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Generativity is a Core Value of the ESJ: A Decade of Growth

Erik Erikson (1902-1994) was one of the great psychologists of the 20th century¹. He explored the nature of personal human identity. Originally named Erik Homberger after his adoptive father, Dr. Theodore Homberger, he re-imagined his identity and re-named himself Erik Erikson (literally Erik son of Erik). Ironically, he rejected his adoptive father's wish to become a physician, never obtained a college degree, pursued independent studies under Anna Freud, and then taught at Harvard Medical School after emigrating from Germany to the United States. Erickson visualized human psychosocial development as eight successive life-cycle challenges. Each challenge was framed as a struggle between two outcomes, one desirable and one undesirable. The first two early development challenges were 'trust' versus 'mistrust' followed by 'autonomy' versus 'shame.' Importantly, he held that we face the challenge of **generativity** versus **stagnation in middle life**. This challenge concerns the desire to give back to society and leave a mark on the world. It is about the transition from acquiring and accumulating to providing and mentoring.

Founded in 2010, the European Scientific Journal is just reaching young adulthood. Nonetheless, **generativity** is one of our core values. As a Journal, we reject stagnation and continue to evolve to meet the needs of our contributors, our reviewers, and the academic community. We seek to innovate to meet the challenges of open-access academic publishing. For us,

¹ Hopkins, J. R. (1995). Erik Homburger Erikson (1902–1994). *American Psychologist*, 50(9), 796-797. doi:<http://dx.doi.org/10.1037/0003-066X.50.9.796>

generativity has a special meaning. We acknowledge an obligation to give back to the academic community, which has supported us over the past decade and made our initial growth possible. As part of our commitment to generativity, we are re-doubling our efforts in several key areas. First, we are committed to keeping our article processing fees as low as possible to make the ESJ affordable to scholars from all countries. Second, we remain committed to fair and agile peer review and are making further changes to shorten the time between submission and publication of worthy contributions. Third, we are looking actively at ways to eliminate the article processing charges for scholars coming from low GDP countries through a system of subsidies. Fourth, we are examining ways to create and strengthen partnerships with various academic institutions that will mutually benefit those institutions and the ESJ. Finally, through our commitment to publishing excellence, we reaffirm our membership in an open-access academic publishing community that actively contributes to the vitality of scholarship worldwide.

Sincerely,

Daniel B. Hier, MD

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Assessing the Need for Ecotourism Cluster Establishment in Georgia: Ways to Increase the Country's Competitiveness

Abstract

Georgia is famous for wine, hospitality, culture, and history at the international level. Before now, tourism in Georgia was only related to wine tourism and sea resorts, but in recent years, the country is positioning itself as an emerging destination for adventurous tourism. Industry potential is not fully utilized and it has more hidden possibilities to attract more visitors. This paper focuses on assessing the need for ecotourism cluster establishment in Georgia. In fulfilling this objective, a survey was conducted. Questionnaires were distributed to ecotourism service providers of the country. 54 managers of national parks and other protected areas (Lagodekhi Protected Areas, Kazbegi National Park, Martvili Canyon Natural Monument, Borjomi-Kharagauli National Park and Machakhela National Park) were chosen for the survey. The selected respondents are the managers of the most popular ecotourism destinations among Georgian and foreign ecotourists. Due to the various locations in different parts of Georgia, it took about two weeks to conduct the survey. The results of the survey showed that ecotourism industry representatives agree on the need of cluster establishment for more development of the field. The paper also demonstrated that building promising ecotourism industry through strong cluster development is directly related to increasing the country's competitiveness.

Subject: Business, Ecotourism

Keywords: Ecotourism, business, cluster, competitiveness

Introduction

Building competitiveness is an objective of every business and emerging nation (Porter, 2008). Every organization strives to find its key strengths. Organizations try to foster their abilities and transform them into competitive advantage. Thereafter, the organizations can begin to position rightly and gradually increase their coverage of the market.

The same can be said for countries as well. Firstly, countries intend to identify their strengths, enforce them, and only afterwards win over competitors (Porter, 2008). However, what is the strength of the country? Is it so easy to figure out? Many countries make mistakes in naming their major strengths. Therefore, this leads to incorrect country priorities and inaccurate development strategies.

Tourism in Georgia has always been recognized as promising and there have always been signs of future success in this field (Gavasheli, 2018). It is derived from reality that the country is famous for being hospitable and provides visitors with friendly environment, wonderful wine, and delicious cuisine. On the other hand, Georgia is an emerging ecotourism destination with amazing landscapes, wetlands and rainforests² (Europarc Federation, 2019), high-mountain waterfalls, and semi-arid regions that can be visited within few hours drive (Gogelia, 2013).

According to Hector Ceballos-Lascurain (2008), Ecotourism is not only visitation to relatively undisturbed natural areas, but it also supports local population. Martha Honey (1991) also described ecotourism as the tool for educating travelers, which directly benefits economic development and empowerment of local communities. The thought that ecotourism encourages socio-economic involvement of local people and improves their living conditions is also expressed by International Union for Conservation of Nature (1996). IUCN ensures that tourism generates the full range of benefits for locals. Thus, ecotourism has become very important for potentially reconciling conservation and economic considerations (Drumm, 2005).

On the other hand, this paper underlines one of the most important ideas related to the country's competitiveness theory known as "Clusters". Clusters represent a prominent feature on the landscape of every economy, especially for developed countries (Porter, 2008). Michael Porter stresses that cluster formation is an essential ingredient of economic development. There is an idea that once a cluster is formed, the whole group of industries become mutually supporting (Porter, 2008).

Objectives

²Colchic Rainforests and wetlands – located in Georgia, along the warm-temperate and extremely humid eastern coast of the Black Sea. Colchic Rainforests and wetlands are nominated for inscription on the UNESCO World Heritage list (Europarc Federation, 2019).

Since clusters occupy an important position in the strategies of developed countries, this paper focuses on assessing the country's potential to create cluster in one of the most developing field known as ecotourism. This paper also highlights the perspectives of developing Georgian ecotourism cluster through consideration of theoretical framework and collecting opinions of relevant representatives of the field.

Methods

After analyzing the data and scientific papers about ecotourism and clusters in Georgia, it was decided that conducting a survey would be the most relevant method for the study. The study was carried out in 5 most popular Protected Areas Administrations³ in Georgia (Lagodekhi, Kazbegi, Martvili, Borjomi-Kharagauli, and Machakhela). Questionnaires were distributed to 54 representatives of the administrations, including directors of the administrations, heads of Park Protection Divisions, as well as Administrative Divisions, Rangers, and Visitor Service Specialists. These administrations were selected for the study due to the fact that they host the majority of ecotourists in the country. Also, most of the ecotourism businesses are located in the surroundings of these areas. Since the administrations cooperate with them, they have a lot of information about their needs and potentials for development.

The questionnaire contained 12 items. The questions were selected with the specific principle. This was done so that the answers could give essential information to assess the readiness and willingness of ecotourism businesses, local population, and visitors to create ecotourism cluster in Georgia.

Theoretical Framework

Why Clusters Matters

The fact that businesses are slowly developing in Georgia poses a new problem. According to different researches, there are several reasons for it such as lack of finances, unfriendly business environment, competition, no funds for start-ups, etc (Sepashvili, 2014). In this situation, like many other countries, the lack of cooperation between businesses still remains a challenge (Porter, 2008). Since many international organizations work hard to encourage clusters' development in Georgia, the concept is still new in the country. The development of the concept started late in Georgia. This fact is explained by the negative impact of the soviet era and hardship period of 1990s in the scientific field (Gagnidze, 2012). At the same time, clusters represent tools for

³Protected Areas are managed by Administrations which are governmental structures under the Agency of Protected Areas, Ministry of Environmental Protection and Agriculture of Georgia.

competition exacerbation and building cooperation (Porter, 2008). Once competition and cooperation within the industry can coexist, cluster can enhance the competitiveness. Porter (2008) calls clusters a “driving force” which aid in increasing exports and magnets foreign investments. In his book on competition, Porter (2008, p. 215) states that: “They [clusters] constitute a forum in which new types of dialogue can, and must, take place among firms, government agencies, and institutions (such as schools, universities and public utilities).”

In the article “How Economic Clusters Drive Globalization”, Julia Hanna (2017) talks about clusters and stresses that they have wider impact on world economics than generally recognized. She mentions the words of Harvard Fellow, Valeria Giacomini, who refers to clusters as “the building blocks of the global economy.” In the working paper “A Historical Approach to Clustering in Emerging Economies”, Giacomini (2017) notes that clusters have been around long before they had a name, showing up in the development of colonial-era industries and even earlier. However, Giacomini believes that clusters became platforms for development, which have present-day implications for corporations, governments, and individual actors, especially in emerging economies.

Quite often, companies are beginning to ask questions about clusters. This is because they are not always sure whether joining clusters is a good idea or not. Therefore, why should companies start clustering? European experience shows that cooperation and synergy between companies can make $1+1=3$. European Cluster Panorama Factsheet 2016 provides information about the benefits of European clusters. It reveals updated perspectives on clusters and emerging industries. This is drawn on a new firm-level data set on entrepreneurship and re-industrialization (Ketels & Protsiv, 2017). Cluster Panorama Factsheet shows how important clusters are for economic activities throughout Europe. The mapping tool identifies 3000 strong clusters ranking in the top 20% of regions in their respective field of related industries. The data is really impressive. It shows that, through these clusters, more than 54 million jobs are created and 45% of all traded industries’ wages are incorporated within (23% of the overall economy). The figures also prove that fast growing new businesses (i.e., gazelles) account for 40% of the cluster. The Panorama Factsheet also stressed that organizations which are within the clusters pay higher wages than the same industries elsewhere. Also, they have stayed resilient throughout the crisis, slightly increasing their share of economic activity between 2008 and 2014.

The information of European Cluster Panorama Factsheet 2016 is also presented in the paper “The power of business clusters” by Paul Hackett (2019). Hackett underlines the importance of cooperation within the clusters and stressed that huddling together can derive benefits such as cutting supply

chain costs or hiring qualified specialists easily. It can also lead to increased innovation, collaboration, and productivity.

Ecotourism in Georgia

Clusters have proven to be effective tools for cooperation, and building cooperation makes even more sense once it occurs in high potential sectors (Giacomin, 2017). In Georgia, the advantages and existing strengths have continuously been explored within the years. There is no doubt that wine and tourism industries are considered as growth industries and they experience higher-than-average growth rates compared to other sectors (Baratashvili, Kurashvili & Makharashvili, 2018). Nowadays, Georgia needs to find more promising fields that could be a flagship industry for economic development.

Tourism has been recognized as the sector that shows the light at the end of the tunnel. After all the problems encountered during the Post-Soviet period, Georgia started increasing awareness internationally as an emerging tourism destination (Sekhniashvili, 2016). Rapid growth was recorded after 2010 especially as the impact of 2008 world financial crisis was conquered. According to the statistical data (Georgian National Tourism Administration, 2020), Georgia hosted more than 9 million international visitors in 2019. Taking into consideration that the population of the country is just 3.7 Million (National Statistics Office of Georgia, 2020), the number of visitors is quite impressive.

Table 1. Number of International Visitors of Georgia, 2008-2019

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1,290,108	1,500,049	2,031,717	3,115,527	4,741,346	5,734,898	5,888,709	6,305,635	6,719,975	7,902,509	8,679,544	9,357,964

Source: Georgian National Tourism Administration

If wine has been the main reason for visiting Georgia, recreational tourism has become more popular for travelers in the recent years (Sekhniashvili, 2016). However, Georgia's recreational potential is not yet fully developed (Chigogidze, 2016). The area of Georgia is 69,700 km² (National Statistics Office of Georgia, 2020). In spite of the small area, the country is famous for unique and diverse ecosystems such as forests, wetlands, lakes, rivers, waterfalls, glaciers, canyons, and deserts (Ministry of Environment and Natural Resources Protection of Georgia, 2014). The uniqueness of the forests is also derived from the location. Colchic Rainforests, located in West Georgia, have survived from the tertiary period and are characterized with relict species (Ministry of Environmental Protection and Agriculture of Georgia, 2019). Thus, the country has a lot to share to the rest of the world.

It is worthy to note that the ecotourism potential of the country is collected within protected areas of the country. Protected areas of Georgia cover more than 9.5% of the whole country incorporating strict nature reserves, national parks, managed reserves, natural monuments, and protected landscape (Agency of Protected Areas, n.d.). All these areas create wonderful opportunities for visitors. The prospects of protected areas are widely discussed by Merab Diasamidze in his research (2015). He stresses that businesses working in the sector should unite their efforts to address the challenge if they strive to reach their greatest potential.

Furthermore, protected areas of Georgia are the most visited ecotourism destinations in the country. Ecotourism at protected areas is developing and hosting more than one million visitors per year (Agency of Protected Areas, n.d.).

Table 2. Number of visitors of protected areas of Georgia, 2012-2019

2012	2014	2016	2017	2018	2019
298 910	420 166	734 874	954 692	1 108 503	1 199 011

Source: Agency of Protected Areas

There is no important benefit in increasing visitation at protected areas unless this is not happening in parallel with increasing benefits of ecotourism businesses and local population (Ceballos-Lascurain, 2008). Georgian National Tourism Administration does not present data of the revenues generated by local population through ecotourism services. Therefore, in the process of the research, it was only possible to obtain information about the revenues generated by protected areas of Georgia.

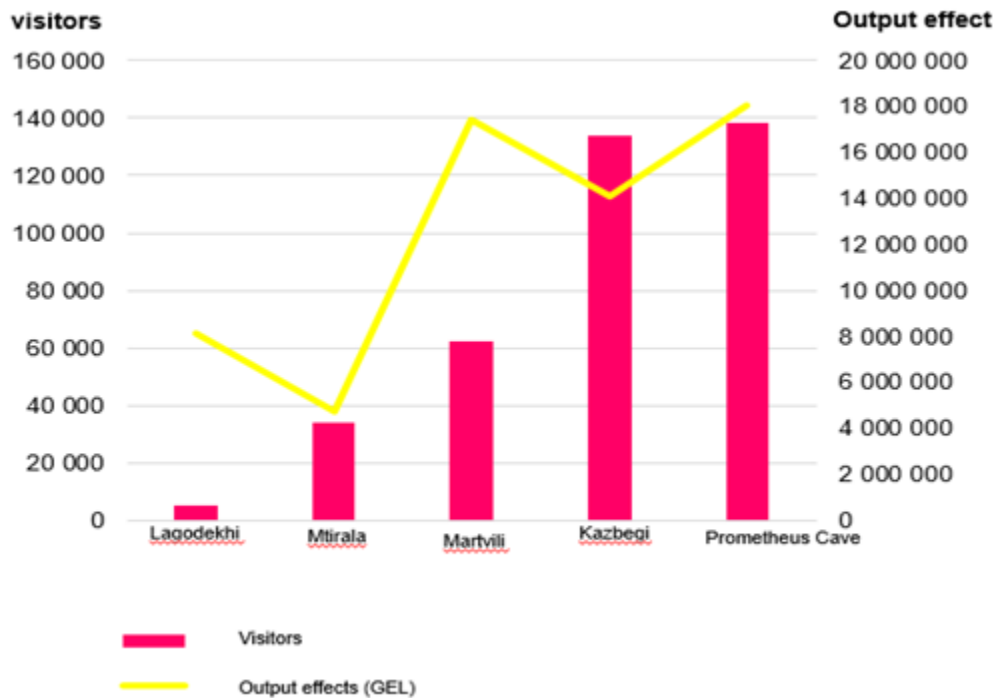
Table 3. Revenues generated from ecotourism services at protected areas of Georgia (in GEL)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
56 026	84 962	118	420	737	982	1 320	1 589	2 313	4 504	8 436	more than 11 mln
		387	189	122	869	793	757	697	472	125	

Source: Agency of Protected Areas

Important information about the revenues generated by the local population has been considered based on the report of Dr. Julius Arnegger, which was conducted in March 2018. The report “Economic impacts of tourism in Georgian Protected Areas” is the first study in Georgia that analyzes economic impacts of tourism around five protected areas and shows the benefits of local communities living there. The report also illustrates economic output of local communities as well as the employment effect of ecotourism in these villages for 2018. The result of the study revealed that in 2018, economic output effect of more than 80 mln Gel (approximately USD 30 mln) was created from ecotourism services (in the surrounding villages of five protected areas only).

Figure 1. Economic impacts of tourism around 5 protected areas



Survey

This section presents the survey applied to the managers of Protected Areas of Georgia. Respondents from 5 most popular Protected Areas were selected to collect information about the opinion of the local population living adjacent to protected areas. The selected respondents are the ones who have the closest contact with tour operators, agencies, visitor centers, and local guesthouses. This means that they provide service to hundreds of people daily and are aware of the requirements of tourists. The questionnaires were developed in the way that they could elicit information on various topics related to the needs and readiness for ecotourism cluster establishment in Georgia.

The selected protected areas were Lagodekhi Protected Areas (PA), Kazbegi National Park (NP), Martvili Canyon Natural Monument (NM), Borjomi-Kharagauli National Park (NP), and Machakhela National Park (NP). Protected Areas are managed by Territorial Administrations.

Questionnaires were distributed to 54 representatives of the administrations:

- Lagodekhi Protected Areas – 7 representatives
- Kazbegi National Park – 10 representatives
- Martvili Canyon Natural Monument – 8 representatives

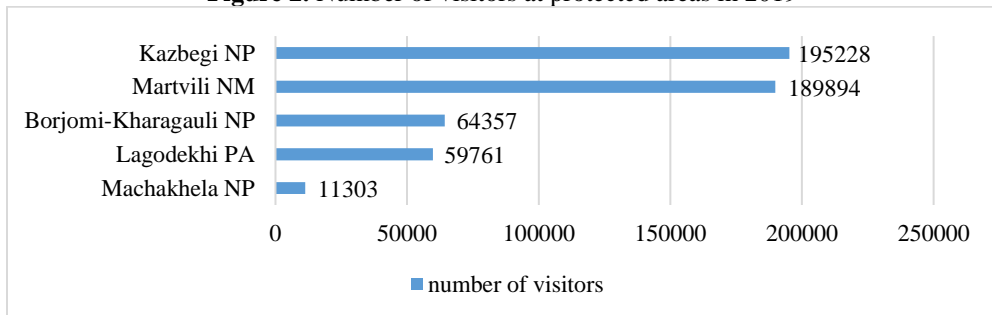
- Borjomi-Kharagauli National Park – 21 representatives
- Machakhela National Park – 8 representatives

Protected areas managers were asked 12 questions. 5 questions were asked to each administration and they had to give one joint answer, while 7 questions required personal answers.

Questions for Administrations

1) How many tourists visited the administration in 2019?

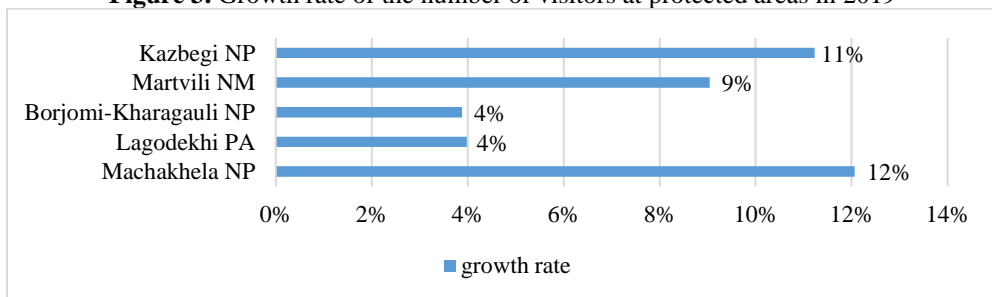
Figure 2. Number of visitors at protected areas in 2019



It is worthy to note that the selected protected areas were visited by 520, 543 tourists in 2019, while the total number of visitors at protected areas was 1, 199, 011. Thus, the percentage of the total visitors is 43%. This implies that most of the ecotourism potential of the country is gathered in these areas.

2) What is the growth rate of the number of tourists at the protected area (in comparison with 2018)?

Figure 3. Growth rate of the number of visitors at protected areas in 2019



3) What is the percentage of the number of tourists increase in the last three years?

Figure 4. Growth rate of the number of visitors at protected areas in 2016-2019

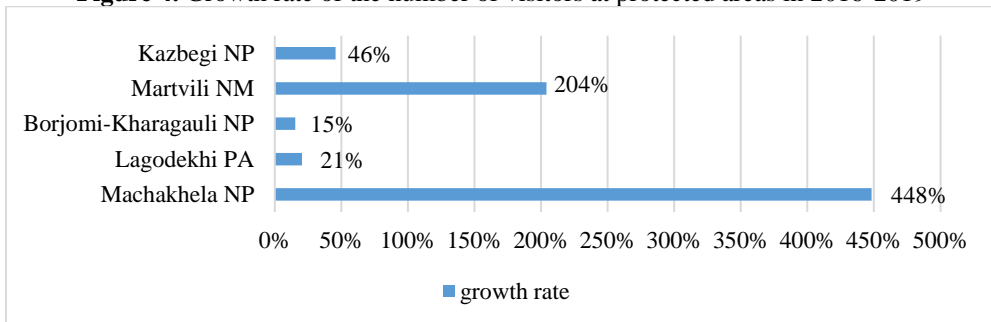
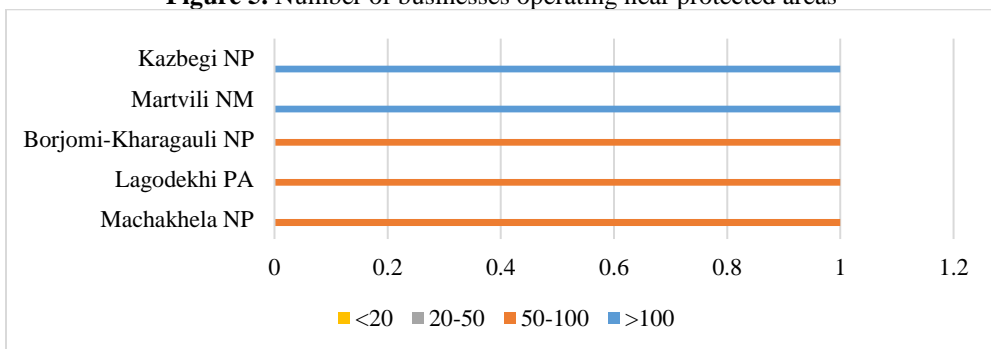


Figure 3 and Figure 4 shows that each protected area has positive growth rate in terms of visitors. There was about 8% average growth rate in 2019, and it increased to about 150% within 3 years period. The responses indicate that the number of tourists grows annually. This means that the attractiveness of protected areas of Georgia is gradually increasing.

4) Approximately how many ecotourism businesses (guesthouses, cafes, adventurous tour operators, etc.) operate near the protected area?

Figure 5. Number of businesses operating near protected areas



The administrations were also asked about the number of ecotourism businesses near protected areas. Machakhela NP, Lagodekhi PA, and Borjomi-Kharagauli NP administrations opined that there are 50-100 ecotourism businesses operating. It is logical that the responses show more business units in the case of Kazbegi NP and Martvili NP. This is because they are more developed, they have more visitors and, consequently, more people are involved in ecotourism industry.

5) What ecotourism services are in demand at protected areas?

Table 4. Demanded ecotourism services at protected areas

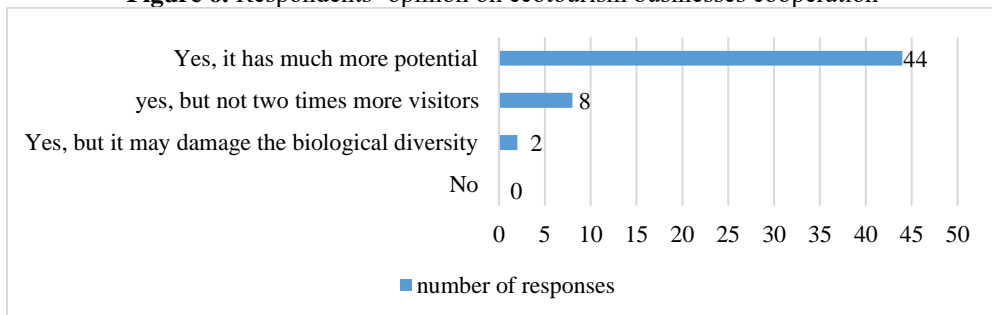
	Lagodekhi PA	Borjomi-Kharagauli NP	Machakhela NP	Martvili NM	Kazbegi NP
Hiking	X	X	X		X
Horse Riding	X	X			X
picnics		X	X		
Overnight in eco-lodges	X	X			
camping	X		X		X
Visiting canyon				X	
Visiting waterfalls				X	
Boating				X	
Zip-line				X	

The table above illustrates the diversity of services that are provided at protected areas. This reveals that each protected area has potential and people have the opportunity to start their own ecotourism business, serve tourists, and earn revenues.

Individual Questions

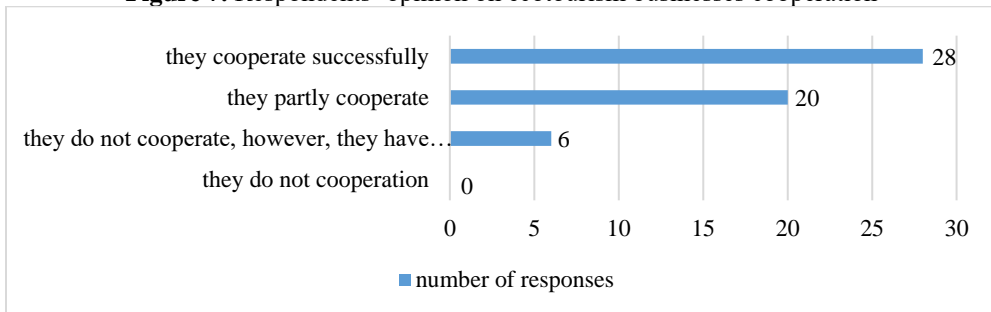
6) Does the protected area have the potential to host more visitors?

Figure 6. Respondents' opinion on ecotourism businesses cooperation



7) Do ecotourism businesses (guesthouses, cafes, adventurous tour operators, etc.) cooperate with each other?

Figure 7. Respondents' opinion on ecotourism businesses cooperation



When asked this question “Do you think ecotourism businesses cooperate with each other”, 52% of Protected Areas managers responded that they do. Additional 37% of respondents evaluated the cooperation as partial. The rest 11% fixed their positions that *they do not cooperate, however, they have an intention, just that they do not know how to do that*.

8) What do you think is the maximum revenue generated from all ecotourism businesses around the protected areas throughout the year?

