Secondly, local governance that strengthens community participation and the involvement of local civil society should be promoted. To this end, existing consultation bodies and the capacities of public actors should be strengthened to improve the participation of communities and traditional structures in urban planning and management decisions. Thirdly, a data collection system needs to be set up to help local authorities better understand the dynamics of urban fragility. This includes demographic data, socio-

economic indicators, conflicts and social exclusion data and information on the use of services and the state of infrastructure.

The study results remain limited to the case of a medium-sized city. Some topics of fragility and resilience have not been sufficiently explored, such as the phenomenon of parallel modes of governance that characterize overcrowded cities with a high proportion of informal housing. There is also a scientific interest in conducting a similar study in other cities in Burkina Faso or elsewhere to draw possible generalizations on fragility and resilience factors. An important perspective of this study is to further investigate the relationship between urban design and planning, especially the role of public spaces on the one hand, and fragility and resilience on the other.

ACKNOWLEDGEMENTS

This work is supported by the World Bank, the Association of African Universities and CERViDA- DOUNEDON for their support throughout the production of this article.

REFERENCES

- [1] Mossoa, L. (2012). *Les Politiques Urbaines en Afrique: Contours Réels*. Paris: L'Harmattan.
- [2] Danvide, T.B. (2015). *Gouvernance des politiques de planification urbaine et gestion des inondations à Cotonou (BENIN) (Thèse unique de doctorat)*. Université d'Abomey Calavi, Université Paris 8 Vincennes-Saint-Denis.
- [3] Guigma, L. (2017). *Vivre dans le non-loti à Ouagadougou: Processus de marchandages foncier entre citoyens, chefs traditionnels et autorités publiques (Thèse)*. Université Paris 8 Vincennes-Saint-Denis, Paris.
- [4] ONU-Habitat. (2014). *L'état des villes africaines 2014: Réinventer la transition urbaine*. Nairobi: ONU-Habitat.
- [5] Simeu-Kandem, M. (2018). *Introduction, Les Politiques de la Ville en Question*. Paris: Karthala.
- [6] Bryceson, D.F. (2005). *Fragile Cities: Fundamentals of Urban Life in East and Southern Africa, African Urban Economies: Viability, Vitality or Vitiation?* Palgrave Macmillan London. <https://doi.org/10.1057/9780230523012>
- [7] UN-Habitat. (2020). *The new urban agenda*. UN-Habitat.
- [8] De Boer, J. (2015). *Resilience and the fragile city reducing vulnerability to complex urban crises*. https://collections.unu.edu/eserv/UNU:3226/unu_cpr_resilience_and_the_fragile_city.pdf.
- [9] World Bank Group. (2020). *Strategy for fragility, conflict, and violence 2020-2025*. <https://www.worldbank.org/en/topic/fragilityconflictviolence/publication/world-bank-group-strategy-for-fragility-conflict-and-violence-2020-2025>.
- [10] OCDE. (2021). *États de fragilité 2020*. https://www.oecd-ilibrary.org/development/etats-de-fragilite-2020_0d344c87-fr.
- [11] Monstadt, J., Schmidt, M. (2019). *Urban resilience in the making? The governance of critical infrastructures in German cities*. *Urban Studies*, 56(11): 2353-2371. <https://doi.org/10.1177/0042098018808483>
- [12] Beall, J., Goodfellow, T., Rodgers, D. (2013). *Cities and conflict in fragile states in the developing world*. *Urban Studies*, 50(15): 3065-3083. <https://doi.org/10.1177/0042098013487775>
- [13] Selby, J.D., Desouza, K.C. (2019). *Fragile cities in the developed world: A conceptual framework*. *Cities*, 91: 180-192. <https://doi.org/10.1016/j.cities.2018.11.018>
- [14] Okeke, F.O., Eziyi, I.O., Udeh, C.A., Ezema, E.C. (2020). *City as habitat; Assembling the fragile city*. *Civil Engineering Journal (Iran)*, 6(6): 1143-1154. <https://doi.org/10.28991/cej-2020-03091536>
- [15] Armchair, Gabriella. (2018). *Urban fragilities and resilience strategies: Implementing the SDGs and the New Urban Agenda in the Adriatic Balkan Region*. In *International Forum of Architecture and Urbanism*. Roma: GANGEMI EDITORE. <https://iris.unirc.it/handle/20.500.12318/19155?mode=full.28>.
- [16] Sepe, M. (2020). *Regenerating places sustainably: The healthy urban design*. *International Journal of Sustainable Development and Planning*, 15(1): 14-27. <https://doi.org/10.2495/SDP-V15-N1-14-27>
- [17] Moroke, T., Schoeman, C., Schoeman, I. (2020). *Neighbourhood sustainability assessment model for developing countries: A comprehensive approach to urban quality of life*. *International Journal of Sustainable Development and Planning*, 15(1): 107-123. <https://doi.org/10.2495/SDP-V15-N1-107-123>
- [18] OCDE. (2023). *États de fragilité 2022*. <https://doi.org/10.1787/65c2c30f-fr>
- [19] Abel, A., Hammond, D., Hyslop, D., Lahidji, R., Mandrella, D. (2017). *Le cadre de l'OCDE sur la fragilité, Etats de fragilité 2016. Comprendre la violence*. OCDE, Paris. <http://doi.org/10.1787/9789264269996-7-fr>
- [20] Fund for Peace. (2023). *Fragile states index annual report 2023*. https://fragilestatesindex.org/wp-content/uploads/2023/06/FSI-2023-Report_final.pdf.
- [21] Mager, C., Matthey, L. (2010). *Cities ensnared in precarity: A genealogy of concern about urban fragility*. *Geographica Helvetica*, 65(4): 269-276. <https://doi.org/10.5194/gh-65-269-2010>
- [22] Beall, J. (2006). *Cities, terrorism and development*. *Journal of International Development*, 18(1): 105-120. <https://doi.org/10.1002/jid.1265>
- [23] Muggah, R. (2014). *Deconstructing the fragile city: Exploring insecurity, violence and resilience*. *Environment and Urbanization*, 26(2): 345-358. <https://doi.org/10.1177/0956247814533627>
- [24] Zhao, C., Chen, J., Su, G., Yuan, H. (2020). *Assessment of the climate change adaptation capacity of urban agglomerations in China. Mitigation and Adaptation Strategies for Global Change*, 25(2): 221-236. <https://doi.org/10.1007/s11027-019-09874-5>
- [25] Alshoubaki, H., Zazzara, L. (2020). *The fragility in the land of refugees: Jordan and irrepressible phenomenon of refugee camps*. *Journal of International Studies*, 13(1): 123-142. <https://doi.org/10.14254/2071-8330.2020/13-1/8>
- [26] Hunter, M. (2021). *Resilience, fragility, and robustness: Cities and COVID-19*. *Urban Governance*, 1(2): 115-125. <https://doi.org/10.1016/j.ugj.2021.11.004>
- [27] African Development Bank Group. (n.d.). *African Development Bank Group strategy for addressing fragility and building resilience in Africa 2014-2019*. (ADB/BD/WP/2020/147 – ADF/BD/WP/2020/105).