Figure 8. Respondents' opinion on the amount of revenue ecotourism businesses generate throughout the year

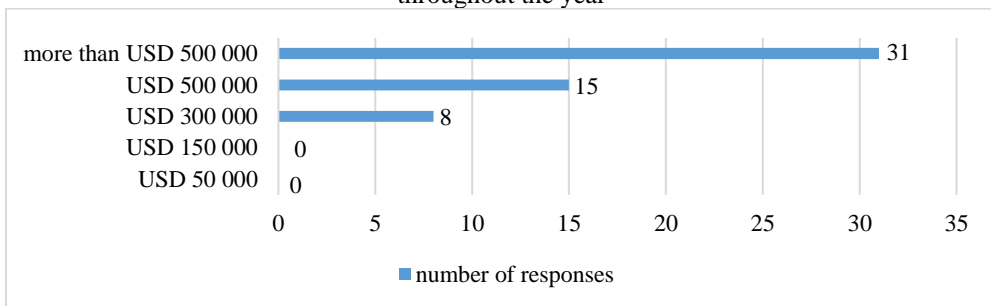


Figure 8 illustrates the approximate revenues of local communities generated through ecotourism services. Majority of respondents indicated the maximum amount in the proposed answers. 57.4% are of the opinion that revenues of local people exceed USD 500 000.

9) What percentage of nearby living population is involved in ecotourism businesses?

Figure 9. Respondents' opinion on the size of population involved in ecotourism businesses

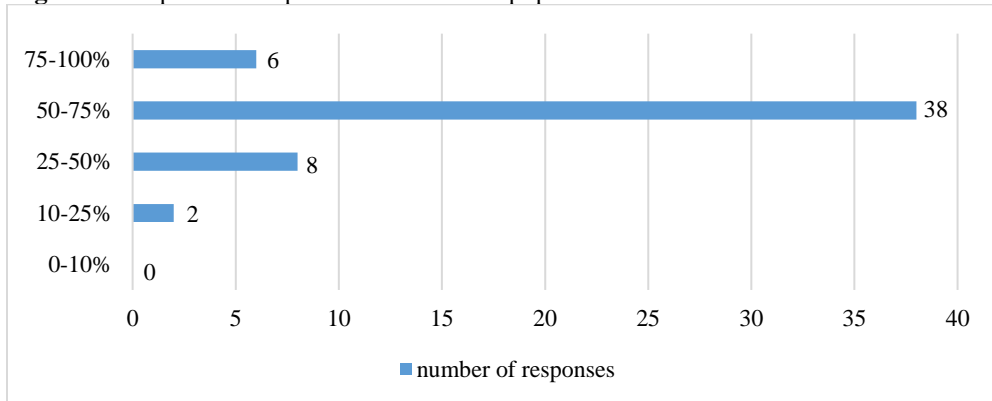
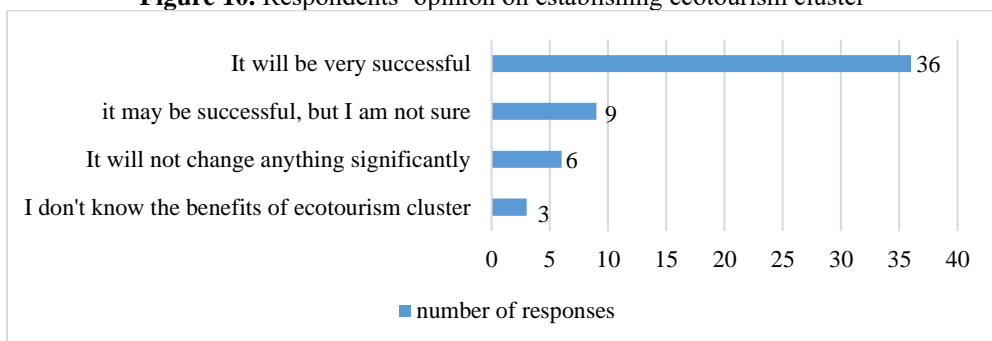


Figure 9 shows the opinion of the respondents about the approximate percentage of local communities involved in ecotourism activities. Majority (70%) of the respondents stated that 50-75% of the population is engaged in businesses. This also points to the importance of the industry on the local economy.

10) Is it reasonable to establish an ecotourism cluster in Georgia?

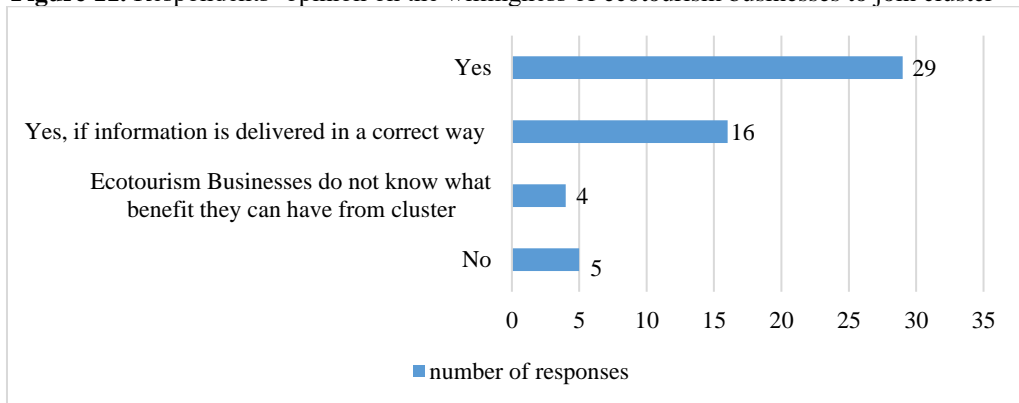
Figure 10. Respondents' opinion on establishing ecotourism cluster



When asked this question “Do you think it would be reasonable to establish an ecotourism cluster”, 67% of the respondents answered that *it would be successful*. They realized that in ecotourism, cluster businesses will cooperate. Also, with mutual efforts, more economic benefits will be created.

11) Do you think that companies providing ecotourism services are willing to join ecotourism cluster?

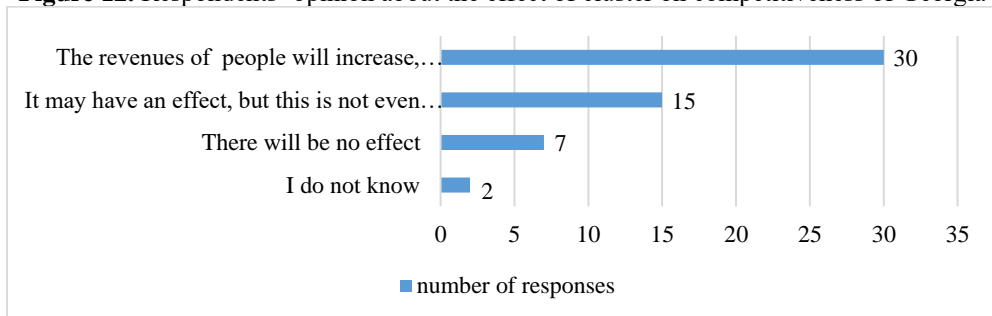
Figure 11. Respondents' opinion on the willingness of ecotourism businesses to join cluster



When asked whether companies providing ecotourism services are willing to join ecotourism cluster, 54% responded positively. Conversely, 9% of participants gave a negative response.

12) What will be the effect of ecotourism cluster on the competitiveness of the country?

Figure 12. Respondents' opinion about the effect of cluster on competitiveness of Georgia



The last question was related to the competitiveness of Georgia. Respondents were asked whether ecotourism cluster could affect the competitiveness of the country. 30 respondents out of 54 are of the opinion that establishing ecotourism cluster can affect the socio-economic situation in the country. They indicated their positions which revealed that through ecotourism cluster *the revenues of people would increase, economic prosperity would be created and, accordingly, the country's competitiveness would be raised.*

Results

The representatives of the protected areas were asked questions on important aspects, and the following conclusions were drawn:

- Selected protected areas are important enough to consider them relevant for the survey (Q1-Q6, Q8, Q9)
- Ecotourism businesses partly cooperate with each other and have the intention to join ecotourism cluster (Q7, Q10, Q11)
- Ecotourism cluster will improve the socio-economic conditions of the local population (Q6, Q10; Q11)
- Ecotourism cluster will have an effect on the competitiveness of Georgia (Q12)

There are 87 protected areas in Georgia (Agency of Protected Areas, n.d.), and 14 of them are strict nature reserves. There are only about 20 protected areas out of the remaining 73 where tourists usually visit (Agency of Protected Areas, n.d.). The survey has been carried out in 5 of them, which covers 25% of the areas where ecotourists prefer to spend time.

The analysis of the data has revealed that in 2019, Protected Areas of Georgia generated more than 11 million GEL (about USD 5 mln) from tourism related services. Most ecotourism services that visitors enjoy are camping, picnic sites, overnight in tourist shelter and bungalows, overnight in tents, mountain biking, panton, cater, kayak, boat services, horse riding, zip lines, rope parks, fly fishing, diving, etc. The income generated from the services is still reinvested in the development of protected areas and creation of more comfortable environment for visitors' enhanced satisfaction.

After analyzing the data of the number of visitors and the revenues, the potential of ecotourism can be clearly seen. The table below shows that in 2019, the number of visitors at protected areas increased by 8.2%. On the other hand, the revenues generated through different services increased by more than 30%.

Table 5. Comparison of the number of visitors and revenues of protected areas in 2018 and 2019

	2018	2019	increase	Increase in %
Number of visitors	1108503	1199011	90508	8.2%
Revenues (GEL)	8436125	More than 11 mln	More than 2563875	More than 30.4%

The table above is an excellent evidence of the role of ecotourism in the economy. The study of Dr. Julius Arnegger (2018) on the "Economic Impacts of Tourism in Georgian Protected Areas" also points to significant paybacks from ecotourism. Every ecotourist brings huge contribution to the country's economy. Georgia has unique biodiversity and huge potential to host millions of tourists. Against the backdrop of the situation, ecotourism offers

wonderful opportunities for development. Table 5 points out that as soon as the number of visitors increased by 8.2%, revenues for locals increased by 30.4%. The following result definitely underlines the huge economic benefit that could be achieved once it is developed in a sustainable way.

Conclusion

In the scientific assessments, Michael Porter proves that clusters foster the process of creating economic prosperity. Within the cluster, cooperation is more fruitful and this brings more benefit to the participants. They find it easy to access information, start a business, find partners, and offer services to the target market.

The results of the study showed the need of ecotourism cluster development in Georgia. Country has a huge potential of hosting 2-3 times more international visitors at the same time, and this potential needs to be entirely utilized to create more economic benefits. The results of the survey also identified that ecotourism businesses partly cooperate with each other. Furthermore, in order to maximize returns from ecotourism industry, businesses should cooperate. Frequent and easy ways of exchanging information, interchanging resources, and sharing knowledge and practice can subsequently form strong networks and encourage the achievement of the 1+1=3 effect. It was a positive remark that businesses which engaged in ecotourism industry expressed the willingness to join the cluster and obviously consider it reasonable to initiate its establishment.

Undoubtedly, the benefit of cluster and the added value it brings to the country's economy is significant. Effective operation of ecotourism cluster contributes to increasing productivity in the country. Productivity is the main factor driving economic growth. In the long run, it has the ability to improve the standard of living and cover all aspects of prosperity. This includes not only economic but also environmental and social considerations. Prosperity within the country is a vital tool to grow more sustainable and inclusive industries. This is closely linked to fostering the country's competitiveness.

Another interesting fact that was revealed after the study is that the respondents noted the influence of ecotourism development in enhancing the country's image at the international level. As a result of the study, it can be stated that ecotourism development can have a significant impact on the competitiveness of Georgia and also affect the country's positions in Global Competitiveness Report.

Furthermore, the country's competitiveness at the regional level is quite high. On the one hand, Armenia and Azerbaijan are both part of South Caucasus region and the positions of Georgia in terms of ecotourism is incomparable. Also, the number of international visitors in Armenia has never exceeded 2 million. On the other hand, Azerbaijan is positioning more as a

MICE tourism⁴ destination rather than as a recreational tourism. Georgia, being located at the crossroad of Asia and Europe, is surrounded with high mountains and situated in the middle of two seas. This in addition to its unique culture and ancient history creates an outstanding destination for adventurous tourism.

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ESJ Humanities

Vulnerability of Women and Climate Change in Coastal Bangladesh

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Abstract

This paper focuses on providing a comprehensive scenario of women's vulnerabilities based on the effects of climate change in Bangladesh. To address the problem, this study focuses on the nature of suffering and how they have tried to mitigate it. This study followed the purposive sampling method of a total of sixty respondents from the Satkhira district. Primary data were collected through a structured questionnaire, survey, and observation method. Besides these, secondary sources of national and international levels have been used in this study. This study found that sanitation problems of women and young girls as well as the lack of pure drinking water are common during the disaster time in the study area. In the context of a patriarchal society like Bangladesh, women are compelled to be submissive and obey the decision of male members due to prevalent social and cultural norms and conditions. As a result, most of the time, even when problem arise, women do not take any decision about whether they would stay at their home or seek shelter. The study uses an exploratory approach, and it will provide an insight into different sorts of sufferings as well as the detrimental effects of such natural disasters. It will also provide a better understanding and intensity of the problem. Although innumerable studies of climate change and its effects have been published, underlying scenarios are not properly focused on. Therefore, it would obviously help for further study as well as policymaking.

Keywords: Climate change, women's vulnerabilities, coastal area, natural disaster, patriarchal society

Introduction

The coastal areas around the world are at great risk due to climate change. Continent Asia accounted for one-third of global disasters related to weather, climate, and water, of which around half of the total deaths and one-third of economic losses occurred from 1970 to 2019. According to Oxford Languages, vulnerability refers to the quality or state of being exposed to the possibility of being attacked or harmed, either physically or emotionally. Vulnerability is more likely related to gender, class, caste, and ethnicity. As individuals are not affected equally by a natural disaster, certain groups are more vulnerable to natural disasters, which include people who are not getting equal opportunities to access resources, social amenities as well as fewer capabilities. Naturally, women are more vulnerable, particularly in poor countries like Bangladesh, because they play multiple roles in family life such as food producers, water and fuel collectors as well as caregivers for their loved ones. Most of the women in the study area depend on natural resources for their livelihood. As a result, frequent natural hazards resulting from climate change makes the life of women more vulnerable. Dependence on natural resources is the major cause of women's vulnerabilities as climate change is not gender-neutral. Lack of safety, amid the flooding, landslides and cyclones, makes them more at risk in their life. Consequently, traditional food collection and production have become more uncertain due to climate change (Ministry of Environment and Forests). The result of climate change has differentiated developed countries from developing countries as well as increases the gap between males and females in the developing parts of the world (Tanny & Rahman, 2016). Moreover, Women's position in society is not determined by their personal ability but rather it is determined by social institutions, ethnicity, and gender identity (Nielsen and Reenberg (2010) cited in Ferdous and Mallick (2019)). Gender characteristics and patriarchal norms act as a social barrier which makes it a more difficult situation for a woman even in an extreme event. This is because they have no power to make any decision whether they would take any sheltered place or any other things during the disaster time. After all, the characteristics of vulnerability are determined by physical, social, economic, and environmental factors or processes which increase the susceptibility of an individual, a community, assets, or systems to the impacts of hazards (UNDRR Terminology, 2017).

Bangladesh is also the most disaster-prone country as it stands next to the Bay of Bengal. The frequent natural disaster causes immense suffering to the people as well as barriers to the sustainable development of this area. According to the World Meteorological Organization (WMO) and UN Office for

Disaster Risk Reduction, Bangladesh is the most tropical cyclone-prone country due to its geographical position. The hilly and coastal areas are more susceptible compared to other regions. The effects of climate change make the situation worst (Manusher Jonno Foundation). In the global context, Bangladesh is the most vulnerable country related to climate change impact (IUCN). In addition, globally, precipitation pattern has become more erratic and intense due to climate change. However, this reality is particularly true in Bangladesh. Stronger rainfall, as well as the melting of the Himalayan glaciers which is caused by the rising temperature, makes the country more prone to devastating river erosions and floods. According to International Displacement Monitoring Center, during the past decade, around 7,000,000 Bangladeshis were displaced every year due to natural disasters. This number surges yearly due to powerful cyclones, such as cyclone Sidr in 2007, Aila in 2009, Roanu in 2016, Bulbul in 2019, Amphan in 2020, and cyclone Yaas in 2021— all of these bring momentous devastation by claiming lives. Such a kind of stronger cyclone is becoming more common due to climate change, and Bangladesh is still facing the same tragedy yearly due to its geographic position.

Objectives

The major objective of this study is to present the women's vulnerabilities due to climate change. Particularly, the study aims to accomplish the following objectives:

- To explore the sufferings of the women in the coastal area;
- To assess the effects of climate change in the coastal area;
- To identify the pattern of women's vulnerabilities in the coastal region.

Theoretical Framework and Conceptual Definition

A review of relevant feminists' theories, such as Nature vs Culture, Second Sex, Habitus, Muted group, Purity and Danger, was done in this study. Among these, the study emphasized Nature vs culture because of the befitting nature of all parts of the study.

Nature vs Culture

Sherry Ortner (1972) suggested that women are closer to nature. In her writings "Is Female to Male as Nature is to Culture", she acknowledges the universality of female subordination. The reason women are closer to nature can be summarized in three ways. Firstly, a women's body and its functions are more involved with the species' life which places her closer to nature. Secondly, a women's body and its functions place her in social roles that are considered to be at a secondary position in the cultural process. Lastly, a

woman's social roles give her a different psychic structure which is seen as being closer to nature.

Conceptual Definition

Climate Change: Long-term transformation in temperature and weather patterns is known as climate change. This transformation in weather patterns may occur in a natural way due to the solar circle. Around 1800, burning fossil fuels such as coal and oil and gas are the main primary sources of climate change which is driven by humans.

Greenhouse gas emitted from fossil fuels act as a castanet around the globe, causing temperatures to rise. Methane from garbage and carbon dioxide from deforestation increase greenhouse gas which causes climate change (UN).

Women Vulnerabilities: According to European Institute for gender equality, vulnerable groups are often used as disadvantaged groups. Vulnerabilities of women are an inherent feature due to their gender roles and attitudes resulting in disadvantages for women including violence. Women's vulnerability can be classified into five categories: such as Biomedical, Social & cultural, economic, legal & political, and educational vulnerability (Development Education).

Coastal Area: According to Wikipedia, "the coast also known as the coastline or seashore is defined as the area where land meets the ocean or as a line that forms the boundary between land and the ocean or a lake." The main characteristics of the coastal zone in Bangladesh are very high tides and frequent cyclone that emerges from the Bay of Bengal. People in this area remain under threat and are more vulnerable as well as relatively poor due to climate change compared to other parts of Bangladesh.

Background of the Study

According to the United Nations, from 1970 to 2019 in Asia, a total of 3454 disasters were counted and around 31% of disasters accounted for global perspectives. Moreover, the region losses half of the total deaths in the world and experiences nearly one-third of economic losses due to natural disasters in terms of weather, water, and climates-related disaster. In addition to this, 72% of lives were lost by storms and 57% of economics to floods (UN news, 2021).

According to the World Metrological Organization (WMO provisional report, 2021) during the last decades' extreme weather, conflicts as well as economic recession have dramatically increased causing hunger and lack of food security. Extreme weather has altered the rainfall seasons resulting in disruption of livelihoods and agricultural production throughout the world. Climate change has impacted people's lives in many ways. For example,

displacement across the world has hit a number of people least equipped to recover and adapt.

UN Women, women in the coastal areas, are commonly dependent on natural resources for caring for their families and communities but the effects of climate change dictated their daily activities, particularly access to clean and safe water, food, and fuel collection. During the disaster, more women and children even die than men due to many reasons: such as lack of mobility for women and inability to swim, etc. Moreover, lack of secured shelter lead to increase harassment which induced them to not seek space in cyclone shelters.

At the time of disaster, women's health remains at great risk. Due to lack of toilets, women and young girls often suffer urinary tract infections. Besides this, they are exposed to violence within and outside the homes as male members lose their jobs and frequently use slang language and torture female members as well as dependent ones (Alam et al., 2008).

The southern part of Bangladesh is the highest disaster-prone area as it is close to the Bay of Bengal. Frequent cyclones, tidal surges, floods, waterlogging, and land subsidence are very common and this makes the lives of people in this area more vulnerable. Everybody is affected by climate change as it is not gender-neutral. However, it reflects the gender disparity in terms of vulnerability and coping capabilities during the time of disaster (UNDP, 2007).

At the time of the disaster, women and children are often faced with more risk even resulting to death compared to men. This is attributed to various reasons, such as not being willing to leave their home, mother's protective instincts, and wearing sarees (traditional clothes) which hinders them from swimming, etc. (Hague & Blair, 1992).

Literature Review

Women's Vulnerable due to Climate Change in the Coastal Area of Bangladesh (2019)

The study showed that familial roles and responsibilities make a woman more vulnerable in the time of disaster. It also identified that women are mostly affected by various types of waterborne disasters as well as skin diseases. Moreover, cyclone shelters are not favorable for women and young girls. In addition, lack of pure drinking water and medical facilities are common during and post-disaster time (Hasan & Shovon, 2019).

The Impact of Natural Disaster on Women: A Case Study from Bangladesh (2016)

More than 75% of women and young girls are vulnerable to natural disasters. The study also shows that women hardly receive emergency

messages and necessary measures because they are not permitted to participate in public places. Even if they receive the information, the head of the family or male member takes the decision whether they will be transferred into the cyclone shelter or not. Bangladesh Institute of Social Research Trust conducted a study in the Borguna district. Massive damage to coastal areas as well as infrastructure is common in Bangladesh. Among 64 districts, 19 of the districts are faced with several types of disasters.

Climate Change Vulnerabilities of Women in Bangladesh: The study analyzed that women are more vulnerable to the effects of climate change, particularly in developing countries like Bangladesh, due to their gender. It also showed the root causes of gender discrimination which act as driving forces to the risk of climate change such as ownership, political affiliation, labor force participation, etc. In addition, the study identified that the major barrier of women to suffering from climate change includes not getting opportunities to access resources and other parts of the social elements (Tanny & Rahman, 2016).

Climate Change Impacts and Adaptation Assessment in Bangladesh: This study analyzed the impacts of climate change in Bangladesh such as tropical cyclones, storm surges, coastal erosion, and backwater effects. It also showed the data of 199 years and discussed both qualitative and quantitative formats. In addition, it also shows the chances of increased cyclones as well as resulting in lying in the southern part of Bangladesh (Anwar Ali, 1999).

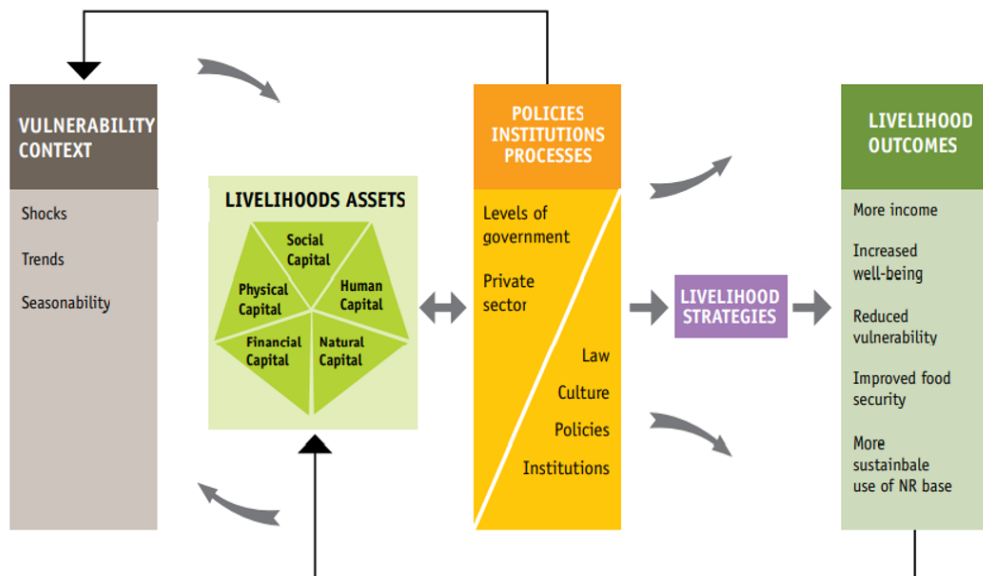


Figure 1. Sustainable Livelihoods framework (DFID’s Sustainable Livelihood Framework, Collected from UN WOMEN)

Figure 1 clearly shows the perspectives of vulnerability and livelihoods assets. It also explains the strategies and outcomes of livelihood patterns. The chart above is also useful for a logical explanation of reducing vulnerabilities due to disasters as well as climate change impacts.

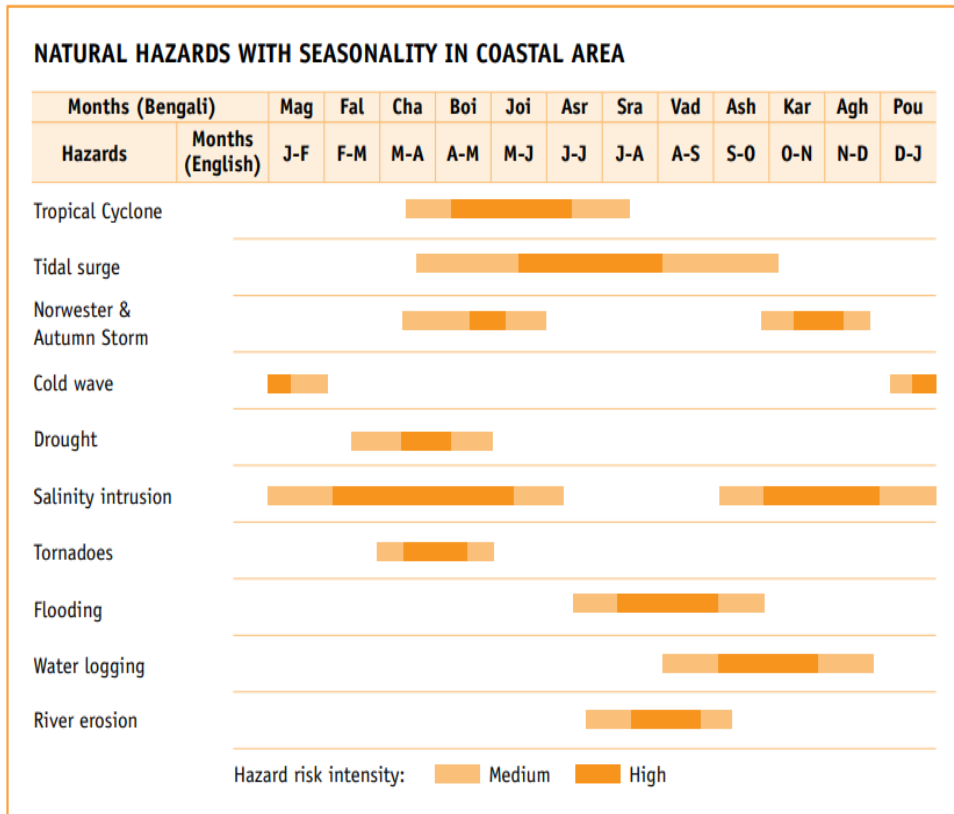


Figure 2. Seasonality Hazards in Coastal Area (Hazards seasonality developed through the PRA session, collected from UNWOMEN)

Figure 2 shows the seasonal vulnerability of people in the coastal area. In terms of intensity, people are highly affected by tropical cyclones and tidal surges from the month of April to August. Cold wave affects them from December to January and Tornadoes from March to May. It also explains that they face salinity intrusion between February to May and late September to October. Besides this, the people encountered flooding and waterlogging from July to early September and from September to October respectively. River erosion is another problem that commonly occurs in the month of July to August.

Methods and Data Collection

Considering the nature of the topic, this study focuses on the existing literature as well as national and international document. Moreover, in order to achieve the objectives, this study follows the purposive sampling method of a total of sixty respondents in the coastal area at Shaymnagar thana in the Satkhira district. Shaymnagar thana was selected here as a study area because it stands next to the Sundarbans and Bay of Bengal as well as one of the most disaster-prone areas in Bangladesh. Primary data were collected through a structured questionnaire, survey, and observation method. Collected data were analyzed carefully using SPSS statistical tools version 20.

Findings and Data Analysis

Table 1. Age-wise distribution of the respondents

Age range	Frequency	Percentage
15 – 25	17	28.33
25 - 35	11	18.33
35 - 45	10	16.67
45 - 55	15	25
55 - above	7	11.67
Total	60	100

Source: Fieldwork, 2021

Table 1 shows the age-wise distribution of the female respondents. Among the total respondents, the highest of 28.33% are in the 15-25 age range. The second highest age bracket is 45-55, with 25% of total respondents. The third and fourth levels of the age group are respectively 25-35 and 35-45. The rest of the respondents are 11.67%, which belongs to 55 and above age bracket.

Table 2. Occupation of the respondents

Occupation	Frequency	Percentage
Housewife	22	36.67
Work in fish firms	9	15
Work in the field	13	21.67
Unmarried young girls	6	10
Work in another house	10	16.66
Total	60	100

Source: Fieldwork, 2021

Table 2 shows the occupation of the respondents. The highest percentage of respondents 36.67% (22) are housewives. The second highest respondents 21.67% (13) work in the field as day laborers. 16.66% and 15% of the respondents work in other house and in fish firms respectively to meet their needs. 10% (6) of the whole respondents were unmarried young girls.

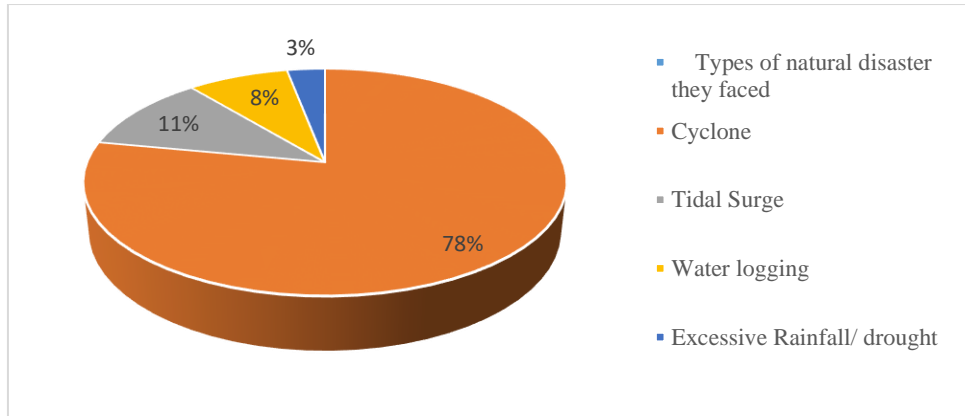


Figure 3. Types of natural disasters they faced
Source: Fieldwork,2021

Figure 3 shows that 78% of the respondents mostly suffer the effects of cyclones, and 11% of people in the coastal area face the effects of tidal surges. Waterlogging is another problem in this area which has affected 8% of people. Excessive rainfall or drought in certain years has also affected 3% of the total respondents.

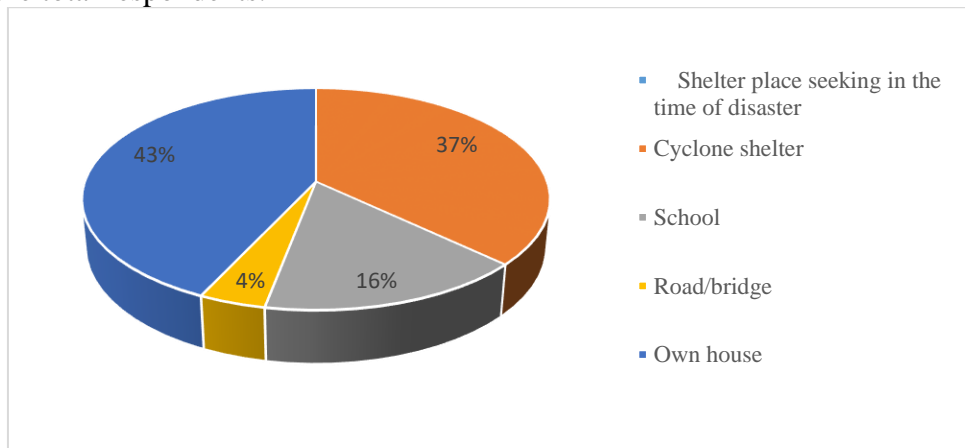


Figure 4. Shelter place seeking at the time of disaster
Source: Fieldwork, 2021

Figure 4 shows that 43% of the respondents don't seek any cyclone shelter, but they rather stay in their own houses. 37% and 16% of the respondents seek shelter in cyclone shelters and schools respectively. Only 4% of respondents take shelter on the bridge or roadsides.

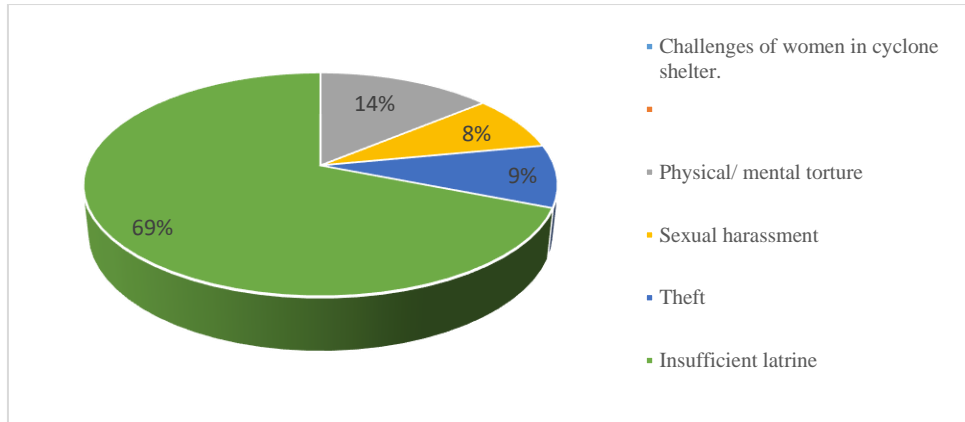


Figure 5. Challenges of women in a cyclone shelter
Source: Fieldwork, 2021

Figure 5 show that a major part of 69% of the respondents faces challenges due to insufficient latrine. 14% of women and young girls face mental and sometimes physical torture. Among them, 8% and 9% of respondents experience sexual harassment and theft respectively.

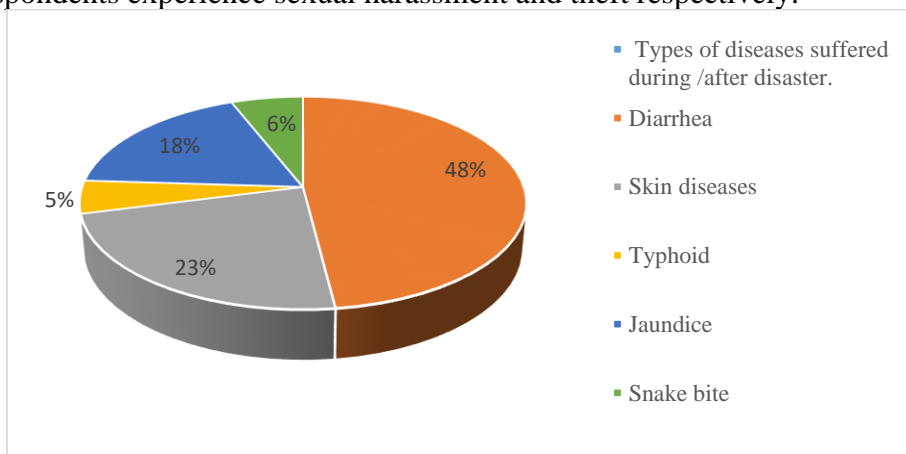


Figure 6. Types of diseases suffered during /after the disaster
Source: Fieldwork, 2021

Figure 6 show that 48% of the respondents suffer from diarrhea diseases and 23% are affected by skin diseases. The third highest 18% of the respondents stated that they experience jaundice during and after the natural disaster. Also, 5% and 6% of respondents identified their experience of typhoid and snake bite respectively.

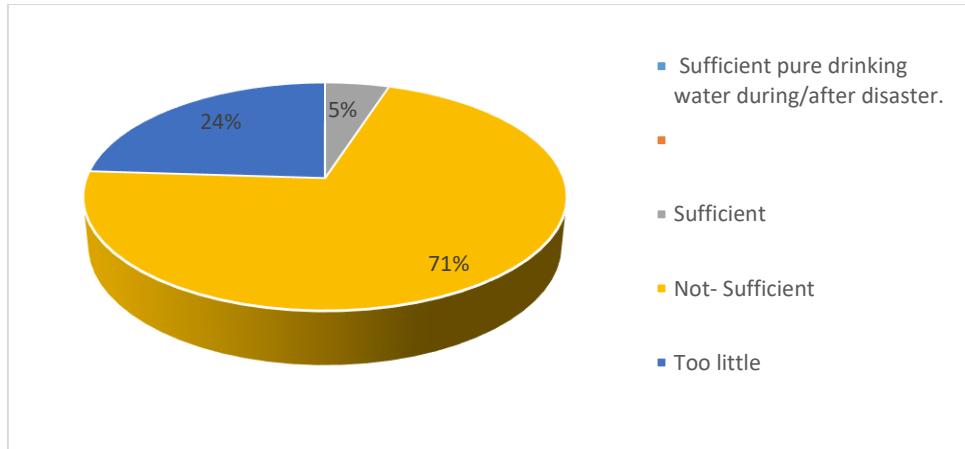


Figure 7. Sufficient pure drinking water during/after the disaster
Source: Fieldwork, 2021

Figure 7 show that a major portion, 71% of the respondents, stated that they do not get sufficient pure drinking water during or after the disaster. Among them, 24% stated that they get pure drinking water or too little of the amount due to waterlogging or flood. Only 5% of the respondents answered that they get necessary pure drinking water as their house is comparatively safe or is situated on high land in the area.

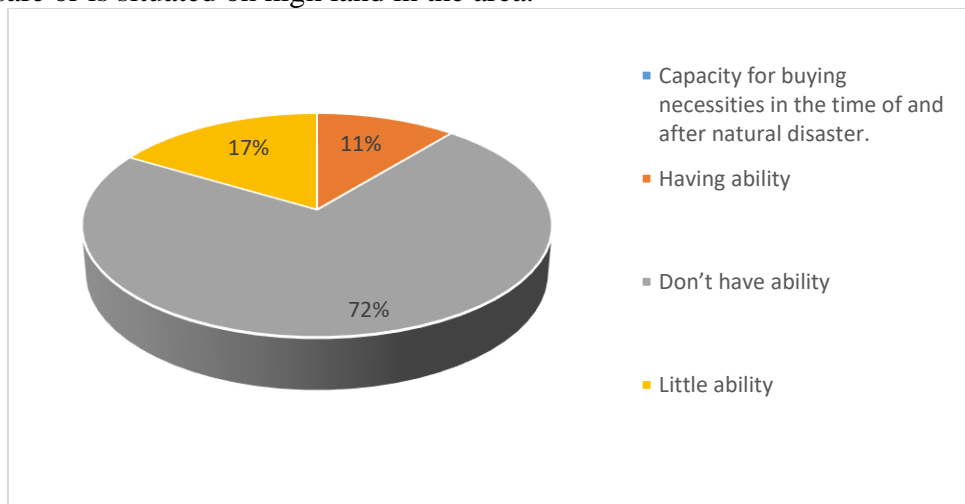


Figure 8. Capacity for buying necessities at the time of and after a natural disaster
Source: Fieldwork, 2021

Figure 8 explores that around one-third of the respondents do not have the ability to buy necessities at the time or after a natural disaster due to several reasons, while 11% have the ability to buy necessities. Another 17% of the respondents stated that they have so little ability to buy their daily goods.

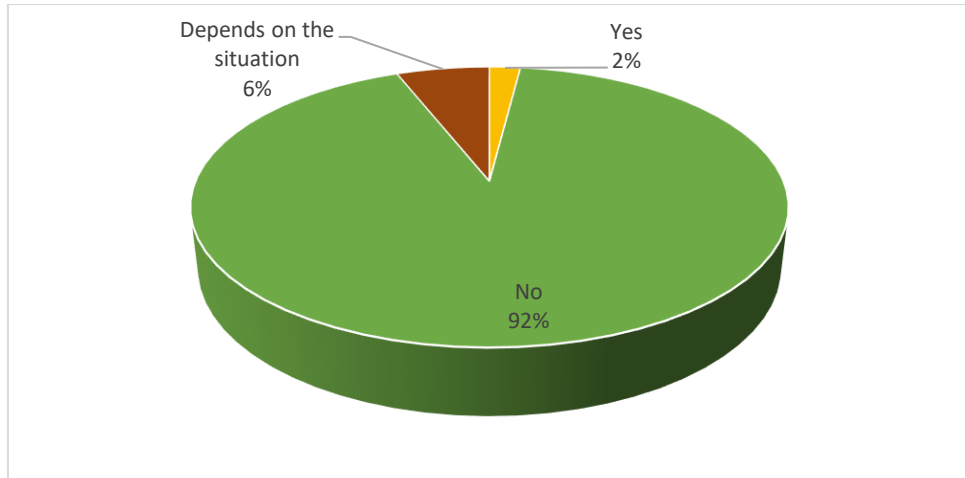


Figure 9. Taking decisions at the time of emergency
Source: Fieldwork, 2021

Figure 9 shows the reality of taking decisions in times of emergency, and 92% of women stated that male members of the family take decisions at the time of crisis due to social-cultural norms. Only 2% of respondents answered they can take decisions after discussing with the male member of the family. The rest of the women stated that taking decisions during the disaster depends on the situation and intensity of the incidents.

Conclusion and Discussion

It is evident from the study that more than three-fourths of people suffer from the effects of cyclones. 43% of affected respondents do not seek cyclone shelter due to a variety of reasons. In this regard, a major part of the respondents expressed their dissatisfaction with the environment as well as safety for women in the cyclone shelter. A large number of respondents stated that a major challenge in the shelter center is insufficient latrine which causes health problems, particularly for women. Around 50% of the respondents suffered from diarrhea and nearly one-third from skin-related diseases. It is a matter of concern that a major part of the respondents suffers a lack of pure drinking water for their necessary uses.

More importantly, it can be noted that except for a few, almost all of the respondents stated that they have no right to take any decision at the time of emergency due to socio-cultural trends. In Bangladesh, women are having limited access to resources such as physical, human, social, and natural for example decision making, land, training, education, etc. Thus, all these things make a man capable of adaptation which is worst in the coastal area (Soussan & Anjan, 2002) as cited in Rabiul Islam.

According to feminist perspectives, vulnerability is neither an innate phenomenon nor derived from any dimensions, i.e., rurality and femininity. They argued that it is rooted in our cultural process and pattern of power relations which makes some groups more disadvantaged than others. Unequal power practices and subordinate positions make some particular groups more vulnerable to risk and disaster compared to others. Climate change impacts in multiple ways but how much impact on both male and female depends on the social relations between men and women. Moreover, it is important how these relations shape the responsibilities in production and reproduction systems as well as the decision-making process which determines the vulnerabilities of both men and women in different ways. Since women are more vulnerable to climate change, they are also disadvantaged in the adaptation process. In traditional societies like Bangladesh, women and children are more likely to be the vulnerable groups for many reasons. Natural disaster increases the chances of vulnerability in many folds. Hence, some socially and culturally constructed ideas make them more vulnerable groups because they are bound to perform their socially-determined roles. According to Sherry Ortner, women seem closer to nature in the context of their social responsibilities and the subordinate position; they suffer from gender division of labor which falls on them in a dangerous situation even in a time of disaster. Also, they do not have the liberty in making decisions to migrate or some other aspects (World Bank, 2005). Women in Bangladesh are more victims of different types of violence as well as natural disaster, particularly in the coastal areas. Since women makes up half of the total population in this country, they need to be taken care of by the government and other agencies so that these vulnerable groups can mitigate their situations and survive for a better life. Therefore, Bangladesh should emphasize women's voices in the climate change adaptation policies and should as well introduce an awareness program related to climate change that impacts the life of women.

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Contribution des Poissonneries à L'amélioration des Conditions de vies des Populations de la Ville de Bouaké

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Résumé

Bouaké, ville à population ichtyophage et deuxième pôle urbain après celui d'Abidjan, abrite des poissonneries qui mobilisent nombre de personnes. L'implantation de ces moyens de conservation, les activités qui en découlent ainsi que les acteurs qu'ils mobilisent suscitent un regard scientifique. Ainsi, cette réflexion vise à analyser la contribution des poissonneries à l'amélioration des conditions de vie des populations de la ville de Bouaké. L'étude a consisté à recueillir des données à partir de la recherche documentaire et de l'enquête de terrain circonscrite à l'observation, à l'entretien et à l'enquête par questionnaire. Il en ressort que les poissonneries sont inégalement réparties à l'échelle de la ville de Bouaké. Elles sont plus concentrées à Dougouba (17 poissonneries), Broukro (11 poissonneries), Zone industrielle 10 poissonneries et Air-France (09 poissonneries). Ce déséquilibre spatial est dû à une différenciation du point de vue socio-démographique et économique entre les quartiers de la ville. Par ailleurs, ces poissonneries sont approvisionnées en diverses espèces par la ville d'Abidjan et le circuit d'animation du commerce est composite. En outre, elles (les poissonneries) contribuent à l'amélioration des conditions de vie des populations de la ville de Bouaké à travers la création d'emplois et de revenus dont la plupart surclasse le SMIC ivoirien. Aussi, ces moyens de conservation contribuent à

l'alimentation en permettant la satisfaction des besoins en protéines halieutiques de la population.

Mots-clés : Bouaké, contribution, poissonneries, conditions de vies

Contribution of Fishmongers towards Improving the Living Condition of the Population in the City of Bouaké

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Abstract

Bouaké, a city with a fish-eating population and the second largest urban center after Abidjan, is home to fishmongers' shops that mobilize a large number of people. The establishment of these means of conservation, the activities which emerge from them, as well as the actors they mobilize call for scientific scrutiny. This paper focuses on analyzing the contribution of fishmongers towards the improvement of the living conditions of the populations in the city of Bouaké. The result of the study shows that fishmongers are unevenly distributed throughout the city of Bouake. They are more concentrated in Dougouba (17 fishmongers), Broukro (11 fishmongers), Industrial Zone (10 fishmongers), and Aire-France (09 fishmongers). This spatial imbalance is due to a socio-demographic and economic differentiation between the city's districts. The city of Abidjan also supplied the fish shops with various species and the circuit of the trade is composite. They (the fish shops) further contribute to the improvement of the living conditions of the populations in the city of Bouake through the creation of jobs and incomes, most of which exceed the Ivorian minimum wage. The means of conservation contribute to food by offering fish to the population to satisfy its needs in animal resources.

Keywords: Bouaké, contribution, fish shops, living conditions

1. Introduction

Située à 7°69' de latitude nord et 5°03' de longitude Ouest, la ville de Bouaké est limitée au nord par la ville de Katiola, au Sud par celle de Djébonoua, à l'ouest par la ville de Brobo, et à l'est par celle de Botro. Sa

l'Hydraulique de l'Environnement et de la Lutte Contre la Désertification, 2006, p.14).

« À partir des années 80, plusieurs pays et en particulier ceux d'Afrique subsaharienne font irruption dans une crise profonde et structurelle. Cette crise frappe les différents secteurs d'activités de la Côte d'Ivoire puis engendre la dégradation de la situation économique. Ainsi, pour accroître leurs revenus, de nombreux ménages ivoiriens ont opté pour des activités du secteur tertiaire. Plusieurs nouvelles activités vont commencer à prendre de l'ampleur puisqu'aucune des rares ressources dont dispose le pays ne doit être négligée afin de renouer une croissance forte, saine et durable » (Kébé et *al.*, 1997). C'est alors que le sous-secteur des pêches est appelé à jouer un rôle primordial compte tenu de sa contribution à la richesse nationale et à la satisfaction des besoins des populations en protéines.

La Côte d'Ivoire est l'un des premiers pays importateurs de poissons congelés de la sous-région (Kébé et *al.*, 1997, p.3). Entre 1984 et 1994, elle a importé en moyenne 173 000 tonnes de produits halieutiques, soit 70 % de la production nationale. L'importation du poisson a été à l'origine du développement des moyens de conservation (poissonnerie) à terre pour assurer une bonne distribution dans le pays. En effet, il existe des sociétés d'importation qui traitent avec les producteurs. Ceux-ci congèlent le poisson directement en mer dans des bateaux de pêche-usine (2000 à 4000 tonnes) afin de ne pas interrompre la chaîne de froid (en moyenne -20°C) avant leur arrivé à Abidjan pour être stocker dans des chambres froides des différentes sociétés telles que S C O D I (Société des Conserves de Côte d'Ivoire), F I N U M A (Fabrique Ivoirienne de Nuoc-Mam) (Cormier-Salem, 1983, p.74).

Pour Dehaut (2014, p.19), la chaîne de froid est complétée par un réseau d'entrepôts secondaires appelé poissonnerie. Elles sont généralement vues comme des commerces de quartier ou de proximité, voire comme un magasin traditionnel permettant à un expert des produits de la mer (poissonnier ou poissonnière) indépendant(e) d'exercer un commerce (Commission Pacifique Sud, 2015, p.21).

Bouaké, à l'instar des autres villes du pays, regorgent des poissonneries permettant aux populations de satisfaire leurs besoins en ressources halieutiques. Selon le Ministère des Ressources Animales et Halieutiques (Direction de Bouaké) (2021, p.10), en 2020, la ville de Bouaké a abrité environ 109 poissonneries qui ont mobilisé plus de 377 employés. Par ailleurs, la ville a importé 12 204 tonnes de poissons congelés en 2019 (Ministère des Ressources Animales et Halieutiques / Direction de Bouaké, 2020, p.10). En claire, la fouille documentaire témoigne de ce qu'il s'agit d'une activité dynamique dont la contribution à l'amélioration des conditions de vie des populations de la ville de Bouaké reste sous silence. Cette situation suscite l'interrogation suivante : Comment les poissonneries contribuent-elles

à l'amélioration des conditions de vie des populations de la ville de Bouaké ? Répondre à cette question revient d'abord à faire l'état des lieux des poissonneries de la ville de Bouaké, ensuite à analyser la chaîne de commercialisation des poissonneries dans ladite ville, enfin à étudier les effets induits de l'activité des poissonneries sur la vie des populations dans la ville de Bouaké, à l'aide de certaines méthodes d'analyse.

I. Outils et méthodes

La méthodologie qui guide ce travail s'articule autour de deux éléments essentiels. Il s'agit de la recherche documentaire et de l'enquête de terrain circonscrite à l'observation, à l'entretien et à l'enquête par questionnaire.

En ce qui concerne la fouille documentaire, certains ouvrages se prononcent sur les institutions mises en place pour les poissonneries et leurs fournisseurs. D'autres montrent que les poissonneries sont des unités de conservation, et des auteurs circonscrivent leurs réflexions à l'apport socio-économique des poissonneries ainsi qu'aux contraintes liées à son fonctionnement. Parmi ces documents, figurent ceux de Chaboud et Kébé (1989, p.127), FAO (2006, p.112), Via Aqua (2017, p.16), Kouman et Aboya (2017, p.97), Dehaut (2014, p.19), et FAO (2008, p.19). À cela, s'ajoutent les données statistiques recueillies auprès du centre technique de la mairie (2020) et du Ministère des Ressources Animales et Halieutiques de la ville Bouaké (2021).

L'observation s'est déroulée du 04 au 14 janvier 2020. Elle a consisté à faire des investigations sur le terrain pour s'imprégner des activités liées aux poissonneries et leur emprise spatiale. Cette phase a permis d'inventorier toutes les poissonneries à l'échelle de la ville, de les localiser et d'avoir une idée du déroulement de toutes les activités qui en découlent. Toutefois, cette technique ne permet pas d'expliquer et de comprendre tout ce qui est observé ; d'où le recours à l'enquête par entretien et par questionnaire.

Menés à l'aide d'un guide, l'entretien s'est déroulé du 1^{er} au 10 février 2020 avec les responsables du service technique de la mairie, ceux du Ministère des Ressources Animales et Halieutiques, et avec les responsables des tenanciers de poissonneries. Ces échanges ont fourni des informations essentielles sur les zones d'approvisionnement, les quantités (importées et vendues), les acteurs, les chiffres d'affaires de certaines activités liées aux poissonneries et leur participation à l'amélioration des conditions de vie des populations de la ville de Bouaké. Quant à l'enquête par questionnaire, elle s'est déroulée en deux temps : du 15 février au 15 mars 2020 et du 20 mars au 21 avril 2020. Elle a permis, d'abord, d'avoir des informations sur le niveau de vie des acteurs mobilisés par les activités liées aux poissonneries, ensuite, de connaître l'apport des poissonneries à l'alimentation des ménages.