- [28] Ziaja, S., Grävingsholt, J., Kreibaum, M. (2019). Constellations of fragility: An empirical typology of states. *Studies in Comparative International Development*, 54(2): 299-321. <https://doi.org/10.1007/s12116-019-09284-3>
- [29] De Boer, J., Muggah, R., Patel, R. (2016). Conceptualizing city fragility and resilience. <https://collections.unu.edu/eserv/UNU:5852/ConceptualizingCityFragilityandResilience.pdf>.
- [30] Eskandari, N., Zarabadi, Z.S.S., Habib, F. (2021). A systematic review of the fragile city concept. *International Journal of Architecture and Urban Development*, 11: 29-40. <http://doi.org/10.30495/IJAUD.2021.60320.1532>
- [31] The Fund for Peace. (2022). State resilience index annual report 2022. Washington, DC. <https://fundforpeace.org/wp-content/uploads/2022/12/SRI-Index-12.6.22-II80.pdf>.
- [32] Pérouse de Montclos, M.-A. (2010). Migration forcée et urbanisation de crise: L'Afrique subsaharienne dans une perspective historique. *Autrepart*, 55(3): 3-17. <https://doi.org/10.3917/autr.055.0003>
- [33] Engels, B. (2022). Transition now? Another coup d'état in Burkina Faso. *Review of African Political Economy*, 49(172). <https://doi.org/10.1080/03056244.2022.2075127>
- [34] N'Da, P. (2015). Recherche Et Méthodologie En Sciences Sociales Et Humaines. Réussir Sa Thèse, Son Mémoire De Master Ou Professionnel, Et Son Article. L'Harmattan, Paris.
- [35] Dumez Hervé. (2016). Méthodologie De La Recherche Qualitative. Les Questions Clés De La Démarche Compréhensive. (2^e édition.), Vuibert, Millau.
- [36] Observatoire Nationale de l'Emploi et de la Formation. (2023). Rapport d'analyse situationnelle annuelle sur le marché du travail au Burkina Faso (RASAMT 2022). http://www.cns.bf/IMG/pdf/onef_rapport_d_etude_rasamt_2023.pdf.
- [37] Institute for Economics and Peace. (2014). Global Terrorism Index 2014: Measuring and understanding the impact of terrorism. <https://reliefweb.int/report/world/global-terrorism-index-report-2014>.
- [38] Institute for Economics and Peace. (2023). Global Terrorism Index 2023: Measuring the impact of terrorism. Sidney. <https://reliefweb.int/report/world/global-terrorism-index-2023>.
- [39] ACLED. Conflict exposure - ACLED. <https://acleddata.com/conflict-exposure/#calculator>, accessed on Aug. 14, 2024.
- [40] Banque Mondiale. Note sur la situation économique 2024 - Chapitre spécial: Maintenir l'élan de la réforme de l'assistance sociale. <https://www.banquemondiale.org/fr/country/burkinafaso/publication/burkina-faso-economic-update-2024-special-chapter-maintaining-reform-momentum-on-social-assistance>, accessed on Aug. 14, 2024.
- [41] OCHA. Burkina Faso: Suivi des inondations - Humanitarian Data Exchange. <https://data.humdata.org/dataset/burkina-faso-suivi-des-inondations>, accessed on Aug. 13, 2024.
- [42] INSD. (2024). Note synthétique de l'Enquête Nationale de base sur l'Emploi et le Secteur Informel (ENB-ESI). https://www.insd.bf/sites/default/files/2024-03/Note_Synth%C3%A9tique_emploi_secteurInformel.pdf.
- [43] World Health Organization. Au Burkina Faso, des structures sanitaires jadis fermées reprennent service dans la Boucle du Mouhoun | OMS | Bureau régional pour l'Afrique. <https://www.afro.who.int/fr/countries/burkina-faso/news/au-burkina-faso-des-structures-sanitaires-jadis-fermees-reprennent-service-dans-la-boucle-du-mouhoun>, accessed on Aug. 14, 2024.