Concernant l'enquête par questionnaire, tous les 377 employés mobilisés par les poissonneries ont été enquêtés. En ce qui concerne les autres acteurs (les vendeurs et/ou vendeuses de poissons congelés au détail, les vendeuses de poissons fumés et les restaurateurs utilisant les poissons congelés) exerçant dans les activités annexes liées aux poissonneries, les statistiques du Service Technique de la Mairie ont permis de choisir les répondants. Selon ce service (2020, p.15), « dans les quartiers tels que Dougouba, Zone Industrielle, Ahougnansou, N'Gattakro, Broukro Extension, Dar-Es-Salam 1, et Gonfréville, les acteurs exerçant dans les activités annexes liées aux poissonneries excèdent 30 personnes par quartier. Dans les autres, ce nombre n'excède pas 10 acteurs par quartier ». Ainsi, des questions ont été adressées à tous les acteurs dans les quartiers dont les acteurs n'excèdent pas 10. Dans les quartiers dont les noms sont mentionnés plus haut, l'échantillon a été défini à partir de la formule suivante :

$$n = \frac{Z^2(PQ)N}{[e^2 (N-1) + Z^2]}$$

Source : Marhoun, A. E. (2019, p. 11)

N = taille de l'échantillon à déterminer ;

N = taille de la population mère ;

Z = coefficient de marge (déterminer à partir du seuil de confiance) ;

e = marge d'erreur ;

P = une constante variant entre 0 et 1 ; c'est une probabilité d'occurrence d'un évènement. Étant donné qu'il n'existe pas de valeur de cette proportion, celle-ci a été fixé à 50 % (0,5) ;

Q = 1-P

Or, P = 0,50, donc Q = 0,50,

À un niveau de confiance de 95 %, Z = 1,96 avec une marge d'erreurs e = 0,05%.

En remplaçant les constantes par leurs valeurs, la forme simplifiée de la formule donne :

$$N = \frac{0,9604 N}{0,0025N + 0,9579}$$

L'application de cette formule a donné les résultats suivants :

Tableau 1. Populations échantillonnées dans certains quartiers de la ville de Bouaké

Quartiers	Vendeurs et/ou vendeuses de poissons congelés au détail	Vendeuses de poissons fumés	Restaurateurs utilisant les poissons congelés
Dougouba	Pm = 35	Pm = 32	Pm = 35
	E= 32	E=30	E=32
Zone Industrielle	Pm= 31	Pm= 33	Pm= 32
	E=29	E=30	E=30
Ahougnansou	Pm= 32	Pm= 31	Pm= 36
	E=30	E=29	E=33
N’Gattakro	Pm= 33	Pm= 33	Pm= 34
	E=30	E=30	E=31
Broukro Extension	Pm= 31	Pm= 30	Pm= 40
	E=29	E=28	E=36
Dar-Es-Salam 1	Pm= 32	Pm= 31	Pm= 39
	E=30	E=29	E=35
Gonfréville	Pm= 33	Pm= 32	Pm= 33
	E=30	E=30	E=30

Source : Service Technique de la Mairie de Bouaké (2020), calculs Dosso Yaya, 2021
 Pm : population mère / E : échantillon

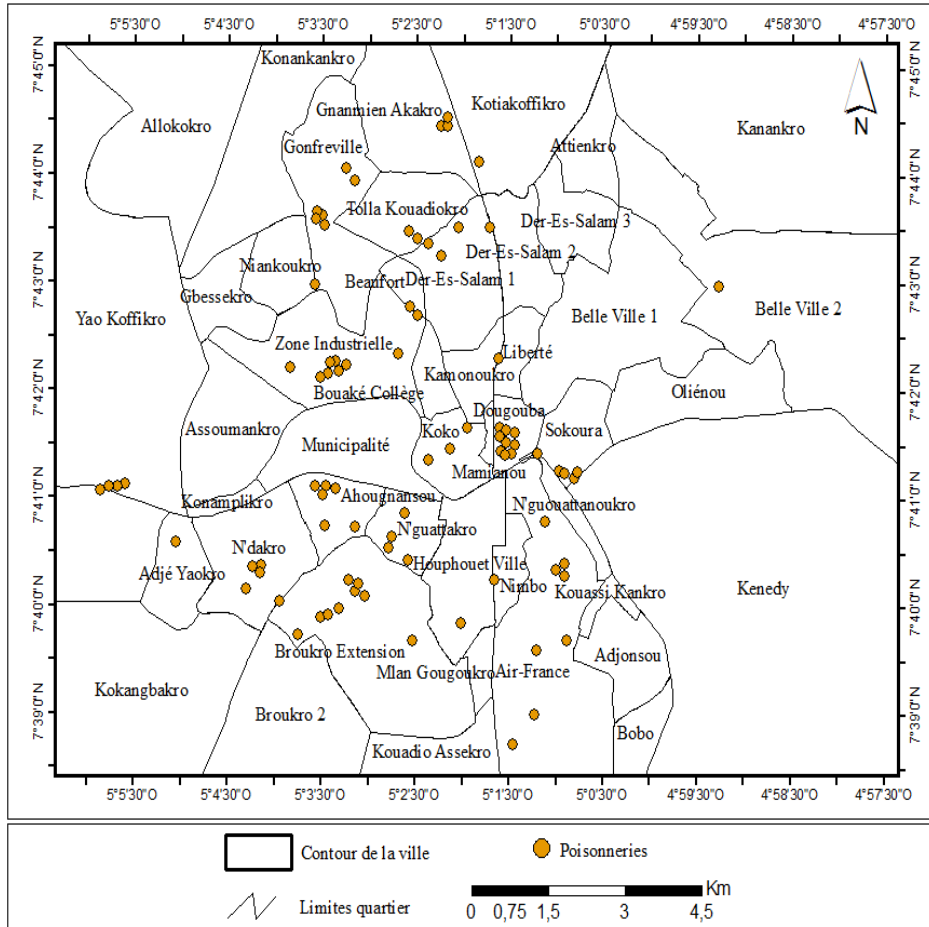
En plus de cette population échantillonnée pour le questionnaire, un GPS a été utilisé pour la prise de coordonnées géographiques des poissonneries à l’intérieur de la ville.

Certaines données ont fait l’objet d’un traitement cartographique et graphique pour leur donner un caractère beaucoup plus expressif. Ainsi, les logiciels EPI Info, SPSS et Excel ont servi à établir des tableaux et des graphiques. Aussi, le logiciel ArcGIS 10.3 a été utilisé pour réaliser des cartes. L’analyse des données recueillies a permis d’obtenir trois types de résultats.

II. Résultats

II.1. Une répartition inégale des poissonneries due à une différenciation du point de vue socio-démographique et économique entre les quartiers de la ville

L’installation des différentes poissonneries dans la ville de Bouaké laisse entrevoir une inégale répartition spatiale de celles-ci comme l’indique la carte suivante :



Source : INS, 2019

Réalisation : DOSSO Yaya, 2021

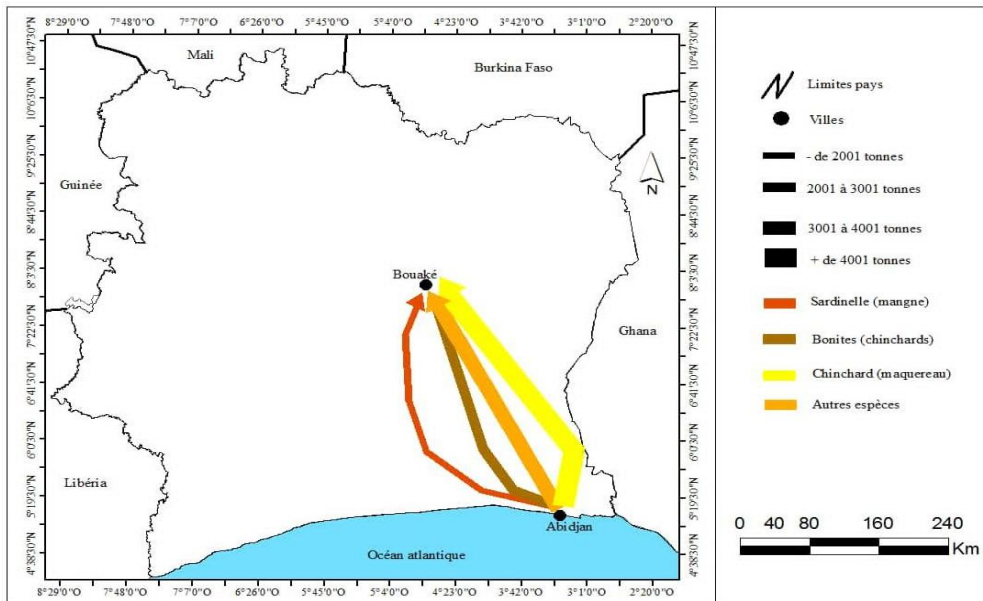
Carte 2. Répartition spatiale des poissonneries à l'échelle de la ville de Bouaké

L'analyse de la Carte 2, montre une forte inégale répartition des poissonneries à l'échelle de la ville de Bouaké. Cela s'explique par la différenciation du point de vue socio-démographique et économique entre les quartiers. En effet, tous les 109 poissonniers confirment qu'ils préfèrent implanter leurs poissonneries dans des quartiers ayant une forte population et enregistrant une diversité d'activités économiques. Ce qui justifie la concentration des poissonneries dans des quartiers tels que Dougouba (17 poissonneries), Broukro (11 poissonneries) Zone industrielle 10 poissonneries et Air-France (09 poissonneries). Ces quartiers comptent respectivement 6 224 habitants (1,16 %), 31 357 habitants (5,84 %), 48 787 habitants (9, 10 %) et 39 555 habitants (7,37%) (INS, 2014). De plus, ils (ces quartiers) enregistrent une diversité d'activités économiques telles que la vente de l'attiéké, la restauration de tout genre, le transport et l'hôtellerie.

La commercialisation des produits issus des poissonneries se caractérise par un circuit composite avec une unique zone d’approvisionnement.

II.2. Un circuit composite à unique zone d’approvisionnement pour une diversité d’espèces

Les différentes poissonneries installées à l’échelle de la ville de Bouaké sont approvisionnées par les chambres froides installées au port de pêche d’Abidjan. La Carte 3 montre les flux de poissons congelés en provenance de la métropole, à destination des poissonneries de la ville de Bouaké.



Carte 3. Flux d’approvisionnement en poissons des poissonneries de la ville de Bouaké
Source : INS, 2014, Ministère des Ressources Animales et Halieutiques / Direction de Bouaké, 2021
Réalisation : DOSSO Yaya, 2021

Comme le montre cette carte, environ 12 204 tonnes de poissons congelés ont été importés en 2021 (Ministère des Ressources Animales et Halieutiques / Direction de Bouaké) (2021, p.10). Ces importations sont composées de la Bonite (maquereau) (4 002 tonnes), du Chinchard (Apollo) (2 551 tonnes), la Sardinelle (mangne) (2 000 tonnes) et des autres espèces dont les importations s’élèvent à 3 651 tonnes. Aussi, les prix de vente diffèrent d’une espèce à une autre selon le tableau ci-après :

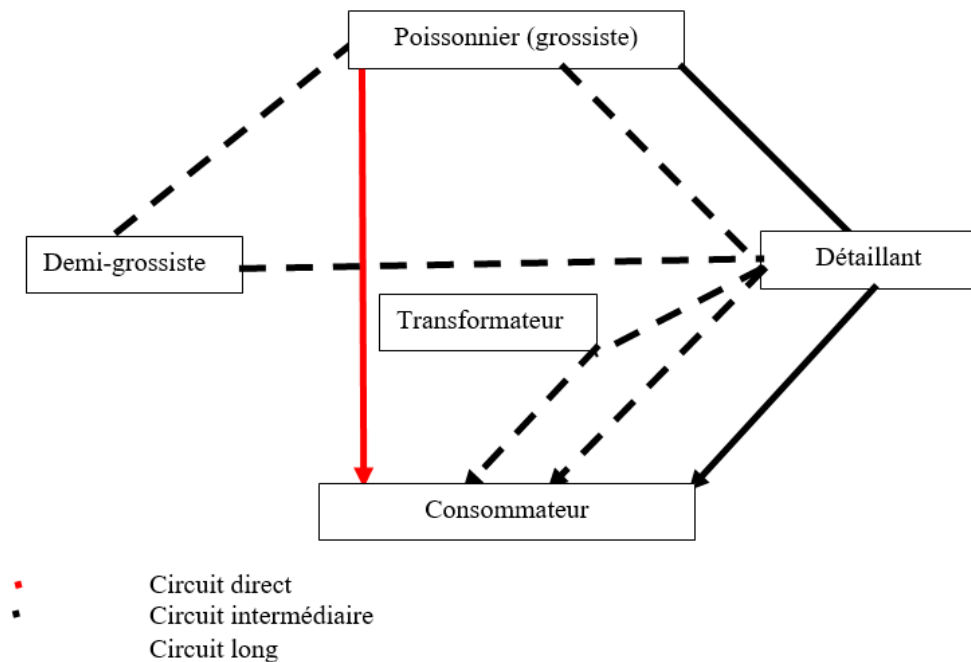
Tableau 2. Quelques espèces de poissons et leurs prix de vente dans les poissonneries de la ville de Bouaké

Nom commercial des poissons	Quantité en kg (carton)	Prix en FCFA	
Aiguilles/Aiguillettes (Tombola)	15 kg	15000	
	30 kg	27000	
Eba (Aoubé)	20 kg	14000	
Brama (mécanicien ou goudron)	30kg	33000	
Bobo (Sosso)	20kg	25000	
Bonites (Maquerreau)	20 kg	P	17000
		m	18000
		g	19000
Belle dame	10kg	9000	
Brochet	1kg	2700	
Carpe blanche	10kg/ 20kg	p	15500 / 30000
		m	16000 / 31000
		g	17000 / 32000
Carpe grise (buro)	20kg	P	25000
		m	25500
		g	26000
Chinchard (appolo)	20kg	P	20000
		m	20000
		g	24000
Friture (sosso petit)	20kg	23000	
Hareng (sardine)	20kg	16000	
Liche	20kg	22000	
Mulet	20kg	15000	
Machoiron de chine	10kg	11000	
Machoiron de mer	10kg	12000	
Ombrine (sosso moyen)	20k	24000	
Pelon (lôgôlôgô)	20kg	20000	
Sardinelle (mangne)	20kg	17500	
Sardines (mangne sardine)	20kg	16000	

Source : DOSSO Yaya, 2021

NB : P= petit/ m= moyen/ g=grand

La vente se fait généralement par quantité de 10, 15, 20 et 30 kilogrammes. Les espèces les moins chères sont la Sardinelle, le Mulet, la bonite, le Eba et l'Aiguille/Aiguillette. Leurs prix sont inférieurs à 10 000 francs CFA (le carton de 10 Kilogrammes). La quantité de 10 kilogrammes des autres espèces a un prix de vente supérieur à 10 000 francs CFA. Le commerce des produits issus des poissonneries se fait à travers un circuit composite, composé de circuit court, de circuit intermédiaire et de circuit long. La figure suivante en donne un aperçu.



Source : DOSSO Yaya, 2022

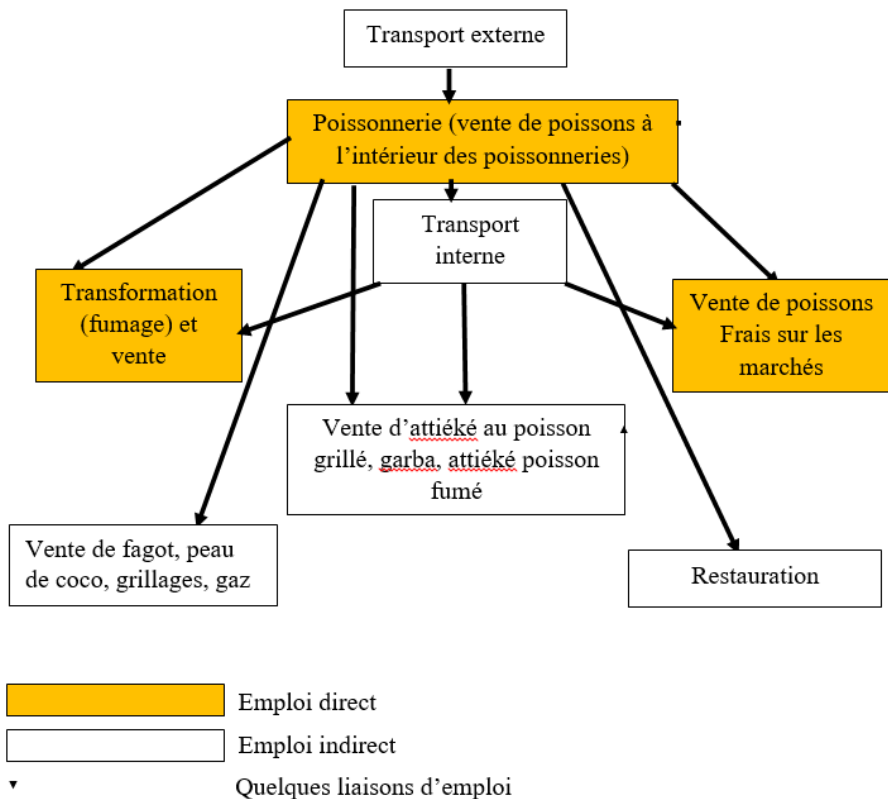
Figure 1. Circuit de distribution des produits issus des poissonneries de la ville de Bouaké

Le circuit court part des grossistes (les poissonniers) aux consommateurs sans intermédiaire aucun. Dans le circuit intermédiaire, le produit part du grossiste aux consommateurs en passant par le détaillant. Quant au circuit long, le produit arrive aux consommateurs en passant par le demi-grossiste, le détaillant et / ou le transformateur.

L'existence des poissonneries dans la ville de Bouaké a favorisé la création de diverses activités qui participent à l'amélioration des conditions de vie des populations.

II.3. Une diversité d'activités à revenus mensuels supérieurs au SMIC ivoirien

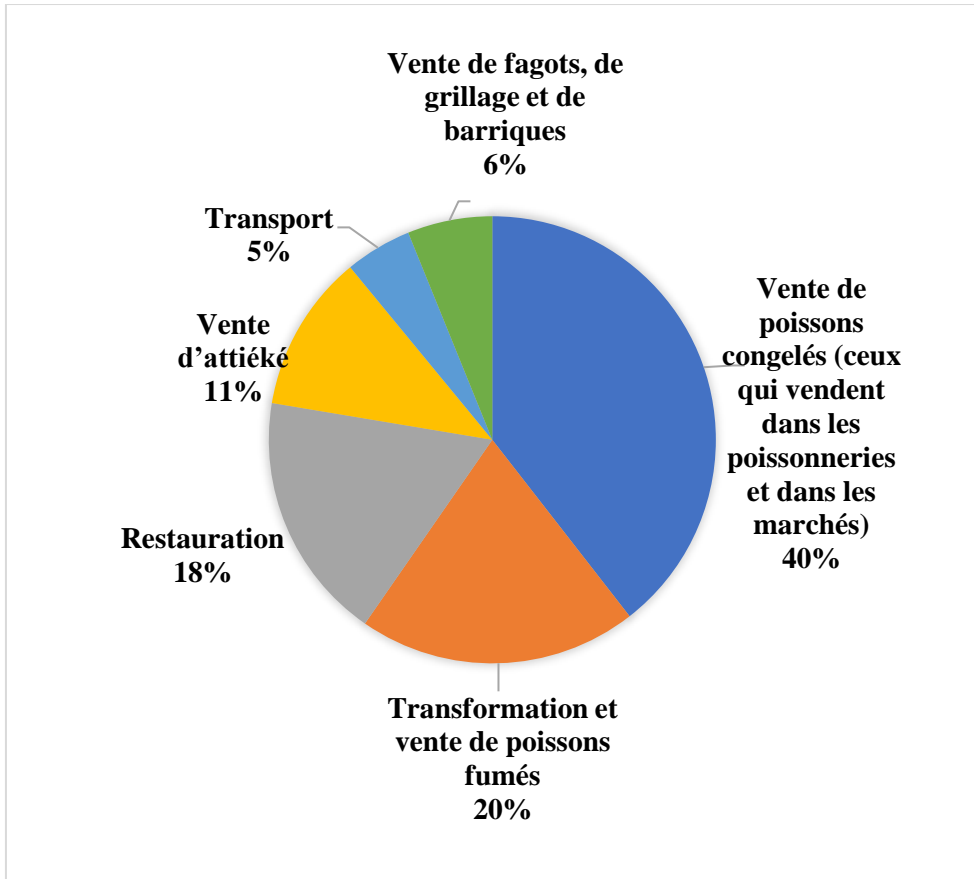
Le secteur des poissonneries offre de nombreux emplois aux populations urbaines de Bouaké. L'ensemble de ces emplois est illustré par la figure suivante :



Source : DOSSO Yaya, 2021

Figure 2. Les différents emplois générés directement ou indirectement par les poissonneries dans la ville de Bouaké

Les poissonneries sont à l'origine d'une diversité d'emplois dont trois directs que sont : la vente en gros de poissons congelés dans les poissonneries, la transformation et la vente de poissons fumés, et la vente de poissons frais au détail sur les marchés. On y trouve quatre activités indirectes dont la restauration, la vente d'attiéké, le transport, la vente de fagots, de grillages et de barriques. Quant à la population impliquée dans ces activités, la Figure 3 en donne la répartition.



Source : Service technique de la mairie (2020), Ministère des Ressources Animales et Halieutiques (2020), DOSSO Yaya (2021)

Figure 3. Répartition des populations impliquées dans les activités liées aux poissonneries

L'analyse de la Figure 3 montre que 2 280 personnes, soit 0,42 % de la population totale de la ville de Bouaké exercent dans les activités liées aux poissonneries. Leur revenu mensuel dépasse, pour la plupart, le SMIC ivoirien (60 000 Francs CFA) comme le montre le tableau ci-dessous :

Tableau 3. Revenus mensuels des acteurs mobilisés par les activités directes et indirectes liées aux poissonneries

Emplois	Propriétaire de poissonnerie	Employer dans une poissonnerie	Vendeur de poissons congelé en détail dans les marchés	Vendeuse d'attiéké	Transporteur	Vendeurs de fagots, de grillage et de barriques
Revenu mensuel (FCFA)	600 000 à 800 000	60 000 à 80 000	60 000 à 90 000	30 000 à 70 000	45 000 à 150 000	15 000 à 45 000

Source : DOSSO Yaya, 2021

En dehors des vendeurs de fagots, de grillages et de barriques, nombreuses sont les personnes travaillant dans les activités liées aux poissonneries et dont les revenus dépassent le SMIC ivoiriens. Il s'agit des propriétaires de poissonneries, de ceux qui y sont embauchés, des vendeurs en gros dans les marchés et des responsables des entreprises de fabrication d'*attiéké*. À cela, s'ajoutent les propriétaires et les chauffeurs des véhicules qui transportent le poisson.

Par ailleurs, sur les 109 propriétaires de poissonnerie, 30 ont pu bâtir leur propre maison et une cinquantaine dispose de moyen de déplacement dont 10 voitures et 40 motos. Certains de leurs biens acquis se matérialisent comme suit :

Planche photographique 1. Quelques biens acquis par des acteurs mobilisés par les activités liées aux poissonneries dans la ville de Bouaké

Photo 1. Une moto appartenant un employé d'une poissonnerie



Photo 2. Une maison construite par un poissonnier dans la ville de Bouaké



Source : DOSSO Yaya, 2021
Attiéké = Semoule de manioc

Cette planche photographique représente quelques biens acquis parmi tant d'autres par les personnes exerçant dans les activités liées aux poissonneries. Il s'agit d'une maison appartenant à un poissonnier et d'une moto dont le propriétaire est une personne embauchée dans une poissonnerie. En outre, les poissonneries contribuent à l'alimentation de la population en leur procurant du poisson. Les entretiens avec 8 poissonniers à Dougouba, 7 à Broukro, 6 à la Zone industrielle et 5 à Air-France, témoignent que des ménages s'approvisionnent directement dans les poissonneries en moyenne une fois chaque trois jours.

En somme, les poissonneries contribuent à l'amélioration des conditions de vie des populations dans la ville de Bouaké. En effet, elles sont

créatrices d'activités et de revenus. Par ailleurs, elles participent à l'alimentation des populations en leur offrant des ressources halieutiques pour la consommation familiale.

Discussion

Cette étude a montré que les poissonneries sont inégalement réparties à l'échelle de la ville de Bouaké. Ce résultat est semblable à celui de Kouman et Aboya (2015, p.95) qui soutiennent que la commune de Yopougon abrite une diversité de poissonneries à répartition spatiale déséquilibré. Elles se concentrent surtout proche des marchés-gares (Kouman & Aboya, 2015, p.95). Par ailleurs, nos résultats corroborent ceux du Comité Sectoriel de Main-d'œuvre du Commerce de l'Alimentation du Québec (2019, p.7) qui stipule que les poissonneries indépendantes sont inégalement réparties à l'échelle de la région du Québec.

Aussi, la commercialisation des produits issus des poissonneries se caractérise par un circuit composite mobilisant une diversité d'acteurs, confirmant ainsi les résultats de Mahamat et *al.* (2021, p.16302). En effet, Mahamat et *al.* (2021, p.16302) montrent que : « à Abéché, l'acheminement des poissons depuis leurs zones de provenance jusqu'aux consommateurs, fait intervenir divers acteurs. Il s'agit des grossistes, des grossistes-détaillants, des détaillants et des consommateurs. ».

Par ailleurs, Abidjan est la seule zone d'approvisionnement des poissonneries implantées dans la ville de Bouaké. Cette assertion est contraire à celle de Njifonjou (2002, p.8) et du Ministère Nigérien de l'Environnement et de la Lutte Contre la Désertification (2007, p.27). En fait, Njifonjou (2002, p.8) affirme que le Cameroun est approvisionné en ressource halieutique par une diversité de pays que sont : la Mauritanie, le Sénégal, la Hollande, l'Argentine, l'Espagne et la Namibie. Quant au Ministère Nigérien de l'Environnement et de la Lutte Contre la Désertification (2007, p.27), la république du Niger est approvisionnée en ressource halieutique par plusieurs pays dont le Mali, le Nigéria, le Sénégal, le Bénin et la Côte d'Ivoire.

De plus, les poissonneries contribuent à l'amélioration des conditions de vie des populations dans la ville de Bouaké à travers la création d'activités et de revenus. Ces résultats sont similaires à ceux de Dosso (2019, p.187), de Failler et *al.* (2010, p.161), et de FAO (2006, p.12). Selon Dosso (2019, p.187), 4,30 % de la population de la Sous-préfecture d'Adiaké exercent dans le domaine du commerce du poisson. Quant à Failler et *al.* (2010, p.161), en Mauritanie, « le sous-secteur de la pêche artisanale est de loin la première source de création d'emplois directs. Entre 1994 et 2001, le nombre de pêcheurs artisans est passé de plus de 3 800 à environ 12 100 pour une croissance moyenne annuelle de 8% ». Hormis cela, Carmen-Paz (2018, p.17) soutient que les recettes budgétaires de l'État Mauritaniens proviennent de la

pêche à hauteur de 29 %. Cela est soutenue par Failler *et al.* (2010, p.157) qui témoignent que « le secteur des pêches, exploité jusqu'à la fin des années 70 par des opérateurs étrangers, continue à être un pilier majeur de l'économie nationale de la Mauritanie malgré une diminution de sa contribution aux principaux agrégats macroéconomiques (balance commerciale, PIB, recettes budgétaires). Le secteur continue encore à maintenir sa place comme importante source de recettes du budget de l'État. Son apport s'est toujours situé au-dessus des 20% de ces recettes sur la période de 1993 à 2000. ». Pour la FAO (2006, p.12) le secteur de la pêche génère des richesses qui sont d'une grande utilité pour l'économie locale grâce aux effets multiplicateurs des revenus et de l'emploi.

En outre, les poissonneries contribuent à l'alimentation des populations de la ville de Bouaké. Cela confirme les dires de FAO (2013, p.2), Lahsen Ababouch (2015, p.2), la Commission de l'Océan Indien (2019, p.3) et un Administrateur Agréé de l'Aquaculture en Afrique (2019, p.3). Selon la FAO (2013, p.2), le poisson contribue à raison d'environ 17 % à l'apport en protéines animales de la population mondiale, mais cette proportion peut cependant dépasser 50 % dans certains pays. D'ailleurs « dans les pays côtiers d'Afrique de l'Ouest, le poisson constitue un élément essentiel du régime alimentaire depuis des siècles. Aussi, le poisson contribue à l'alimentation des populations de plusieurs pays Africains tels que l'Angola, le Benin, le Burundi, le Cap-Vert, le Comores, la République Démocratique du Congo, etc. » (FAO 2013, p.2). De plus, Lahsen Ababouch (2015, p.2) affirme que la pêche et l'aquaculture procurent 17 % des protéines d'origine animale à l'échelle mondiale et les moyens de subsistance d'environ 660 820 million de personnes, soit 10 à 12 % de la population mondiale. Quant à la Commission de l'Océan Indien (2020, p.3), dans les régions de l'Afrique de l'Est et de l'océan indien, la consommation de protéines de poisson va de 33 à 35 % (Malawi, Seychelles, Ouganda, Congo et Comores). De plus, le poisson, y compris les mollusques et les crustacés, représentent 17 % des protéines animales et 7 % de toutes les protéines, et sont essentiels pour plus de 3 milliards de personnes dans les pays en développement (Administrateur Agréé de l'Aquaculture en Afrique, 2019, p.3).

Conclusion

Cette étude analyse la contribution des poissonneries à l'amélioration des conditions de vie des populations urbaine de Bouaké. Il en ressort une inégale répartition des dites poissonneries. Cette répartition spatiale déséquilibrée est due à la différenciation du point de vue socio-démographique et économique entre les quartiers de la ville. Par ailleurs, on note des espèces aussi variées que les acteurs et une unique zone d'approvisionnement qu'est la ville d'Abidjan. Aussi, les poissonneries sont à l'origine d'une diversité

d'activités génératrices de revenus, permettant ainsi aux acteurs de satisfaire certains besoins. En outre, elles (les poissonneries) participent à l'alimentation des populations en leur offrant des ressources halieutiques pour la consommation familiale.

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Is Narayan's Bharati a Crocus of an Ideal Indian Woman?

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Abstract

India is a land with deep-rooted value system. Exhibiting the trends associated with being a 'true Indian', R.K. Narayan, who is celebrated as a pure and simple writer, affirms the values of life and reposes faith in moral order in his novels. At the time when he started writing, Indian society underwent a sea change. Social reformers and intellectuals were busy in redefining the image of an Indian woman. Narayan also felt the pressure of the prevalent ideology and put forward the idea of what it is to be an ideal Indian woman and created a female character named Bharati in his novel *Waiting for the Mahatma* (1955). The novel is seen as a 'liberation fable' with Bharati as the central character who is viewed as a crocus of an ideal Indian woman. Her view of life is considered viable and authentic. Critics opine that Bharati, who is bold, self-dependent, and strong is an example of Narayan's true vision of women's empowerment. Although when her character is studied closely, it becomes apparent that Bharati internalizes myths and accepts roles that afford her no real choices and no real values. She perfectly resembles traditional women who possess neither agency nor any will of their own and spend their energy in the service of patriarchy. Even though Bharati radiates through the novel and finds a space, her attributes as a volitional force reserved for Sriram suggest that she is the subject of the novel who lacks artistic expression and self-assertion. Narayan, despite his awareness about the predicament of an Indian woman and his sincere effort to be judicious towards woman, fails to transcend the forces of history that allows him to look at women with stereotypical vision.

Keywords: Complex Identity, Emancipation, Ideal, Assertion, Morality

Introduction

Women are the only exploited group in history who have been idealized into powerlessness.

- Erica Jong

Mother is a sacred object. It is a commodity whose value we don't realize as long as it is with us. One must lose it to know what a precious possession it is... As long as my mother lived, she said every minute 'Do this, Don't do that' And I remained a good son to her. The moment she died, I changed. Its rare commodity, Sir, Its rare commodity.

- R.K. Narayan, *The Bachelor of Arts*

R.K. Narayan interprets Indian life with striking variegation-sometimes humorously, sometimes ironically. Notwithstanding, he invariably inscribes within the four walls of his culture. His novels are considered to bring forth the changing images of women in the Indian scene in all their fascinating varieties whether through Bharati, Rosie or Daisy. Although not an advocate of women's rights, he is sensitive to the agony of this marginalized group, which is manifested in his work *My Days*:

I was somehow obsessed with a philosophy of woman as oppressed to man, her constant oppressor. This must have been an early treatment of the 'Women's Lib' movement. Man assigned her a secondary place and kept her there with such subtlety and cunning that she herself began to lose all notion of her independence, her individuality, stature, and strength. A wife as an orthodox milieu of Indian society was an ideal victim of such circumstances (Narayan, 2001, p.119).

He has great respect for women, not only in his thoughts, but also in his personal life. Nevertheless, in his literary work, his moral outlook is so subtly stated that it needs a close perusal. Therefore, this paper focuses on examining how far Narayan's happy notes have succeeded in gripping Bharati's existential reality. The character Bharati from *Waiting for the Mahatma* is chosen for this study because much has been discussed about Narayan's 'emancipated' character Bharati. Nevertheless, the intricacies of her portrayal have not been fully articulated. Since multiplicity of discourse is what it takes for identity construction, this paper deals with a number of aspects of how, despite Narayan's understanding of women's plight, his sensitivity, and compassion, he plants Bharati squarely within a male modernist tradition; how he has assigned Bharati a singular identity as a

‘woman’; and how patriarchy is at work based on affinities and love. A predominant feminist perspective has been adopted in the critical analysis of Bharati.

At the time Narayan started writing, the winds of change had started blowing over the societal set-up of India. Women had been struggling for their liberation all around the world. Indian reformers believed that this struggle for liberation would make women give up their values, ethos, and even their unique sense of self for the sake of success. Therefore, womanhood became one of the most important signifiers of social transformation and reformers in India, which launched an indigenous attempt to build a new image of woman. A refurbished image of the ideal Indian woman, culturally loaded against the stereotypical notion of a modern westernized woman was recommended. Living in the age of self-consciousness and criticism, the writers belonging to this era also came forward in developing and creating an ideal image of the Indian woman. Narayan could not also refrain from realizing the tension between prevalent ideologies and put forward different perspectives of what it is to be an Indian woman through his characters. Nothing illustrates this breadth of vision about the Indian woman better than his portrayal of the character Bharati in *Waiting for the Mahatma* where he tries to transmit human values, especially that of a female, which is characterized by a conception that idealizes the feminine condition, romanticizes relationships between a man and a woman, and develops an ideal identity for women. Through the whole process, he projects Indian womanhood with all its complexities, onto the character, often at the cost of betraying contradictions built into their status.

Apart from her ubiquitous presence in the novel, Narayan’s Bharati is cast on the lines of typical gendering of society and she spends her energies in the service of patriarchy. She is a culturally constructed emancipated woman who is restricted from enacting her independence because of gender-biased rules related to limitations on expression, communication, and movement. Her character remains fixed and her autonomy is compromised. Being an orphan girl, she is brought up in an *Ashram* and becomes a freedom fighter not by choice, but by chance. She has never afforded a choice to show her interest, to choose her profession, and to talk about her preferences. It is a well-accepted feminist dictum that ‘real’ empowerment is something that women can only do for themselves (Rowlands, 1997). This axiom is not true for Bharati as she does not have the capacity to make independent choices and follow them through.

There is absolutely no doubt that she speaks Tamil, English, Hindi, Urdu, and many other Indian languages fluently. Does possessing knowledge of sundry languages necessarily guarantee freedom? Living in a multi-lingual society and as a part of Gandhi’s cavalcade, she travels immensely across India with him and comes in contact with people from different parts of India. Since

her task is to propagate Gandhian ideology, she learns these languages in order to fulfil her duty of disseminating Gandhian ideology. Her knowledge about different languages cannot be considered as a marker of her independence. She herself acknowledges, "I do whatever I am asked to do by the *Sevak Sangh*. Sometimes they ask me to go and teach people spinning and tell them about Mahatma-ji's idea. Sometimes they send me to villages and poor quarters" (p.49). Although Bharati is an active freedom fighter, she is found to be less willing to engage in self-promoting and self-assertive behavior and has grave problems discussing matters on an intellectual level.

Narayan has assigned Bharati a singular identity as a 'woman'. Thus, when one singular identity, i.e., being a 'woman', becomes more meaningful than other identities, it falls in the trap of mythical construction. Carrying a singular identity does not perturb her, rather she accepts roles that give her no real choices and no real values; she never re-evaluates her relationship with others; she does not ever think about taking control of her own body nor does she ever struggle to establish her identity. Her consciousness is not divided because she is not bothered about being victimized neither does she have the sense of identity that leads to empowerment. Amartya Sen also confirms the same when he states: "singular affiliation", which takes the form of assuming that any person preeminently belongs, for all practical purposes, to one collectivity only- no more and no less'(Sen, 2006, p.23).

Saritha Batliwala defines empowerment as 'control over material assets, intellectual resources, and ideology' (Batliwala, 1994). Also, in *The Second Sex*, Simone de Beauvoir argues that economic liberation is the *sine-qua non* of every other form of liberation (Beauvoir, 1952). Beauvoir's uncompromising message is crystal clear when she says that motherhood and marriage alone cannot make a woman happy. Therefore, paid work alone secures her independence. Despite her arduous work, Narayan has made Bharati a woman who has no financial security or financial independence. For every single need, she is utterly dependent upon the male centric *ashram* people and has absolutely no share in decisions that are made for her since she is only there to carry out the orders she receives. Her grass-root-level participation does not help her reach a stage where she could be identified by her unflinching dedication and uphill tasks. Although she works for a bigger cause, she rarely exhibits the quality of self-confidence and self-assurance as she does not have good reasons to possess such a level of confidence. Woolf (2016) emphasizes that such assertion comes from being financially independent: 'what a change of temper a fixed income will bring about' (p.41).

It is possible that Bharati does not question her existential reality in favor of broader, civic and national focus and willfully sacrifices and surrenders for Mother India. However, 'rejection of self-interested behavior does not indicate that one's actions are necessarily influenced by a sense of

identity with others. It is quite possible that a person's behavior may be swayed by other types of considerations, such as her adherence to some norms of acceptable conduct, or by her sense of duty- fiduciary responsibility- toward others with whom one does not identify in any obvious sense' (Sen, 2006, p.23). Bharati finds herself in a situation where she is expected to behave in a certain way and fulfil demands of the time. She lives in the age when grassroots conscientization and mobilization takes place in India and 'such process engages people in making sense of their worlds, their relationships, their assumptions, beliefs, practices, and values, while questioning that which they have come to take for granted, with potentially transformatory effects' (Batliwala, 1993; Kabeer, 1994). However, Narayan does not allow Bharati to question the existing paradigms and thus fails to focus on the individuality of Bharati. Moore (2001) states that challenging a tendency is the discourse of the day and this tendency of challenging norms is missing in the character of Bharati who is believed to be a crocus of an ideal woman (p.321-329). She has no share in power politics and her venture does not challenge the existing power structure that sustains inequitable gender relations. Bharati does not even get the equality of opportunity and accepts life as it is. Her task as a freedom fighter is nothing but a mere extension of her familial duty. More so, the task that a woman performs is so sacred and done with so much love, care, and affection that it cannot possibly be put in the realm of paid workforce. She never questions her subjugation. Bharati talks a great deal about Gandhiji and India, but when asked from where she has learnt all this, she simply replies, "from wise men". Bharati collects money and takes care of Gandhiji's needs. She herself admits, "I attend to Mahatma-ji's needs" (p.59). She is a master spinner who wins prizes in a Khadi competition and teaches people spinning. She also attends to visitors and takes good care of orphan children:

She was always attending on children, changing one's dress, combing another's hair, engaging another group in dance or play, and continuously talking to them; besides this, she had a great deal to say to a lot of miscellaneous men and women who came in search for her. Hers was a full time occupation. She gave the children a wash, fed them, put them to sleep on mats in various sheds, drew their blankets over them, said something to each one of them, and finally came back to her own room, sat down on her cot and stretched her arms (p.241).

For this reason, Gandhi crowns her with the name 'mother', which is a traditional certification of Indian womanhood. Gandhiji says, "I hope your children are flourishing. You are a mother of thirty already. What a blessing" (p.250). In the words of Swami Vivekananda, 'The ideal of womanhood in India is motherhood - the marvelous, unselfish, all suffering, ever-forgiving mother' (Vivekananda, 1900, p.10). To render it in the words of Rehana

Ghadijally, 'In a patriarchal culture, what we get is a masculinist definition of ideals and images of women' (Ghadijally, 1988). Since discrimination against a woman is weaved so intricately in the fabric of social customs and traditions and it is done with so much love and care, she hardly thinks that the task that has been assigned to her is demeaning and therefore, not acceptable. Luce Irigaray aptly argues, 'When women's movements challenge the forms and nature of political life, the contemporary of powers and power relations, they are in fact working toward a modification of women's status. On the other hand, when these same movements aim simply for a change in the distribution of power, leaving intact the power structure itself, then they are resubjecting themselves, deliberately or not, to a phallogocentric order' (Luce, 1985, p.81).

The cultural, economic, and sociopolitical determinants that produce discrimination against a woman is conspicuous in the very beginning of the novel. According to Simone- de- Beauvoir, the central project for both men and women is to transcend the natural limits of being human, but they have different relationships to it and this sexual dichotomy is evident right from the beginning in *Waiting for the Mahatma* (Beauvoir, 1952). The novel begins with the sentence, 'His mother who died delivering him and his father who was killed in Mesopotamia, might have been figures in a legend as far as Srirama was concerned' (p.5). Since the beginning of this novel, it is evident that Narayan's patriarchal mindset does not allow him to come out of the world of binary oppositions when he presents two distinct arenas for two different sexes. Bharati is restricted from enacting her independence because of this sexual dichotomy. Hence, 'natural difference' is used to restrict her to limited roles and spaces. She is unable to have effective and pragmatic interventions in the public sphere. Her movement is further restricted and controlled by 'Chalak' who decides the visiting hours for her and also the kind of people she should visit. 'Chalak' symbolizes Jeremy Bentham's 'panopticon' (Miller, 1987). Michel Foucault, a French philosopher, dubs the panopticon as 'the eye of power' and uses the panopticon as a way to illustrate how the proclivity of disciplinary societies subjugates its citizens. According to him, discipline is viewed as a kind of power which infiltrates the very body and psyche of the individual and transforms it into a malleable and obedient subject. It produces a specific type of sexuality that conforms and propels the functioning of the entire system of domination (Foucault, 1979, p.200-201). Bharati is good to the extent that she believes her obedience will make her ethical without ever realizing the fact that her automaton conformity shows the lack of courage in her personality. She is certainly a part of this social system of domination and one who rather naively takes pride in being dominated, which is quite evident in her exchange with Sriram:

I am practicing kindness, otherwise I should not be speaking to you at all. If I didn't want to be kind to you, I wouldn't have gone in and taken my *Chalak's* permission and come right away here. We must have permission to talk to people at this hour. There is such a thing as discipline in every camp. Don't imagine that because it is Mahatmaji's camp, it is without any discipline (p.57).

Bharati and Sriram, the protagonist of the novel, seem to enjoy each other's company. She revels in when he caresses her, but at the same time never encourages him and rather grows angry at his advances and admonishes him: "This is enough to irritate even the Mahatma. Now what will he think of me if he realizes I am encouraging a fellow like you to hang about the place, a fellow whom I have not known even for a full day yet" (p.71-2). Why is Bharati's behavior so ambivalent? Luce Irigaray formulates the possible reasons behind such ambivalent behavior of a woman when she says: 'Woman, in this sexual imaginary, is only more or less an obliging prop for the enactment of man's fantasies. That she may find pleasure there in that role, by proxy, is possible, even certain. But such pleasure is above all a masochistic prostitution of her body to a desire that is not her own, and it leaves her in a familiar state of dependency upon man. Not knowing what she wants, ready for anything, even asking for more, so long as he will "take" her as his "object" when he seeks his own pleasure. Thus she will not say what she herself wants; moreover, she does not know, or no longer knows what she wants' (Irigaray, 1985, p.25). She further says, 'Woman's desire would not be expected to speak the same language as man's; woman's desire has doubtless been submerged by the logic that has dominated the West since the time of the Greeks' (Irigaray, 1985, p.25). Bharati wants to marry Sriram only if Gandhi permits her, and therefore she exhibits the typical trait of a traditional woman who desires nothing and at the same time everything. She is undoubtedly the other in herself. On the other hand, when Sriram plans to marry Bharati, he never bothers to seek the permission of his grandmother who has brought him up and avowedly tells everyone about his love. He does not even hesitate to confess his love for Bharati before Gandhi: "I like to be where Bharati is" (p.70). When Gandhiji asks about her consent to marry Sriram, she bows her head and simply fidgets. Gandhiji says, "Ah, that is the sign of a dutiful bride" (p.252). Mary Ellman in *Thinking about Woman* rightly argues that, 'when men are searching for the truth, women are content with lies, but when men are searching for diversion of variety, women counter with their stultifying respect for immediate duty' (Ellman, 1968, p.93-94).

Bharati emulates the path of Savitri, a female protagonist in Raja Rao's novel *The Serpent and the Rope*, who 'rejoices in the rejoicing of others' (Rao, 2003, p.369), and achieves the mark of female adulthood, marriage, and

secures her future with a man. She has to go through various trials and invariably passes all of them before being adjudged worthy of marrying the protagonist of the novel, Sriram. Throughout the novel, she proves that she is a virtuous woman and is as untouched and uncorrupted as a girl who has never crossed the four walls. In the end, she retreats to the four walls because her work as a freedom fighter is over after independence and she is all set to reach her next goal in life, which is to be a virtuous wife of Sriram. Wollstonecraft tries to persuade women about their existential reality while addressing the women whose final goal is to get married and settle down: 'I wish to persuade women to endeavor to acquire strength, both of mind and body, and to convince them that the soft phrase, susceptibility of heart, delicacy of sentiment, and refinement of taste are almost synonymous with the epithets of weakness, and that those beings who are always objects of pity and that kind of love, which has been termed its sister, will soon become objects of contempt' (Wollstonecraft, 1983).

A woman exists only to be acted upon by men as a sensual object irrespective of her character, orientation, mood, and interest. She is invariably observed as an object of 'male gaze'. In spite of his best effort not to be a sexist, Narayan could not restrain himself from depicting Bharati along the same lines. The whole novel is replete with Sriram's observations of Bharati's physical appearance while all we know about Sriram's appearance is that he is of medium height. Sriram feels thrilled when she comes close to him, he ogles her, measures her body, and her figure arouses wild emotions in him. This could perceptibly be felt by the following statements made by Sriram:

What a dangerous thing for such a beauty to be about
(p.23).

Whether it was the wearer who was enriching the cloth
or whether the material was good in itself (p.31).

She had the lightening-like motion of a dancer, again
the sort of pirouetting movement that she had adopted
while carrying off other people's coins in a jingling box
(p.56).

He struggled in the grips of unholy thoughts when she
stooped over him, held his hand, and taught him the
tricks. He concentrated until his mind was benumbed
with the half whispering movement of spinning wheel.
His fingers ached with holding a vibrant ever-growing
thread, and his eyes smarted (p.98).

He could see her left breast moving under her white
Khaddar *Sari*. She seemed to be unaware of the feelings
she was rousing in him (p.131).

On the one hand, Narayan epitomizes woman as a sex symbol with such sensuous descriptions and cleverly adds to the interest of the novel and on the other hand, emphasizes the sanctity of her virginity and chastity

Symbolic devices such as the attribution of defilement make women insecure, diffident and portray them as inferior objects. Bharati says, “Mahatmaji had advised women as a last resort to take their lives with their own hands rather than surrender their honor. There was no sense of fear when Mahatmaji was. But...if any unexpected thing happened, I was always prepared to end my life” (p.245). Bharati casts out her fear and steps out of the four walls. At the same time, her task is to resurrect the whole body, which she must preserve, even to the extent of killing herself. Committing suicide after being raped is believed to be an act of courage, bravery, and reverence, rather than punishing perpetrators. Rajinder Singh Bedi beautifully presents the agony of a rape victim in his short story ‘Lajwanti’ (Kumar, 2015, p.60). The female protagonist of this story is Lajwanti who is a victim of rape. She and other victims are rebuked, chastised, and frowned upon by their own people and they brand them as ‘cowards’ for clinging to life so tenaciously. They never realize how much courage they possess just to survive. Virginia Woolf (2016) rightly points out: ‘...chastity may be a fetish invented by certain societies for unknown reasons- but were nonetheless inevitable. Chastity had then, it has even now a religious importance in a woman’s life, and has so wrapped itself round with nerves and instincts that to cut it free and bring it to the light of day demands courage of the rarest’(p.54).

Dr. D.V.Vijayalakshmi observes that ‘Bharati, the heroine of *Waiting for the Mahatma* is a sensible Malgudi Portia who turned her Bassanio (Sriram) from a mere irresponsible romantic hero to a self-disciplined leader capable of sacrifice, altruism, and charity’ (Malgudi Women, 1984, p.41). Nevertheless, Bharati does not bring any kind of transformation in Sriram’s character. In psychological terminology, ‘transformation’ is taken to mean a deep change in the existing personality structure. Sriram’s personality remains the same throughout the novel. Besides being the lover of Bharati, Sriram is involved in other activities and roles such as painting the walls, working with Jagdish in his calamitous schemes, and going to jail. Narayan is pretty sure that his character Sriram cannot afford to be passive. Therefore, he must have different shades to display and different roles to play because if his male character were presented otherwise, his novel would be incredibly impoverished. Virginia Woolf (2016) has pinpointed, ‘Suppose, for instance, that men were only represented in literature as the lovers of women and were never the friends of men, soldiers, thinkers, dreamers; how few parts in the plays of Shakespeare could be allotted to them; how literature would suffer!’ (p.88) His actions, whether constructive or destructive, are solely for the purpose of having Bharati as his wife. His yearning for a relationship with

Bharati has motivated him to do whatever he does, which is evident from his statements like, “if she had married me, I should probably not have died or something like that” (p.155). He wishes “Britain would leave India, so that he might return to Kabir Street and live in peace with Bharati and Granny” (p.162). Furthermore, Sriram’s patriarchal mindset is reflected in the statement that he utters towards the end of the novel: “Trust. Who wants her trust? I only want her” (p.241). Bharati also acknowledges that Sriram has not changed a bit when he puts his arm on her shoulder: ‘What a strange man! She cried. You have not changed at all’ (p.242). Setting a goal to marry Bharati, waiting for five long years thinking of nothing else and working single-mindedly towards one single objective, Sriram displays an incredible amount of tenacity and acts with the confidence of one who knows his destination very well. He is seen as a man who knows how to rule over one’s own self and therefore wins the scrimmage to have Bharati as his wife.

Narayan states in *My Days*, ‘I wish to attack the tyranny of love and see if life could offer other values than the man-woman relationship to a writer’ (Narayan, 2001, p.119). In spite of his genuine effort to create his character Bharati outside the realm of man-woman relationships, he could not cross the boundary of patriarchal set up. Thus, all he could do is assign his character Bharati a role that is certainly not ideal. Although Narayan does not reiterate the old hierarchy set by gender, he tries to define his character Bharati in relation to values rather than overtly patriarchal ones of male domination and female subordination. Nonetheless, in the whole process, whether consciously or unconsciously, he imposes on her his own brands of femininity and betrays his limitations. He tries hard to be sincere in his feelings for her and despite all his talk on women’s rights, he falls within the trap of unconscious bias and reinforces many of the old patterns and paradigms in a different way. Bharati is portrayed not as an ideal Indian woman, but as a constituted fictitious creature that never exhibits a mind of her own. She possesses values in deference to the opinion of others. This is on account of the affinities and love that she gets from the people around her, and she aspires for excellence by audaciously acknowledging the limitations of her sex.

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Occupation des Zones à Risques à San-Pedro (Côte D'ivoire): Entre Laxisme des Autorités et Insouciance des Populations

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Résumé

Inscrite dans les Objectifs de Développement Durable, la question de la gouvernance des villes est au cœur de nombreuses préoccupations au niveau mondial. Les défis à la gouvernance sont nombreux et se présentent aussi en termes d'accès au logement. Dans les pays en développement, avoir un logement décent dans une zone moins exposée aux risques naturels est préoccupant. En Côte d'Ivoire, notamment à Abidjan, on enregistre chaque année des glissements de terrain, des éboulements, des inondations entraînant souvent des pertes en vies humaines. San-Pedro, ville située au sud-ouest de la Côte d'Ivoire n'échappe pas à cette réalité. Cette étude vise à analyser les facteurs de l'occupation des zones à risques dans la ville de San-Pedro en vue d'une meilleure planification de l'espace. Pour conduire l'étude, la démarche méthodologique utilisée prend en compte la recherche documentaire, l'interview auprès des gestionnaires du foncier, l'enquête par questionnaire adressée aux chefs de ménage et l'usage des techniques de télédétection pour le traitement des images sentinelles. Les résultats ont relevé que les basfonds occupent 72% de la superficie totale de la ville dont 60% sont bâtis. Ensuite, l'occupation des zones à risques s'explique par les contraintes du milieu physique, le laxisme des pouvoirs publics et l'insouciance des populations, car 51,53% perçoivent le risque très grave contre 14,61% qui ne perçoivent aucun risque. Enfin, l'occupation des zones à risques induit des destructions des

habitations, des documents administratifs et des pertes en vies humaines. Les pouvoirs publics devraient désormais déguerpir les populations occupant les zones à risques..