- [44] BADCOM; DGUTF. (2014). Schema Directeur d'Aménagement et d'Urbanisme de Kaya. https://www.mhu.gov.bf/fileadmin/user_upload/storages/fichier/sdau_kaya_final_2.pdf.
- [45] CAGECT_bc; URBAIN+. (2023). Diagnostic urbain et étude d'impact des PDI sur les infrastructures de base et économiques et identification des investissements et activités génératrices de revenus à Kaya, Burkina Faso, pp. 1-71. https://ewsdata.rightsindevelopment.org/files/document/s/18/WB-P177918_bpylQ77.pdf.
- [46] INSD. (2022). 5^e Recensement Général de la Population et de la Démographie. <https://www.insd.bf/fr/rgph>.
- [47] Institut National de la Statistique et de la Démographie. (2023). Requête Aweh Alira Sondage Kaya. <https://www.insd.bf/index.php/fr>.
- [48] CONASUR. (2022). Situation des PDI au Burkina Faso à la date du 31 décembre 2022. <https://Conasur.Org/Category/Situations/>, accessed on Aug. 14, 2024.
- [49] Gouvernement du Burkina Faso. (2022). Decret N°2022-0118/PPRES-TRANS/PM/MATDS/MEFP portant conditions d'installation, composition, organisation, attributions et fonctionnement de délégation spéciale dans une collectivité territoriale, Gouvernement du Burkina Faso. https://www.securite.gov.bf/default-title-1?tx_news_pi1%5Baction%5D=detail&tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Bnews%5D=214&cHash=bf5d8563800d9dfbfc52deeecc3bf18a.
- [50] Reynaud, J.D. (1993). Les Règles Du Jeu - L'action Collective Et La Régulation Sociale: L'action Collective Et La Régulation Sociale. Armand Colin.
- [51] Lemieux, C. (2012). Problématiser: L'enquête Sociologique. Presses Universitaires de France, Paris.
- [52] De Belizal, E., Foureau-Cauët, V., Germaine, M.-A., Temple-Boyer, E. (2017). Géographe de L'environnement. Armand Colin.
- [53] Gumuchian, H., Marois, C., Fèvre, V. (2000). Initiation à La Recherche En Géographie: Aménagement, Développement Territorial, Environnement. Les Presses Universitaires de Montréal, Lassay-les-Chateaux.
- [54] Di Meo, G., Buleon, P. (2007). L'espace Social: Une Lecture Géographique Des Sociétés. Armand Colin, Paris.
- [55] Lefebvre, H. (1981). La Production De L'espace (2^e édition). Editions Anthropos, Paris.
- [56] Paillé, Pierre, Muchielli, Alex. (2016). L'analyse Qualitative En Sciences Humaines Et Sociales (4^e édition). Armand Colin, Malakoff.
- [57] Calculatrice de taille d'échantillon | SurveyMonkey. https://fr.surveymonkey.com/mp/sample-size-calculator/?ut_source=help_center, accessed on Dec. 20, 2023.
- [58] World Bank. (2013). Inclusion Matters: The Foundation

for Shared Prosperity-Overview. World Bank Publications.

- [59] Alrobaee, T.R., Al-Khafaji, A.S., Al-salam, N.A., Al-jaberi, A.A. (2023). The safer city: A new planning perspective for the traditional city development. *International Journal of Safety and Security Engineering*, 13(1): 139-149. <https://doi.org/10.18280/ijssse.130116>
- [60] Gharios, G. (2019). Fostering sustainable development by empowering indigenous abilities: The border zone case of rural South Lebanon. *International Journal of Sustainable Development and Planning*, 14(2): 130-140. <https://doi.org/10.2495/SDP-V14-N2-130-140>

NOMENCLATURE

DGUTF	Direction Générale de l'Urbanisme et des Travaux Fonciers (Department of Urban Planning and Land Works)
CONASUR	Conseil National de Secours d'Urgence (National Council for Emergency Relief)
IDOS	German Institute of Development and Sustainability
OECD	Organisation for Economic Co-operation and Development