Mots clés: Occupation du sol, Côte d'Ivoire, risque naturel, laxisme, insouciance

Occupation of Risk Areas in San-Pedro (Ivory Coast): between Laxity of the Authorities and Carelessness of the Population

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Abstract

The issue of urban governance, which is included in the Sustainable Development Goals, is at the heart of many concerns at the global level. The governance challenges are numerous and arise in terms of access to housing. In developing countries, having a decent home in an area less exposed to natural hazards is a concern. In Côte d'Ivoire, particularly in Abidjan, landslides, rockslides, and floods are recorded yearly, often resulting in loss of life. San-Pedro, a city located southwest of Côte d'Ivoire, is no exception to this reality. This study aims to analyze the factors of the occupation of risk zones in the city of San-Pedro with a view to better spatial planning. The methodological approach used to conduct the study includes documentary research, interviews with land managers, a questionnaire survey addressed to heads of households, and the use of remote sensing techniques for processing sentinel images. The results showed that the lowlands occupy 72% of the city's total area, 60% of which is built-up. Then, the occupation of risk areas is explained by the constraints of the physical environment, the laxity of the public authorities, and the carelessness of the population, as 51.53% perceive the risk as very serious against 14.61% who perceive no risk. Finally, the occupation of risk zones leads to the destruction of homes, administrative documents, and loss of human life. The public authorities should now evacuate the populations occupying the risk zones.

Keywords: Land use, Côte d'Ivoire, natural hazard, laxity, carelessness

Introduction

Le concept de développement durable tient compte de la reconnaissance de l'environnement comme élément de développement (Ouoba et al., 2019). Dès lors, l'occupation des zones à risques par les populations est devenue une préoccupation pour la gouvernance urbaine au regard de l'intensification des dégâts qu'elle engendre dans les villes. Les inondations constituent les aléas naturels les plus fréquents et les plus dommageables dans le monde car ayant représentées 43% des catastrophes naturelles entre 1994 et 2013 et touchées près de 2,5 milliards de personnes (Banque Mondiale, 2017). En 2020, selon la même source, 1,47 milliard de personnes étaient encore exposées à un risque d'inondation et plus d'un tiers d'entre elles à des catastrophes aux effets dévastateurs. Les inondations urbaines constituent alors un frein majeur pour le développement et mettent en danger les populations, notamment les résidents des villes en rapide expansion des pays en développement (Jha et al., 2012). En Afrique de l'ouest par exemple, la vulnérabilité urbaine face aux inondations demeure élevée (Wallez L., 2010). La Côte d'Ivoire n'est pas épargnée par ces catastrophes dramatiques. Dans la ville d'Abidjan par exemple, les inondations survenues les 18 et 19 juin 2018 ont occasionné la mort de 18 personnes et causé des dégâts sur les infrastructures économiques et sociales dans au moins cinq communes urbaines d'Abidjan (Marti et al., 2019).

San-Pedro, ville nouvelle située au sud-ouest du pays est aussi victime des effets néfastes des aléas naturels liés à l'occupation des zones à risques. Second pôle économique de la Côte d'Ivoire après la ville d'Abidjan en raison de la présence d'un port et de nombreuses unités industrielles, San-Pedro dispose des zones non aedificandi sur lesquelles des personnes se sont installées. Elles occupent des espaces à risques d'inondation et d'érosion. Pourtant, au lendemain de l'indépendance en 1960, le gouvernement ivoirien a entrepris un certain nombre d'actions dans le but de faciliter l'accès des populations ivoiriennes à des logements décentes à travers la mise en œuvre d'outils de planification et de gestion urbaine, la restructuration des quartiers précaires et la production de logements sociaux et économiques (Marti et al, 2019). Ensuite, la création par le décret n° 2011-482 du 28 décembre 2011 de l'Office National de l'Assainissement et du Drainage (ONAD) avec pour mission de développer à l'échelle nationale une expertise technique en assainissement. Puis, depuis 2012, un programme présidentiel de construction de logements sociaux et économiques porte sur la construction de 150 000 logements entre 2016 et 2020 destinés aux populations économiquement faibles (Marti et al, 2019).

De manière spécifique, la ville de San-Pedro pour son développement harmonieux a bénéficié de plusieurs Plans d'Urbanisme. Malgré tous ces efforts, les populations continuent de s'installer dans les zones à risques

d'inondation et d'érosion subissant les effets impitoyables des aléas naturels. Certaines sont installées sur les sommets des collines quand d'autres s'installent dans des basfonds. La question qui fonde cette recherche est pourquoi, malgré les efforts consentis par l'État et les autorités locales, l'occupation des zones à risques se poursuit dans la ville de San-Pedro ? Le problème soulevé est celui de l'installation des populations dans les zones à risques de la ville de San-Pedro. L'objectif visé par l'étude est d'analyser les facteurs de l'occupation des zones à risques dans la ville de San-Pedro. Pour mener à bien l'étude, nous allons faire le diagnostic des zones à risques dans la ville de San-Pedro, ensuite, déterminer les facteurs explicatifs de l'occupation des zones à risques dans la ville de San-Pedro. Enfin, analyser les effets induits de l'occupation des zones à risques. Cette étude est utile car elle est une contribution à une meilleure planification de l'espace urbain africain en général et celui de San-Pedro en Côte d'Ivoire en particulier.

1. Méthodologie

1.1. Présentation de la zone d'étude

La ville de San-Pedro se situe au sud-ouest de la Côte-d'Ivoire. San-Pedro est localisée au bord de l'océan Atlantique sur le golfe de Guinée à 348 km de la ville d'Abidjan, la capitale économique de la Côte d'Ivoire à laquelle elle est reliée par une route « la côtière » tracée depuis les années 1990 (Figure 1).

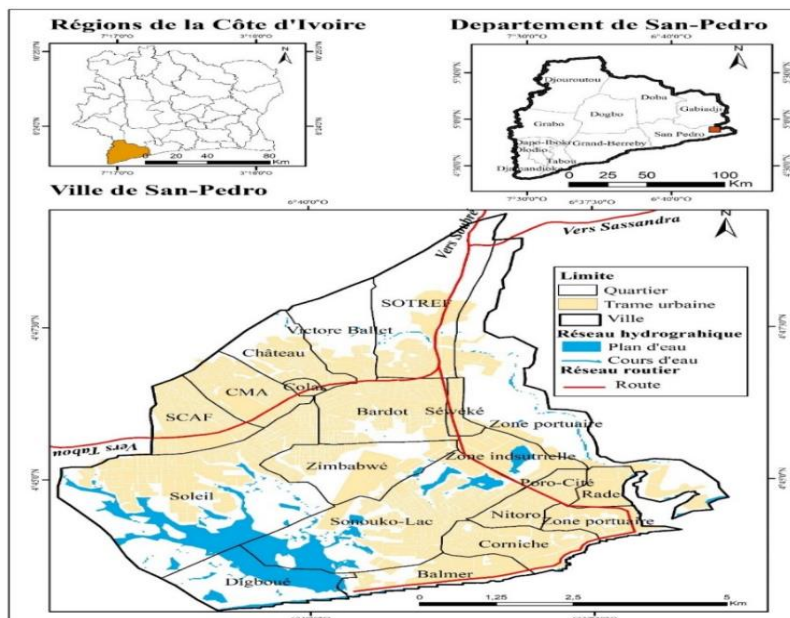


Figure 1. Localisation de la zone d'étude
Source : INS, 2014

San-Pedro appartient à la région de San-Pedro. La ville s'étend sur une superficie de 662,21 Km² en 2022 (Direction Régionale du Ministère du Logement, de la Construction et de l'Urbanisme, 2022). La population en 2021 est de 390 654 habitants (RGPH-INS, 2021), soit une densité de population de 590 habitants/km². San-Pedro est une ville constituée de dix-neuf (19) quartiers regroupés en deux grands secteurs. Le secteur nord regroupe les quartiers évolutifs et de bas standing pendant que celui du sud est constitué de quartiers de moyen et haut standing. En outre, San-Pedro est facilement accessible, car reliée par une voie nationale au nord (San-Pedro-Soubéré) et une voie au sud (la côtière) reliant la ville à Abidjan. La ville de San-Pedro est limitée au nord par la Sous-préfecture de Gabéagui, à l'ouest par la Sous-préfecture de de Grand-Béréby, à l'est par la celle de Sassandra et au sud par l'Océan atlantique.

1.2. Collecte des données

La collecte des données a pris en compte l'observation directe de terrain et les entretiens. L'observation directe a consisté à parcourir les quartiers de la ville pour faire des visites de terrain en vue d'apprécier l'état environnemental de San Pedro et les comportements de sa population. Lors de cette phase, des prises de vue ont été effectuées pour montrer l'état de l'occupation des zones à risques de la ville. Ensuite, d'autres entretiens ont été menés auprès des structures déconcentrées, notamment la direction régionale du ministère de la Construction, du Logement et de l'Urbanisme de San-Pedro, pour comprendre les facteurs à l'origine de l'occupation des zones à risques. D'autres entretiens ont été menés auprès des structures décentralisées comme la direction du service technique de la Mairie en vue de comprendre la gestion de l'espace urbain et les facteurs à l'origine des aléas naturels. Des cartes pédologiques au 1/70 500 fournies par le Programme pour l'aménagement de la Région du Sud/Ouest (ARSO, 1970) ont permis d'apprécier les différents types de sol. Des séries chronologiques de hauteurs de pluies journalières, mensuelles et annuelles de 1960 à 2020 provenant de la station de Sassandra et San-Pedro ont été nécessaires pour montrer la variabilité pluviométrique de la ville. Celles-ci ont été fournies par la Société d'Exploitation et de Développement Aéroportuaire, Aéronautique et Météorologique (SODEXAM). Les données démographiques du recensement de 2014 fournies par l'Institut National de la Statistique (INS) ont permis d'apprécier la répartition de la population, des bâtis et des ménages. Toutes ces données ont permis de faire un diagnostic des zones à risques dans la ville de San-Pedro. De plus, des enquêtes par questionnaires ont été menées auprès d'un échantillon de chefs de ménage en vue de comprendre les facteurs d'occupation des zones à risques.

1.3. Échantillonnage

La détermination de l'échantillon représentatif des ménages dans les quartiers à enquêter a été faite à l'aide de l'utilisation des données du RGPH de 2014. À cet effet, après avoir additionné les effectifs des ménages dans les quartiers à enquêter, le résultat obtenu est un effectif de 25 117 ménages représentant la population mère. La taille de l'échantillon a été définie en s'appuyant sur la formule de (Gumuchian et al., 2000).

$$n = \frac{Z^2(PQ)N}{(N-1) + Z^2(PQ)}$$

n : taille de l'échantillon ;

N : taille de la population mère ;

Z : coefficient de marge (déterminé à partir du seuil de confiance) ;

e : marge d'erreur ;

P = Proportion de ménage supposés avoir les caractères recherchés. Cette proportion variant entre 0,0 et 1 est une probabilité d'occurrence d'un événement. Dans le cas où l'on ne dispose d'aucune valeur de cette proportion, celle-ci est fixé à 50% (0,5) ;

$$Q : Q=1-P$$

Pour l'application de la formule, nous pouvons présumer que si P= 0,5 donc Q= 0,5 ; a un niveau de confiance de 95 %, Z= 1,96 et la marge d'erreur e= 0,05.

Avec N= 25117

❖ Appliquons la formule avec N= :

$$n=(1,96)^2 (0,5*0,5) 25 117$$

$$n = 378 (0,05)^2 (25 117 -1) + (1,96)^2 (0,5*0,5)$$

n = 378, 39 soit 378 personnes à enquêter

Ainsi, 378 personnes identifiées dans neuf (9) quartiers de la ville de San-Pedro ont été interrogées. Le choix des quartiers s'est fait en fonction de la date de création du quartier, le standing et l'effectif des ménages (tableau 1).

Quartier enquêté	Période de création	Standing du quartier	Nombre total de ménages	Nombre de ménages enquêté
Château d'eau	Après l'ARSO	Bas standing	942	14
Cité-Poro	Pendant l'ARSO	Haut standing	1040	16
Colas	Après l'ARSO	Bas standing	1401	21
Grand Bardot	Pendant l'ARSO	Bas standing	10271	154
Lac ou Sonouko	Pendant l'ARSO	Moyen standing	1743	26
Séwéké	Pendant l'ARSO	Économique	1651	25
SOTREF	Après l'ARSO	Bas standing	3220	49
Victor Ballet	Après l'ARSO	Bas standing	1322	20
Zimbabwe	Après l'ARSO	Bas standing	3529	53
Total	-	-	25 117	378

Tableau 1. Choix des quartiers et ménages enquêtés

Source : INS, 2014

Le tableau 1 présente les quartiers et le nombre de ménages enquêtés. Le choix des quartiers s'est fait en fonction du standing, de la date de création (pendant ou après l'ARSO) et de l'effectif des chefs de ménage. Concernant le choix des ménages enquêtés, l'étude s'est appuyée sur la configuration et la localisation des lieux de résidence des enquêtés (fond de vallée, versant de colline et remblai).

1.4. Traitement des Données

La variété du type de données nécessaires pour la réalisation de cette étude a exigé l'utilisation de plusieurs logiciels pour leurs traitements. Le traitement d'image satellitaire Sentinel-2 S2A 2021 de la scène 197-057 du 01 Décembre 2021 a permis de classifier 1238 pixels dont les précisions individuelles varient entre 53,84 et 100%. Ce qui a permis d'obtenir la cartographie de l'occupation du sol. Le traitement de Modèle Numérique de Terrain (MNT) a été nécessaire pour l'extraction des détails de la morphologie du terrain, du réseau hydrographique et de la densité du drainage. Le Géo référencement et la numérisation de la carte de pédologie ont été réalisés grâce au logiciel Qgis 3.12. Le logiciel ENVI 5.1 a aussi servi pour obtenir l'occupation du sol. Le logiciel ARCGIS 10.2 a été utilisé pour la réalisation de la carte des pentes, du réseau hydrographique et l'analyse multicritère. Les coordonnées géographiques ont été relevées à l'aide d'un GPS (Global Positioning System). Les traitements analytiques ont été réalisés à partir de la comparaison des éléments constitutifs de l'espace urbain permettant de mettre en évidence les différents types d'occupation du sol. La combinaison des cartes de susceptibilité d'aléas d'inondation, d'érosion et de vulnérabilité a permis d'obtenir les cartes de risques d'inondation et d'érosion dans la ville de San-Pedro. La cartographie de la susceptibilité d'érosion

résulte de la combinaison des facteurs les plus représentatifs intervenant dans les phénomènes érosifs (la pente, la protection du sol à travers le couvert végétal et les types de sols. Les données quantitatives ont été traitées à partir des logiciels comme, Microsoft Excel et SPSS. Ce qui a permis d'obtenir les différentes figures et certains tableaux utilisés dans ce travail.

2. Résultats

2.1. San-Pedro, une ville exposée à d'importants risques naturels

Dans la ville de San-Pedro, deux risques naturels majeurs peuvent être observés. Ce sont : les risques d'inondation et les risques d'érosion. Le relief relativement plat (variant entre -2 et 80 m) et la pédologie dominée par un sol de type alluvionnaire sont des facteurs de susceptibilité d'inondation élevée (Figure 2).

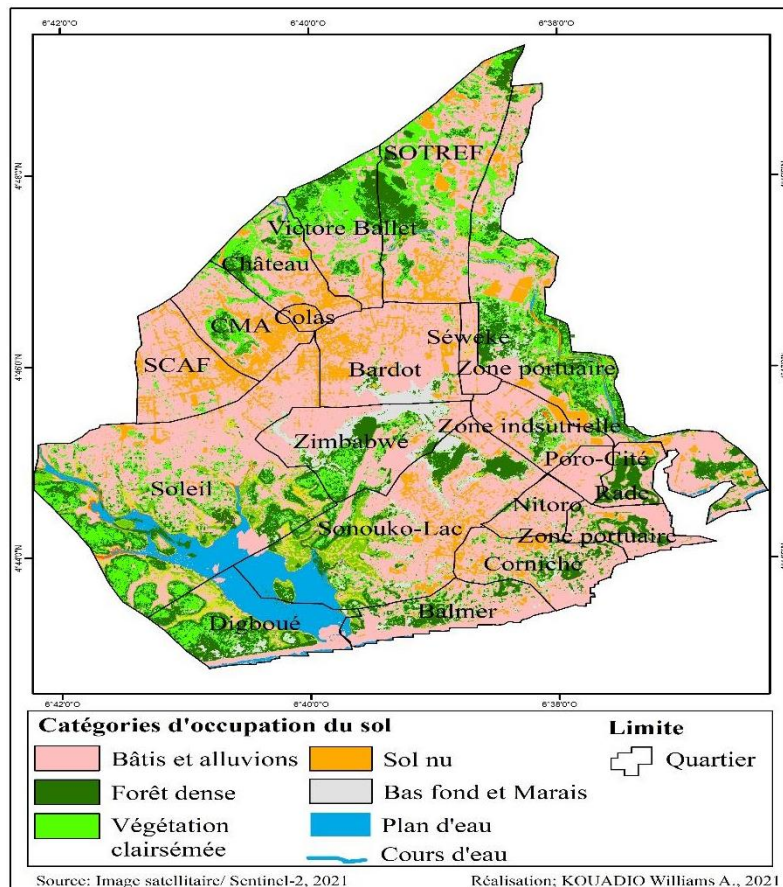


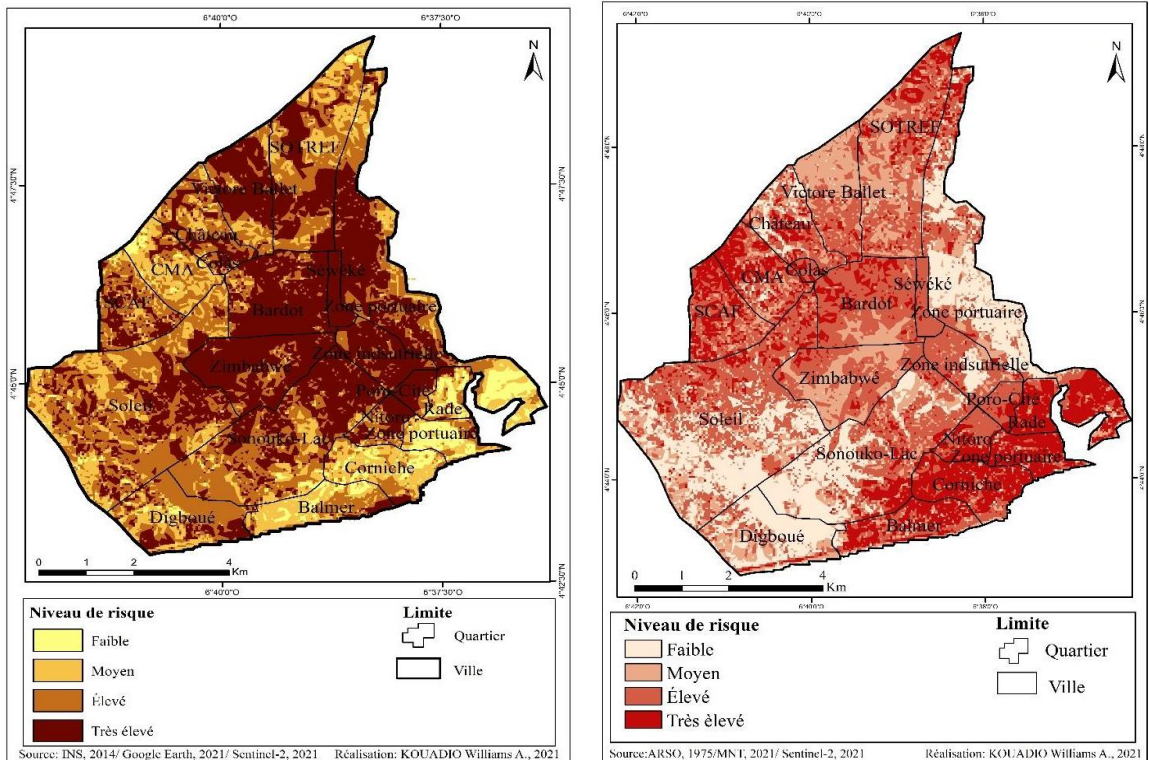
Figure 2. Mode d'occupation du sol dans la ville de San-Pedro

La figure 2 indique que sol de type alluvionnaire occupe 67% de la superficie totale de la ville de San-Pedro et abrite les zones d'occupation humaine. Il s'étend du nord-ouest du quartier Sotref au centre de la ville et

constitue le seul type de sol. Les lits du fleuve San-Pedro et de la lagune Digboué sont constitués de sol alluvionnaire et de sol peu évolué d'apport. Ce type de sol est défavorable au développement de la ville, car regroupe plusieurs bas-fonds et marais. La nappe phréatique est peu profonde et constitue un danger majeur en cas d'inondation. La ville de San-Pedro est limitée au nord-est par la présence d'une butte cuirassée et de sol ferrallitique fortement désaturé sur roche micaschiste. Ce dernier est plus concentré dans les quartiers situés à l'ouest de la ville (Scaf, Cma). La partie sud est dominée par un sol de type ferrallitique sur roche granitique et constitue le cordon littoral. Tous ces éléments pédologiques sont situés sur un substratum géologique composé de Schistes-micaschistes Gneiss. En outre, l'ouverture sur la mer, les pentes abruptes et dénudées que compte la ville sont des facteurs déclencheurs de l'aléa d'érosions. Ces deux aléas combinés aux activités humaines (occupation de sol et densité de population) entraînent des risques d'inondation et des risques d'érosion. La figure 3 permet d'observer la répartition spatiale du risque d'inondation et d'érosion dans la ville de San-Pedro.

Carte A : Répartition spatiale du risque d'inondation

Carte B : Répartition spatiale du risque d'érosion



La carte A montre la répartition spatiale du risque d'inondation. Il ressort de celle-ci que la partie centrale de la ville de San-Pedro est touchée par des risques d'inondation très élevés. Ainsi, chaque année, l'on observe pendant la période des grandes saisons pluvieuses des inondations dans les quartiers situés sur l'ancien remblai mis en place sous l'ARSO lors de la construction de la ville. Par contre, le risque d'inondation élevé est observé dans les espaces situés hors de la zone marécageuse remblayée. Au total, les zones à risques d'inondation élevés sont disséminées sur tout le territoire de la ville. La carte B quant à elle présente les zones à risques d'érosion. L'on observe que les zones à risques d'érosion très élevés se répartissent sur le littoral et dans la partie nord de la ville. Alors que les risques d'érosion élevés sont observés au centre et au nord de la ville.

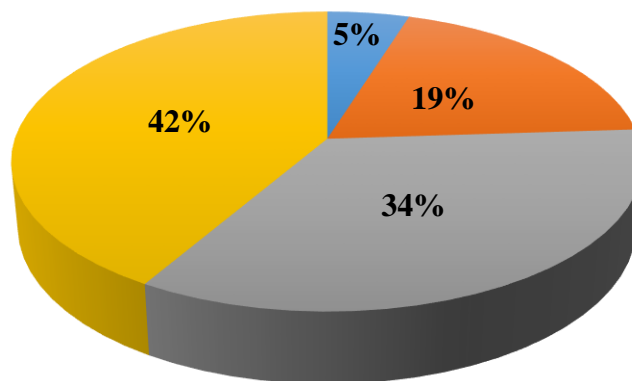
2.2. De nombreux facteurs à l'origine de l'occupation des zones à risques

L'occupation des zones à risques s'explique par plusieurs facteurs. Ce sont : les contraintes du milieu physique, la politique de planification urbaine, le laxisme des autorités locales et l'insouciance des populations.

- *Occupation des zones à risques liée à des contraintes du milieu physique*

La répartition du risque dans la ville de San-Pedro est inégale. Cette situation découle de la morphologie de la ville. La planche de figure 1 permet d'observer la répartition du niveau de risque dans la ville de San-Pedro.

Figure 4 : Répartition du risque d'inondation



■ Faible ■ Moyen ■ Elevé ■ Très élevé

Figure 5 : Répartition du risque d'érosion

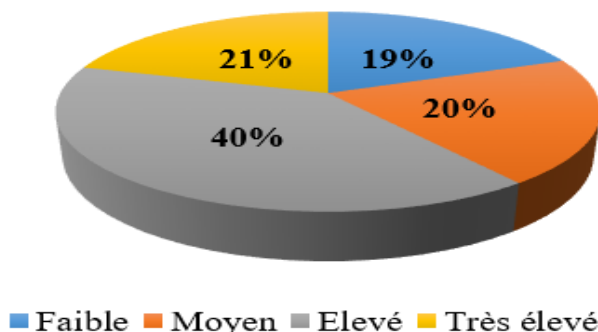


Planche de figure 2 . Répartition du niveau de risque dans la ville de San-Pedro
Sources: ARSO, 1975/ INS, 2014/ STRM, 2020/Sentinel A2S, 2021

La planche de figure 1 présente la répartition des contraintes du milieu physique (inondation et érosion) dans la ville de San-Pedro. La figure 4 indique que sur une superficie totale de la ville estimée à 6 622,1 ha en 2021 (Direction Régionale du Ministère du Logement, de la Construction et de l'Urbanisme, 2021), 42% de celle-ci est soumise à des risques d'inondation très élevés, soit une superficie de 2781,28 ha. Ensuite, 34% de la superficie totale, soit 2251,51 ha sont soumis à des risques élevés d'inondation. Enfin 19%, soit 1258,20 ha sont soumis à un risque d'inondation moyen. Les risques d'inondation élevés s'expliquent par le fait que la ville de San-Pedro a été construite en 1969 sur un remblai qui s'affaisse de plus en plus sous le poids conjugué de la pression démographique, des bâtis, des équipements et des infrastructures. La figure 5 indique que 21% de la superficie de la ville, soit 1390,64 ha sont exposés à des risques d'érosion très élevés et 40%, soit 2648,84 ha soumis à des risques d'érosion élevés.

- ***Déplanification et laxisme des autorités locales, facteurs de l'occupation des zones à risques***

La ville de San-Pedro a connu plusieurs Plans d'Urbanisme Directeur. Le premier a été réalisé par le BNETD en 1995 dans le cadre du Plan National de Développement des Communes Côtières. Le second Plan d'Urbanisme Directeur a été adopté en 2018. En outre, des Plans Directeurs d'Assainissement ont été réalisés en 2009 et en 2015 par Set-Tunisie. Par ailleurs, le Port Autonome de San-Pedro disposait d'un plan de Développement Portuaire et Urbain alliant le développement portuaire et le développement de ladite ville. Tous ces plans ont été précédés du Schéma Directeur initié par l'ARSO en 1969 qui s'étendait sur toute la région Sud-Ouest de la Côte d'Ivoire. Après la dissolution de l'ARSO en 1980, la ville n'a plus connu de programmes d'aménagement jusqu'en 1995. Cette situation couplée à la croissance rapide de la population urbaine a entraîné des

installations anarchiques dans la ville. Par ailleurs, les équipements et les infrastructures n'ont pas suivi l'évolution de la ville (Figure 6).

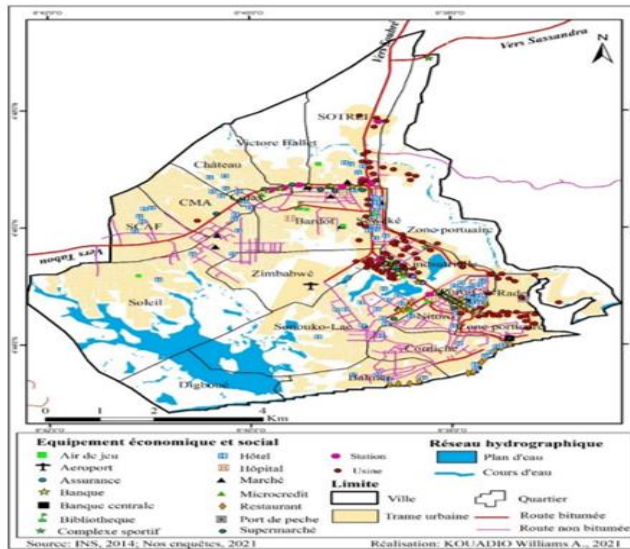


Figure 6. Répartition spatiale des infrastructures et équipements dans la ville de San-Pedro

L'observation de la figure 6 montre que dans la ville de San-Pedro, seulement 3 quartiers sur les 15 existants au recensement de 2014 concentrent la plupart des activités économiques secondaires, tertiaires et les équipements sociaux. Le quartier Zone industrielle situé au Centre-ville dispose à elle seule 42% des unités industrielles de la ville et des services. Poro-Cité situé au sud de la ville abrite les administrations, les banques, les commerces et l'hôpital général de la ville. Puis, le quartier Bardot localisé au centre de la ville abrite le marché central, des agences, des boutiques, des supermarchés et des centres de santé. La concentration des services au centre-ville pousse les employés de ces exerçant dans ces différentes structures situées dans ces quartiers centraux à s'y installer pour minimiser le coût du transport. Toutefois, la pression foncière qui s'ensuit conduit des ménages à se loger dans les zones à risques d'inondation et d'érosion.

- ***Pauvreté et insouciance des populations à l'origine de l'occupation des zones à risques***

Dans la ville de San-Pedro, la pauvreté a contribué à l'installation des populations dans les zones à risques. Selon nos enquêtes, sur un effectif total de 378 chefs de ménage interrogés, 212, soit 56% affirme occuper les zones à risques par manque de moyens financiers. Pendant que, 29% évoque la question de l'héritage et 15% énumère d'autres facteurs, notamment la volonté de se rapprocher de son lieu de travail, l'achat de la parcelle, etc. Cependant,

à l'échelle des quartiers enquêtés, ces raisons se répartissent différemment (Figure 7).

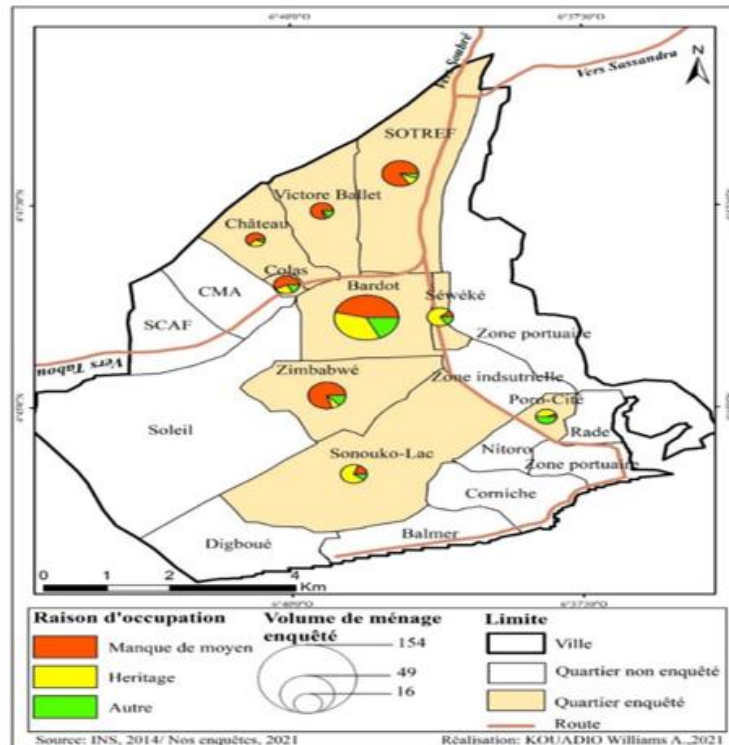


Figure 7. Répartition des raisons d’occupation des zones à risques par quartiers enquêtés de *San-Pedro*

L’observation de la figure 7 montre que le manque de moyen financier est la raison la plus évoquée dans les quartiers Sotref, Victor Ballet, Zimbabwe, Bardot, Château et Colas. Les chefs de ménage ayant évoqué cette raison ont des proportions respectives de 83,52% ; 78,1% ; 80%, 63,43% et 46,1%. Ces quartiers abritent généralement des ouvriers, des pêcheurs, des contractuels et des personnes exerçant dans le domaine de l’informel. Alors qu’au quartier Sonouko-Lac, Poro-Cité et Séwéké, la raison de l’héritage est plus avancée avec 75,3% des chefs de ménage enquêtés au quartier Séwéké, 68,23% à Sonouko-Lac contre 45,7% au quartier Poro-Cité. Toutefois, les chefs de ménage évoquant la raison du manque de moyen sont observés dans ces quartiers, mais à de faibles proportions avec 20,5% pour Sonouko-Lac; 10,4% pour Séwéké et 3,25% au quartier Cité-Poro. Les autres raisons sont faiblement représentées dans tous les quartiers enquêtés. À la pauvreté, s’ajoute l’insouciance des populations au regard des perceptions des ménages sur la notion du risque (Figure 8).

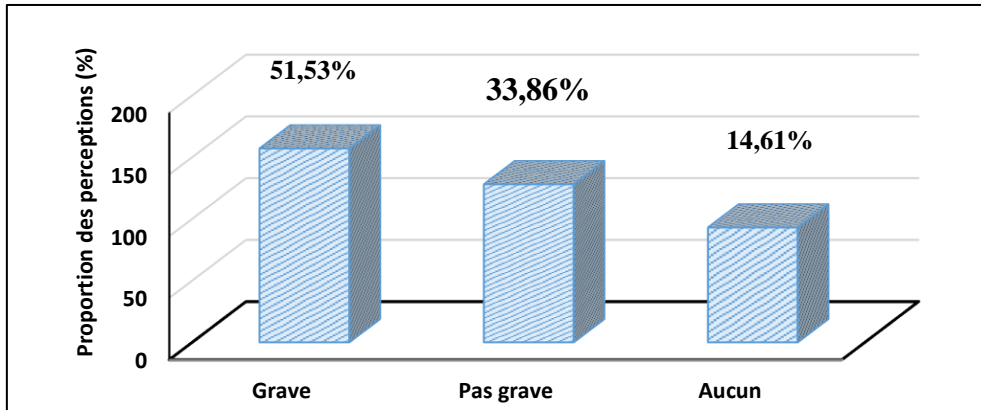


Figure 8. Répartition des perceptions du risque selon les ménages enquêtés à San-Pedro

La figure 8 montre que les chefs de ménage de la ville de San-Pedro perçoivent la notion du risque différemment. La perception du risque varie d'un ménage à un autre en fonction du niveau de revenu, d'instruction et du sexe. En effet, les personnes ayant un niveau de revenus bas préfèrent rester dans ces lieux, malgré les risques auxquels elles sont soumises chaque année. Dans la ville de San-Pedro, 51,53% des chefs de ménage perçoivent le risque auquel, ils s'exposent comme des phénomènes graves. Alors que, 33,86% de ceux-ci affirment que les risques liés aux aléas d'inondation et d'érosion ne sont pas d'une extrême gravité. Cependant, 14,61% soutiennent n'avoir aucune connaissance du risque.

2.3. Les effets induits de l'occupation des zones à risques

L'espace urbain de San-Pedro est exposé à deux aléas naturels majeurs à savoir : les inondations et les érosions. Les aléas liés à l'inondation couvrent 75% de l'espace urbain pendant que les aléas liés à l'érosion concernent 59,8% de la superficie urbaine. Les impacts de ces différents aléas sont d'ordre matériel et humain.

- ***De nombreux dégâts matériels liés aux aléas naturels dans la ville de San-Pedro***

Les dégâts matériels liés aux aléas d'inondation et d'érosion sont essentiellement constitués de destruction des habitations, des clôtures, des appareils électroménagers (télévisions, réfrigérateurs, etc.) et d'autres biens. La figure 9 montre la distribution des types de dégâts enregistrés selon les ménages.

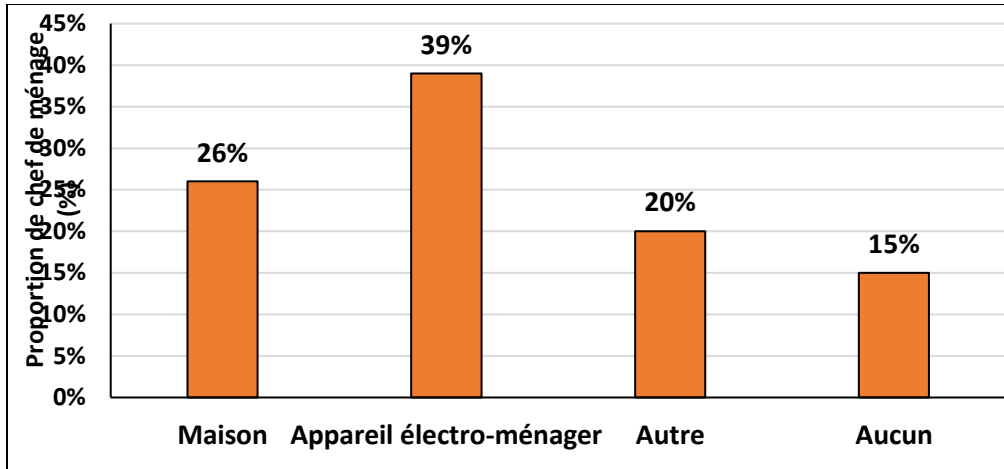


Figure 9. Distribution des dégâts liés aux aléas naturels selon les ménages enquêtés

La figure 9, indique que les dégâts les plus importants liés aux aléas naturels à San-Pedro s’observent surtout au niveau de la destruction des appareils électroménagers. En effet, les enquêtes ont révélées que 39% des chefs de ménage situés dans les basfonds et les lits des cours d’eau ont perdu des biens électroménagers pendant les périodes des crues et de montée des eaux. Ensuite, 26% des chefs de ménage ont vu leurs maisons détruites par les aléas d’inondation et d’érosion (Planche photo 1). Alors que, 20% des chefs de ménage soutiennent avoir perdu d’autres biens tels que les documents administratifs (extrait de naissance, certificat de nationalité, diplôme. etc.). Par contre, 15% d’entre eux n’ont enregistré aucun dégât matériel.

Planche photo 1 : Impacts des aléas naturels sur les biens matériels dans la ville de San-Pedro



Photo 1a : Impact de l’érosion sur un bâti au quartier SOTREF



Photo 1b. Impact des inondations au quartier Sonuko-Lac

Les photos 1a et 1b présentent des bâtiments ayant subi les dégâts des inondations et de l'érosion dans la ville de San-Pedro. Sur la première photo, une maison perchée sur une colline menacée par l'érosion au quartier Sotref est sur le point de s'effondrer. Alors que le bâtiment observé sur la seconde photo, situé au quartier Sonouko-Lac dans un bas-fond a été victime de l'inondation. Les bâtiments qui subissent les aléas naturels sont généralement de types précaires, évolutifs et économiques. En effet, les habitats de type précaire construits en briques de terre, palette de bois et en terre battue sont plus vulnérables à l'eau. De plus, ce type de construction croît de plus en plus dans les zones humides dans le centre-ville et sur les flancs des collines abruptes. Dès lors, les dégâts ne cessent de croître au niveau des populations économiquement faibles, mais à des degrés divers selon les quartiers enquêtés.

- ***Inégale distribution des dégâts selon les quartiers***

Les quartiers enquêtés subissent les effets de l'inondation et de l'érosion. Mais, certains sont moins exposés par rapport aux autres à cause de la morphologie du terrain occupé (Figure 10).

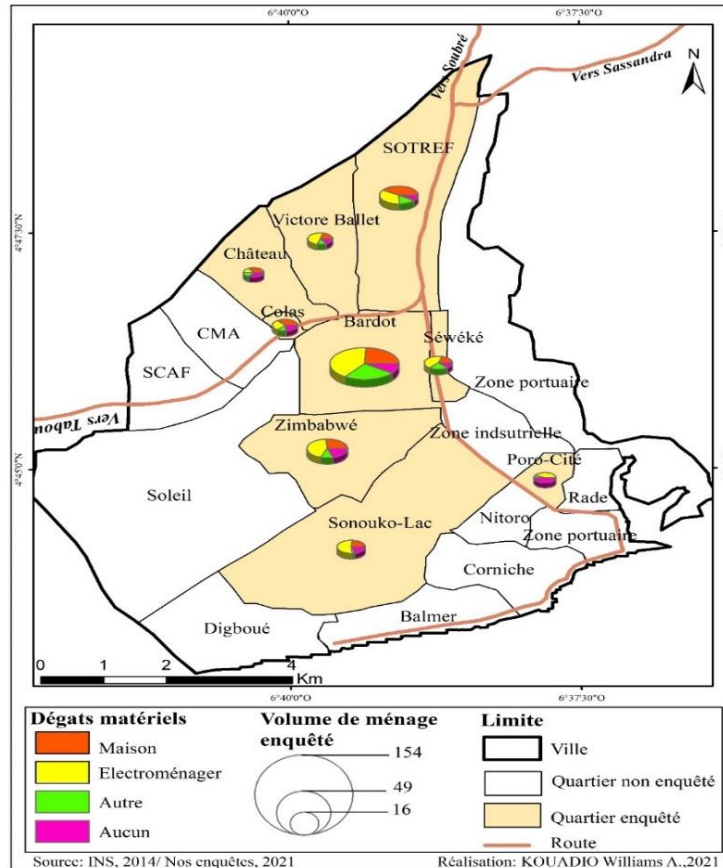


Figure 10 .Répartition spatiale des dégâts due aux aléas naturels à San-Pedro

Selon la figure 10, les appareils électroménagers sont les éléments les plus impactés par les inondations que connaît la ville de San-Pedro. Ils concernent 39% des ménages enquêtés.

À l'échelle des quartiers, plus de 50% des ménages au quartier Sotref, Sonouko-Lac et Victor Ballet ont évoqué la destruction de leurs appareils électroménagers par des inondations. Ensuite, 43,75% des chefs de ménage ont signalé la destruction de leurs appareils électroménagers au quartier Cité-Poro. Enfin, 42,30% des chefs de ménage du quartier Séwéké et 41,51% au quartier Zimbabwe ont signalé des pertes d'appareils électroménagers. Les dégâts les plus coûteux concernent la destruction des maisons. Ce type de dégât a été signifié au niveau de tous les quartiers et touche 26% des chefs de ménage. Cependant, les quartiers les plus touchés sont : Château (38,10%), Colas (35,71%) et Zimbabwe (26,41%). Ces quartiers regroupent en leur sein plusieurs bâtis de type précaire utilisant des matériaux de construction peu commodes faits de briques de terre, de palette de bois et de terre battue. Au quartier Bardot, 24,03% des chefs de ménage vivant dans les basfonds, sur les

lits des cours d'eau non permanents et dans le lit majeur du fleuve San-Pedro ont vu leurs maisons détruites. Il en est de même pour 23,07% des ménages situés au quartier Sonouko-Lac, 20% à Victor Ballet et 19,23% à Séwéké.

D'autres types de dégâts ont été signifiés par les chefs de ménage. Il s'agit de la perte de documents administratifs importants ou autres. Cette catégorie de dégâts a été plus évoquée au quartier Sotref par 30,77% de chefs de ménage, 29,22% à Bardot. Enfin, moins de 15% de chefs de ménage ont affirmé également d'autres types de dégâts au quartier Victor ballet, 14,28% à Château et 13,21% à Zimbabwe. Par ailleurs, les dégâts sont aussi d'ordre humain.

- ***Aléas naturels et dégâts humains à San-Pedro***

En termes de dégâts humains, les inondations sont des aléas qui causent le plus de dégâts dans à San-Pedro. Les dommages peuvent aller des situations bénignes aux plus dramatiques. Ainsi, les dégâts sont situés entre pertes en vies humaines, dommages corporels, disparitions d'hommes et d'autres situations comme les psychoses à l'approche des saisons pluvieuses ou d'un orage (Figure 11).

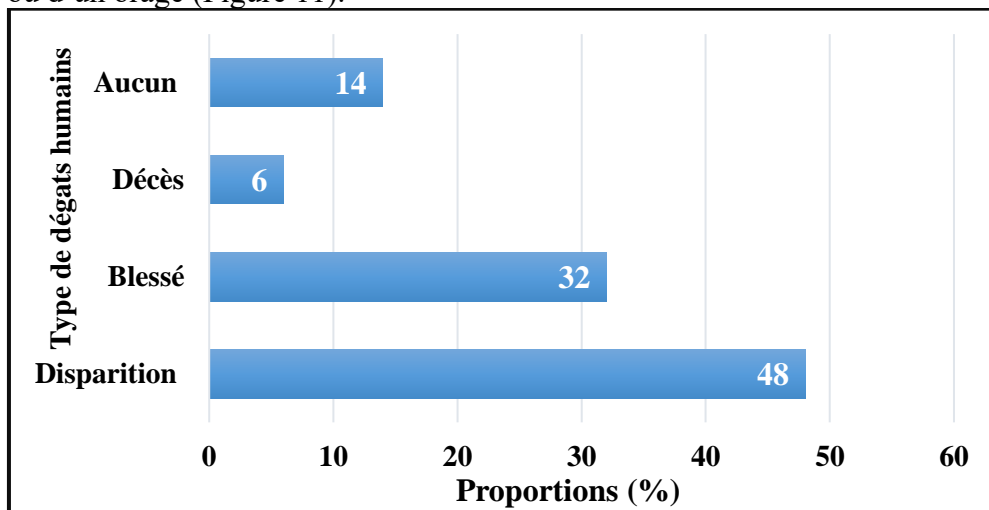


Figure 11. Distribution des dégâts humains dans la ville de San-Pedro

La figure 11 indique que les cas de disparition d'hommes ont été relevés par 48% des chefs de ménage. Ces disparitions concernent les personnes vulnérables à savoir les enfants et les vieillards. Les taux les plus importants s'observent dans les quartiers Sotref, Victor Ballet au nord de la ville et au sud des quartiers Zimbabwe et Bardot. Ensuite, suivent les dommages corporels, évoqués par 32% des chefs de ménage. Ces dommages sont des blessures et des électrocutions du fait de la montée des eaux. Les décès sont les cas les plus dramatiques causés par les inondations. En effet, 6% des chefs de ménage affirment avoir connu des cas de décès liés

directement ou indirectement aux inondations. Ces décès sont généralement des enfants et des nouveaux nés emportés par le courant rapide des cours d'eau ou noyés. À l'opposé, 14% des chefs de ménage situés, surtout au sud de la ville dans les quartiers Poro-Cité et Sonouko-Lac affirment n'avoir subi aucun dommage.

3. Discussion

Les résultats de l'étude ont relevé que San-Pedro est une ville exposée aux aléas naturels. Ensuite, l'occupation des zones à risques résulte de la déplanification, du laxisme des pouvoirs publics et de la pauvreté. Enfin, les effets induits se résument aux dégâts matériels et humains.

3.1. San-Pedro, une ville exposée aux aléas naturels.

La ville de San-Pedro est exposée à deux principaux aléas naturels que sont : les risques d'inondation et d'érosion. Le relief relativement plat et la pédologie dominée par un sol de type alluvionnaire sont des facteurs de susceptibilité d'inondation élevée.

Plusieurs auteurs ayant mené des études sur les risques d'inondation ont abouti au même résultat. Au nombre de ceux-ci figurent Saley et al. (2004) qui ont identifié dans leur étude sur la cartographie des zones à risque d'inondation dans la région semi-montagneuse à l'ouest de la Côte d'Ivoire cinq (5) niveaux de risques (très faible, faible, modéré, fort et très fort). La ville de Man faisant partie de cette région dispose de plusieurs espaces exposés à des risques d'inondation élevés et très élevés impropres à l'urbanisation qui occupent 40% de la superficie totale de la ville (Ouattara, 2018). La situation est similaire dans la sous-préfecture de Kuetinfla où 50% du territoire, soit 17 % du territoire départemental est exposé à un risque d'inondation élevé (N'guessan Bi et al., 2014). Gogbe et al. (2015) ne disent le contraire lorsque dans leurs travaux sur la cartographie des espaces vulnérables aux risques d'inondation ont relevé qu'à San-Pedro, près de 66% du terrain urbain aurait un indice d'imperméabilité élevé. À l'instar de San-Pedro, Abidjan, la capitale politique de la Côte d'Ivoire est aussi confrontée aux aléas naturels car 26% de sa superficie représente des zones à risques d'inondations et d'éboulements où les glissements de terrain sont les principaux risques (Marti et al, 2019). Au Cameroun, la situation est similaire en ce sens que la ville de Yaoundé est aussi exposée à des risques d'inondation où les logements situés dans le bassin versant inondable devraient faire l'objet de destruction. (Zogning, 2017).

3.2. Occupation des zones à risques liée au milieu physique et à la pauvreté

Les résultats de l'étude ont montré que l'occupation des zones à risques d'inondation et d'érosion est favorisée par les contraintes du milieu physique,

l'absence de planification, la pauvreté et surtout l'insouciance des populations face au danger qu'elles courent.

Les résultats sont identiques à ceux obtenus par Werren & Lasri (2014) qui dans leur étude sur les villes marocaines ont attribué l'occupation des zones à risques à la morphologie des sites. Pendant que Jha et al. (2012) et Saley et al. (2014) imputaient l'occupation des zones à risques à l'urbanisation mal contrôlée et aux activités anthropiques. Toutefois, pour Zogning (2017), la recrudescence des inondations de Yaoundé ne s'explique pas uniquement par la croissance urbaine, mais surtout par des lacunes dans la planification en matière d'aménagement urbain. C'est dans cette optique que Sène et al., (2018) ont conclu que l'urbanisation en déphasage avec les normes urbanistiques n'a donné lieu à aucune viabilisation du terrain avant toute installation humaine. Et Barrau et al. (2014) d'ajouter que l'occupation des zones à risques dominée par l'habitat de type précaire est corrélée à une faiblesse des capacités de planification et de gestion urbaine des administrations. Marti et al, (2019) au contraire ont pointé du doigt la pauvreté qui pousse les populations vulnérables à s'installer dans des zones à risques telles que les points bas ou sur les pentes. Ils sont rejoints par Ovono & Pottier, (2019) qui ont indiqué dans leur étude sur le risque inondation dans les petits bassins versants côtiers urbains de Libreville qu'au Gabon, l'extension urbaine rapide, non maîtrisée et soutenue par une forte croissance démographique ont contraint les habitants les moins nantis à occuper les zones inondables. Dans la même veine, Tchokomakwa & Dzalla (2022) pour être plus précis sur l'importance des pauvres dans ces espaces ont indiqué qu'au Cameroun par exemple, 68% des ménages pauvres se sont installés dans les zones à risques du bassin versant du « Grand cours » à cause des terrains peu coûteux.

3.3. Dégâts matériels et humains, principaux effets induits par l'occupation des zones à risques

Les dégâts causés par l'occupation des zones à risques d'inondation et d'érosion dans la ville de San-Pedro se résument en pertes de vies humaines, des disparitions, des destructions des habitats d'infrastructures socio-économiques et des documents administratifs.

Les résultats de l'étude rejoignent ceux de D'ercole et al., (2015) qui ont indiqué que les effets anthropiques directs, notamment les constructions dans les chenaux, les zones marécageuses et inondables, encombrement des lits des cours d'eau à l'origine des inondations. Pour Marti et al. (2019) les conséquences de l'urbanisation non contrôlée, conjuguée à l'aléa naturel sont graves car à l'origine des catastrophes, notamment des pertes en vies humaines, des dégâts matériels importants, le déplacement de personnes et la destruction d'infrastructures socio-économiques. À cela s'ajoutent des ravages, des dégâts économiques et des pertes de vies humaines (Jha et al.,

2012). Dans l'agglomération urbaine de Kumasi au Ghana par exemple, avec une population d'environ 1,6 million d'habitants installée sur le bassin fluvial d'Abobo, les inondations ont eu des répercussions multiples, notamment des bâtiments achevés ou en construction abandonnés, suite à ces catastrophes (Jha et al., 2012). C'est le même son de cloche au Sénégal, notamment à Dakar et à Saint-Louis où les inondations ont poussé des pans de quartiers entiers à déménager (Badameli, 2018). C'est la même situation qui a prévalu à Yaoundé au Cameroun, où Zogning (2017) a dénombré au cours de l'année 2000, 12 inondations causant plus de 70 décès, 88 blessés dans le bassin versant du Mfoundi, 53 disparus, plus de 1124 maisons détruites et des dommages importants causés sur la voirie. Par contre, les conséquences des inondations à Cap Cameroun ont entraîné l'invasion des maisons par les eaux, le pourrissement des piliers de fondation des maisons et la diffusion des maladies épidémiologiques liées à la stagnation des eaux souillées (Mbevo, 2018). À l'échelle mondiale, sur la période de 1998 à 2010, la Banque Mondiale (2017) a estimé les pertes totales causées par aléas naturels à plus de 40 milliards de dollars. Toutefois, dans le District Autonome d'Abidjan, le bilan des pertes des inondations survenues les 18 et 19 juin 2018 est estimé à plus de 18 milliards de FCFA dont 20% représentant les secteurs sociaux (santé et logement) et 57% les infrastructures, notamment les systèmes de drainage Marti et al (2019).

Conclusion

Au terme de cette analyse, l'étude ressort que la ville de San-Pedro est exposée à des aléas naturels, car 76% de la superficie de la ville est soumise à des risques d'érosion et d'inondation. Les facteurs de la poursuite de l'occupation des zones non aedificandi dans les villes et particulièrement à San-Pedro s'expliquent par l'urbanisation accélérée, la déplanification de la ville, le laxisme des autorités locales, la pauvreté et l'insouciance des populations. Cette étude trouve son originalité dans la prise en compte des facteurs qui poussent les populations à poursuivre les installations dans les zones à risques, malgré les sensibilisations et les menaces du gouvernement. Alors que la plupart des études sont focalisées sur les facteurs des inondations dans les villes ainsi que l'évaluation des stratégies mises en place pour lutter contre les risques d'inondation. Le strict respect du nouveau Plan d'Urbanisme Directeur adopté en 2015 pourrait permettre de corriger et maîtriser la croissance de la ville de San-Pedro. Compte tenu de leur ampleur actuelle des dégâts causés par les inondations et érosions, il est urgent de placer la maîtrise du risque de crues et d'inondations urbaines au premier rang des priorités politiques et des stratégies d'intervention de l'État.

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Role of Beliefs in Predicting Smoking Behaviour: a Study of Comparative Optimism in Cameroonian Adolescents

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Abstract

The objective of this study was to examine the influence of comparative optimism on the intention to use tobacco among 244 Cameroonian adolescent students. The sample consisted of girls (n=110) and boys (n=134) aged between 14 and 25 in secondary school. Participants were selected using a purposive sampling technique. The study relied primarily on the theory of planned behaviour to highlight the mechanisms that link beliefs to behavioural intentions. Data were collected from a self-administered composite questionnaire consisting of the comparative optimism scale and the risk-taking scale measuring intention to use tobacco inspired by the theory of planned behaviour. The results obtained after correlation analysis and regression showed that the illusion of vulnerability elicits the intention to use tobacco through attitude ($r = -.141, p < 0.05$), descriptive norms ($r = .204, p < 0.01$), and injunctive norms ($r = .132, p < 0.05$). In addition, the illusion of vulnerability also appears as a predictor of the intention to use tobacco. These results confirm the harmful nature of overly optimistic beliefs about protective behaviours. The implications of the optimism bias for perceived vulnerability are discussed in the light of reference theories and from previous work on the effect of optimistic beliefs on protective behaviour.

Keywords: Comparative optimism, intention, smoking, beliefs, planned behavior

1-1. Background of the study

Tobacco use is considered globally as a major public health problem due to its significant morbidity and mortality (World Health Organization [WHO], 2018). Tobacco use is a true pandemic as it affects all segments of the population, including both sexes. Indeed, nearly one billion men (35% of the male population in developed countries and 50% in developing countries) and nearly 250 million women (22% of the female population in developed countries and 9% in developing countries) smoke every day worldwide (World Health Organization [WHO], 2017). The 6th edition of the Tobacco Atlas reveals that 942 million men and 175 million women aged 15 years and over smoke cigarettes every day worldwide (Drope et al., 2018). In fact, all countries in the world are affected by the tobacco epidemic, although there are disparities between geographical areas. The global prevalence of smoking was estimated at 23.7% and 36.1% in 2010 and 2012, respectively. This includes 15% and 24.2% in Africa; 20% and 22.8% in the Americas; 22.4% and 36.2% in the Eastern Mediterranean region; 31.2% and 39% in Europe; 20.1% and 32.1% for the South-East Asia region and 28.5% and 48.5% for the Western Pacific region (Ericksen et al., 2014).

According to Blecher and Ross (2015), Africa represent the greatest threat in terms of projected tobacco use. These projections make this continent the next epicentre of tobacco use. In Cameroon, as in many sub-Saharan African countries (Niger, Congo, Mauritania), tobacco use is fashionable. A recent report (WHO, 2017), indicated that tobacco consumption has increased among men in Cameroon between 2000 and 2016. It evolved as follows: from 8% to 12% between 2000 and 2002 then from 12% to 19% between 2004 and 2006. Between 2006 and 2010, smoking prevalence increased from 19% to 29%, exceeding 30% to reach 34% in 2012 and peaking at 44% in 2015 (WHO, 2017). The situation is not the same for women aged 15 and over, where the prevalence rate remained relatively stable between 2000 and 2016 (1%). Among young people, smoking seems to be taking on worrying proportions. Indeed, a survey conducted in 2014 in schools revealed that 20.7% of the pupils questioned had already experimented with tobacco, 10.1% of them were daily users of tobacco and its products (13.8% of boys and 5.7% of girls), and 7.4% were already addicted to cigarettes.

The spread of smoking has serious consequences that affect not only humans but also the physical and social environment. On the human level, smoking is responsible for a high rate of mortality and morbidity. Tobacco products expose humans to cancer, chronic lung disease and cardiovascular disease (Institut National de la statistique & Ministère de la Santé Publique,

2013). On the environmental level, smoking is a factor that contributes to deforestation, and soil and groundwater pollution.

To effectively fight against the scourge of smoking, Cameroon has put in place a set of regulatory and incentive measures. The regulatory measures are made up of a set of administrative and legal texts that govern activities related to the production, marketing, and consumption of tobacco products. Incentive measures, on the other hand, concern prevention through awareness-raising. The latter is based on the use of influence strategies aimed at encouraging potential clients to turn away from the use of tobacco products. These influencing strategies are conveyed through awareness-raising messages that are stamped on the various tobacco products and that highlight the risks associated with smoking. Despite these measures, we realise that the phenomenon of smoking continues to spread and to cause damage to both humans and the environment. This situation led us to question the motives for this increased risk-taking in terms of tobacco consumption. A psychosocial approach to smoking behaviour has enabled the identification of a number of psychosocial factors associated with the intention to use tobacco. These factors include: attitude (Ganley & Rosario, 2013), risk perception (Plante, 2012), peer pressure (Ra & Cho., 2016), self-esteem (Ariffin, 2016 ; Khosravi et al., 2016), sensation seeking (Roman et al., 2014, Spillane et al., 2012). Without denying the importance of these factors in explaining smoking behaviour, our focus was more on beliefs. Indeed, the literature (Dillard, 2009 ; Mvessomba et al., 2017) pays particular attention to the study of the consequences of beliefs in general, and of the optimism bias in particular on health behaviour. A presentation of the concept of comparative optimism and a brief review of the work linking comparative optimism and risk taking are presented here.

1-2. Comparative optimism (CO)

The CO effect is historically linked to the year 1980. It is the American researcher Weinstein, from Rutgers University in New Jersey, who first highlighted this effect. According to Weinstein (1980), this optimism is first described as unrealistic because it is clear that not all people can have a better future than others. When it is based on a comparison with others, this optimism is called comparative (Harris & Middleton, 1994). The notion of comparative optimism (CO) is central to the analysis of future anticipatory behaviour. The desire to anticipate our future is an inherent concern of human nature. The idea that almost every perception and almost every social judgment involves comparison and that comparison often involves social comparison, has led researchers working on optimism for the self to focus more on how people perceive their future compared to others (Milhabet, 2010). Work that has sought to understand why some individuals overestimate their luck and

minimise their risk compared to others has crystallised around the notion of comparative optimism. This has given rise to a large body of research on comparative judgements. CO is a phenomenon that is essentially based on a social comparison between self and others (Krzeminski, 2015). From this social comparison, it appears that individuals show an optimistic bias for positive events and underestimate negative events (Sharot et al., 2011).

CO is defined as a kind of self-beneficial perception of one's future compared to that of others (Milhabet, 2010). CO is also considered to be the tendency to think that our own chances of experiencing positive events are greater than those of others and, conversely, that the risks of experiencing negative events are less for us than for others (Agostini, 2008). For Adams (2008), CO is defined as expecting to experience fewer unhappy events than others and vice versa for positive events. To measure CO, we usually use two methods, one direct and one indirect (Milhabet, 2010 ; Milhabet et al., 2002). In the so-called direct method, the procedure initiated by Weinstein (1980) and commonly used to assess CO, consists of asking participants to estimate the chances they have in relation to others (their peers) of having to experience a given event. Each participant is asked to make a judgement for him/herself relative to others by indicating whether he or she thinks that he or she is more, equally, or less likely than others to experience a given event in his lifetime (Milhabet et al., 2002). In the indirect method, participants are asked to estimate the probability of an event happening to them and the probability of it happening to another person of the same age and gender. In relation to a question, participants give two answers (on a scale from very unlikely to very likely), one for themselves and one for another person.

To explain the emergence or expression of CO and the reasons for its intra- and inter-individual variations, researchers in this line of research (Agostini, 2008 ; Milhabet, 2010 ; Shepperd et al., 2002) agree on two explanations: cognitive explanations (the positivity bias of individuals, the heuristics of representativeness and availability, and egocentrism) and motivational explanations (the defence against anxiety about a threatening future and the defence of the self-image, see Milhabet et al, 2002 for a review). Factors such as the frequency of events, their controllability, their severity, and the characteristics of the reference target are also some determinants of CO (Krzeminski, 2015).

1-3. Comparative optimism and risk taking

The relationship between comparative optimism or optimism bias and risk-taking in general has already been the subject of some research (Delhomme & Meyer, 2000 ; Kouabenan, 2007 ; Mvessomba et al., 2017 ; Nguetsa, 2012). Although the beneficial effects of optimism in general and comparative optimism in particular on health behaviours are fairly well known

(Taylor & Brown, 1988 ; Taylor et al., 2012), few studies have sought to examine its reverse consequences on health behaviours.

Several studies have established a negative link between overly optimistic beliefs and the adoption of risky behaviours (Burger & Burns, 1988 ; Dillard et al., 2009 ; Weinstein et al., 1998). According to Amor and Taylor (1998), three types of consequences can be produced as a result of extremely optimistic or even comparative beliefs: disappointment, disillusionment, and self-endangerment. A study conducted by Burger and Burns (1988) showed that individuals who underestimated their risk of contracting a sexually transmitted disease engaged in more risky behaviours such as unprotected sex, than those who realistically estimated their risk. Dillard et al. (2009) showed in a longitudinal study that optimism, when it became unrealistic, led students to adopt risky behaviours for their health, particularly in terms of alcohol consumption. Other studies (Kouabenan et al., 2007; Nguetsa, 2012 ; Nguetsa & Kouabéna, 2014) have also shown that comparative optimism, as a perceptual bias, causes distortions that lead to insecure behaviours. For Kouabenan et al. (2007), comparative optimism has two sides (a positive and a negative side). Its positive side concerns the fact that it leads to a high level of motivation, reduces anxiety and makes it possible to cope better with illnesses when they are already manifest. The negative side is that it leads to maladaptive behaviours and low motivation to engage in precautionary behaviours. This does not allow the individual to make efforts to protect himself from the risk to which he is exposed. This position is also defended by Nguetsa (2012). According to him, if positive illusions can be beneficial for a patient undergoing therapy, they do not always seem favorable to the adoption of safe behaviours in the face of risks.

Several researches have examined the consequences of optimism bias on smoking behaviour (Arnett, 2000 ; Borrelli et al, 2016 ; Masiero et al., 2015 ; Morell et al, 2015 ; Popova & Halpern-Felsher, 2016). Morell et al. (2015) suggest that adolescents' perceptions of themselves as less physically vulnerable than others predict their future smoking behaviour. Indeed, in a longitudinal study of 228 high school adolescents, they examined the relationship between the illusion of vulnerability and smoking. They concluded that feelings of vulnerability (the tendency to believe that one is less likely to be harmed than others) create positive illusions that lead adolescents to take more risks because they believe that they are less likely to be harmed than their peers. In a similar vein, other studies (Meyer & Delhomme, 2000; Weinstein, 1989) have shown that optimism bias leads to risk denial and the trivialisation of awareness campaigns.

Borrelli et al. (2016) conducted research to investigate the relationship between optimism bias and intention to quit and abstain in a population of adult smokers (n=237). Their results showed that adults who persisted in

smoking were more likely to have an optimism bias about the risk of smoking-related diseases. Their perception of risk was low compared to their peers and they perceived fewer benefits from quitting (Borrelli et al., 2016). A study by Masiero et al. (2015) aimed to examine the relationship between optimism bias and smoking habits in a population of 633 participants consisting of smokers, ex-smokers and non-smokers. These researchers showed that the optimism bias developed by people who think they have a low probability of having a health problem compared to others, initiates tobacco use in non-smokers, reinforces and maintains tobacco use in smokers and increases their duration of use over the course of their life. These authors believe that people who are subject to such a bias are actually putting themselves at risk without knowing it because of distortions in risk assessment that lead them to underestimate the risks and overestimate their ability to control and tolerate the risk. Masiero et al.' (2017) work on comparative optimism suggests that this belief is a barrier to the adoption of preventive behaviours and fuels smoking behaviour by hindering the effectiveness of smoking cessation for example. CO would therefore lead individuals to perceive themselves as invulnerable and therefore to ignore the risks associated with smoking. The studies on the link between comparative optimism and tobacco consumption mentioned above reveal the perverse side of comparative optimism. Indeed, when it is unrealistic, comparative optimism can lead to the adoption of unwise or even dangerous behaviours such as smoking.

It is clear from this research that the nature of the relationship between comparative optimism and protective behaviour remains unclear. This is because some of this research has found that optimism bias has beneficial effects on protective behaviour (Taylor & Brown, 1988 ; Taylor et al., 2012), while other research has failed to replicate these findings and in some cases has found the opposite Morisset, Terrade and Somat (2010). A critical review of the literature linking CO and smoking behaviour highlights the paucity of such studies in the African context in general, and Cameroon in particular. The use of beliefs to explain complex phenomena has been highlighted in several studies (Kouabenan, 2007 ; Mvessomba et al., 2017). In view of these theoretical considerations, this study aims to investigate the influence of comparative optimism on the intention to use tobacco among Cameroonian adolescents.

Several theories are regularly used to explain and predict risk-taking in different domains (health belief model, protective motivation theory, theory of reasoned action and theory of planned behaviour). With regard to risk taking related to tobacco use, the theory of planned behaviour has been widely used. Theoretical considerations relating to the theory of planned behaviour suggest that behavioural intention is determined by three factors which are attitude, subjective norms and behavioural control (Ajzen, 2012). With reference to the

work on comparative optimism which has shown that overly optimistic tendencies lead to the adoption of dangerous behaviours in some individuals (Dillard, 2009), we put forward the general hypothesis that comparative optimism drives the intention to use tobacco among Cameroonian adolescents. This general hypothesis has given rise to four specific hypotheses. Operationally, we expect that the illusion of vulnerability will lead to favourable attitudes towards tobacco use (H1). In addition, we hypothesize that the illusion of vulnerability will elicit a perception of descriptive norms favourable to smoking (H2). We also expect the illusion of vulnerability will elicit a perception of injunctive norms favourable to tobacco consumption (H3). Furthermore, we also hypothesize that the illusion of vulnerability will elicit a high perception of control over smoking behaviour (H4).

1-5. MATERIALS AND METHODS

1-5-1. Participants and procedure

For this study, 244 non-smoking Cameroonian adolescents in upper secondary education, consisting of girls (n=110) and boys (n=134), aged between 14 and 25 years were recruited in the city of Yaounde in two schools: the Ngoa-Ekelle high school and the National Institute of Youth and Sports (NIYS). Those from the Ngoa-Ekelle high school were preparing for entrance examinations to Cameroonian high schools, while those from the NIYS were taking part in the "Sports, Leisure, Holidays" activities that are organised during each holiday period. To select the participants for our study, we used the purposive sampling technique. This technique allowed us to work with participants who met pre-defined criteria. Only those between the age of 14 and 25 and those with at least a first level of education and no more than a bachelor's degree were included in the sample.

1-5-2. Measures

Comparative Optimism

Comparative optimism is considered as an independent variable of this study. It was measured using the direct elicitation method by five items. Example of item: The probability for me, compared to a peer of the same age and sex as me, of getting lung cancer by smoking is ($\alpha = 0.862$, $k=5$).

Intention to use tobacco

The intention to use tobacco was the dependant variable of this study. It was measured through the behavioural intention scale inspired by the theory of planned behaviour (15 items). This theory states that behavioural intention is a function of three important constructs: attitude towards the behaviour, subjective norms and perceived behavioural control. We will therefore measure the intention to smoke through the different constructs of the theory

of planned behaviour. Subjective norms will be measure by distinguishing descriptive norms and injunctive norms as recommended by Mvessomba et al. (2017).

Four items measuring attitude towards smoking. Example of item: For me, starting to smoke in the next three months will not be pleasant ($\alpha = 0.70$, $k=4$). Seven items were used to measure subjective norms including three for descriptive norms. Example item: most of my friends smoke and four items were used to measure injunctive norms. Example of item: My friends would approve of me starting to smoke in the next three months ($\alpha = 0.714$, $k=07$ items), one item was used to measure intention directly. Example of item: I intend to start smoking cigarettes in the next three months. Three items were used to measure perceived behavioural control: Example of item: (If I decided to, it would be easy for me to start smoking cigarettes in the next three months ($\alpha = 0.64$, $k=4$).

1-6. RESULTS

The data from this study are analysed in two stages. First, correlations are examined in order to explore the links between the different variables. Secondly, regressions are applied to examine the explanatory weight of each of the modalities of the illusion of vulnerability on the variability of the intention to use tobacco.

Table 1. Correlation between the modalities of comparative optimism and those of the intention to use tobacco

	1	2	3	4	5	6
Attitude						
Descriptives Norms	,166**					
injunctives Norms	,270**	,540**				
Percieved Behavioral control	,042	,369**	,383**			
IVRPhy	-,092	,194**	,095	,029		
IVRPsy	-,185**	,177**	,161*	,021	,672**	

Note. IVRPhy = Illusion of vulnerability associated with psychological impacts; IVRPsy = Illusion of vulnerability associated with physical impacts

Table 1 presents the correlation matrix obtained by crossing the illusion of vulnerability and its modalities (illusion of vulnerability associated with psychological repercussions and illusion of vulnerability associated with physical repercussions) with the intention to use tobacco. With regard to attitude towards the desire to smoke, the results show that the illusion of

vulnerability is negatively and weakly correlated with the attitude towards the desire to smoke ($r = -.141, p < .05$). This result means that the less vulnerable an adolescent feels to the risks associated with smoking compared to his or her peers, the more likely he or she is to develop a favourable attitude towards the desire to smoke. A detailed examination of these results reveals a weak negative correlation between the illusion of vulnerability associated with the psychological consequences of smoking and the attitude towards the desire to smoke ($r = -.185, p < .05$). This means that the more an adolescent believes that he is less likely to contract a disease related to tobacco use that affects mental health, the more likely he is to develop a favourable attitude towards the desire to smoke.

With regard to descriptive norms, the results show a weak and direct link between the illusion of vulnerability and descriptive norms ($r = 0.204, p < .01$). In concrete terms, this means that the more an adolescent believes that he is less vulnerable to the risks associated with

smoking compared to his peers, the more likely he is to believe that his environment is favourable to smoking behaviour. The correlations between the indicators of the illusion of vulnerability and the descriptive norms reveal a weak and direct link between the illusion of vulnerability associated with psychological repercussions and the descriptive norms ($r = 0.177, p < .01$). This result suggests that the more an individual believes that he is less likely to develop a smoking-related disease that impacts psychological health, the more likely he is to believe that smoking is fashionable in the community. Furthermore, the illusion of vulnerability associated with physical impact is also weakly and positively correlated with descriptive norms ($r = 0.194, p < .01$). This association suggests that when an adolescent believes that he is less at risk of contracting a disease whose repercussions impact his physical health, he will tend to believe that his entourage is favourable to cigarette consumption.

With regard to injunctive norms, the results show that the illusion of vulnerability is positively and weakly correlated with injunctive norms ($r = .132, p < .05$). According to these results, the more an adolescent believes that he is less vulnerable to the risks associated with smoking compared to his peers, the more likely he is to believe that those around him approve of the smoking behaviour. The correlations resulting from the cross-tabulation between the modalities of the illusion of vulnerability and the descriptive norms show that the illusion of vulnerability associated with psychological repercussions is positively and weakly correlated with the injunctive norms ($r = 0.161, p < .05$). According to this result, the more a person believes that she is less at risk of contracting a disease related to tobacco consumption whose repercussions impact mental health, the more likely she

will believe that those around her approve of cigarette consumption. The correlation analyses conducted here were followed by regression analyses to identify the best predictors of the modality of intention to smoke.

Table 2. Regression of the dimensions of the vulnerability illusion against the modalities of the intention to use tobacco

R=,182 ; R Square =,033 ; Adjusted R Square =,025 Standard error of the estimate =1,07175 ; F=4,129 ; P=,017 (A)						
R=,204 ; R Square =,042 ; Adjusted R Square =,034 ; Standard error of the estimate =,85664 ; F=5,232 ; p=,006 (B)						
R=,162 ; R Square=,026 ; Adjusted R Square =,018 ; Standard error of the estimate =,83838 ; F=3,229 ; p=,041 (C)						
	Model	Unstandardized Coefficients	Standard error	Bêta standardized Coefficients	T	P
	(Constant)	1,857	,188		9,881	,000
Attitude (A)	IV physical repercussions	-,046	,075	-,052	,613	,540
	IV psychological repercussions	,189	,076	,213	2,491	,013
Descriptives Norms (B)	(Constant)	1,510	,150		10,053	,000
	IV physical repercussions	,098	,060	,138	1,620	,107
	IV psychological repercussions	,060	,061	,084	,985	,326
Injunctives Norms (C)	(Constant)	1,314	,147		8,936	,000
	IV physical repercussions	-,016	,059	-,023	-,273	,785
	IV psychological repercussions	,122	,059	,176	2,055	,041

Note. A= Regression of illusion of vulnerability dimensions against attitude; B= Regression of illusion of vulnerability dimensions against descriptive norms; C= Regression of illusion of vulnerability dimensions against injunctive norms

Table 2 highlights the regressions of the dimensions of the vulnerability illusion against the modalities of the intention to use tobacco.

With regard to the regression model of the dimensions of the illusion of vulnerability against attitude, the results show that the model is significant ($F=4.129$; $p=.017$) and explains 3.3% of the variance in attitude ($R^2=.033$). These results also reveal that the illusion of vulnerability associated with psychological events is a significant predictor of attitude towards the desire to smoke ($F=.213$; $p=.013$). In terms of the regression model of the modalities of the illusion of vulnerability against the descriptive norms, the results suggest that the proposed prediction model is significant ($F=.232$; $p=.006$) and explains 4.2% of the variance in the descriptive norms for smoking ($R^2=.042$). An examination of the different predictors in this model shows that only the illusion of vulnerability associated with risks with psychological repercussions is a predictor of descriptive norms for smoking ($F=.985$; $p=.036$). With regard to the regression model of the modalities of the illusion of vulnerability against the injunctive norms, the results show that the proposed prediction model is significant ($F=3.229$; $p=.041$) and explains 2.6% of the variance of the injunctive norms with regard to smoking among the participants ($R^2=.026$). An examination of the different predictors in this model shows that the illusion of vulnerability associated with risks with psychological repercussions is a predictor of the perception of explicit social norms ($F=.176$; $p=.041$).

Discussion and conclusion

The objective of this study was to examine the influence of comparative optimism on the intention to use tobacco among Cameroonian adolescents. The results obtained confirm the hypothesis of an influence of optimism bias on the intention to smoke. Based on the theory of planned behaviour, we showed that the intention to smoke is determined by attitude towards smoking, descriptive norms and injunctive norms regarding smoking. With regard to attitude, the vulnerability illusion associated with comparative optimism is attractive to the desire to use tobacco when it is favourable. This illusion of vulnerability is more influential on attitude when it relates to events that have a psychological impact on the individual.

When referring to the health belief model (Champion & Skinner, 2008) several explanatory possibilities are available. This theory states that an individual's risk behaviour is determined by a set of risk beliefs that predict why a person will engage in a behaviour to prevent, test for or control a disease. It is the adherence or non-adherence to these beliefs that leads to the adoption or non-adoption of a behaviour. Before acting, the individual will assess his vulnerability and the perceived seriousness of the problem he or she faces. It is the assessment of the threat that will determine their decision to act on the prevention behaviour or not. In the context of smoking, adolescents will assess their risk of contracting a disease such as hypertension with psychological consequences (addiction for example) and the perceived severity (serious

consequences) of that disease if they were to contract it. Those who think they are less likely to get it and that it will be less serious for them compared to their peers are the ones who will develop favourable attitudes towards smoking in the future. The intention to use tobacco will therefore depend on these attitudes. Attitude appears here to be a determinant of smoking behaviour in that it predicts the intention to smoke or not. These results are in line with the work done by Mohammadpoorasl et al. (2012). In a study examining factors influencing smoking intention among Iranian adolescents, these authors showed that having a positive attitude (favourable attitude) towards smoking was strongly associated with the intention to start smoking in the near future.

With regard to descriptive norms, the results obtained show that the illusion of vulnerability influences the intention to use tobacco through a favourable perception of descriptive norms regarding tobacco use. The results of this study show that optimistic adolescents perceive that the majority of significant people in their environment use tobacco. This perception is likely to influence them to use tobacco because of conformist pressures. An explanation of these results can be made by referring to the theory of planned behaviour. Indeed, this theory postulates that behavioural intention and, by ricochet, the behaviour itself, can be predicted by normative beliefs considered as the perception of the influence of the entourage with regard to the fact of adopt or not a specific behaviour. The individual's behaviour would therefore be strongly influenced by external elements, in general, and peers in particular. The work of several researchers is in line with this logic (Benzinovic & Malatestinic, 2009; Kpomezouen et al., 2015). Those researches have shown that smoking behaviour is the result of social influence.

With regard to injunctive norms, the results showed that when they are favourable, the illusion of vulnerability elicits the intention to use tobacco among Cameroonian adolescents. With reference to the theory of planned behaviour, a plausible explanation for this result is that implicit pressure from significant others affects the individual's beliefs. This theory postulates that behaviour is determined by a set of factors that are themselves derived from beliefs. In relation to smoking behaviour, the TCP indicates that the adoption of this behaviour is determined by the individual's evaluation of the consequences of the behaviour he or she will adopt. Faced with risks with psychological repercussions such as hypertension and addiction, the individual who believes that these risks are minimisable insofar as it is his peers who are more exposed will be more suggestible than the individual who believes that the risks incurred will have serious consequences for his physical and mental health. We also note that the perception of vulnerability, when it comes to risks with psychological repercussions, leads individuals to adhere more to the influence of significant others. This is not the case when it

concerns risks with physical repercussions (cancer or lung infection). The explanation that can be given for this result is that adolescents who intend to use tobacco through their adherence to explicit norms regarding tobacco use think that risks with psychological repercussions are less severe than risks with physical repercussions. This way of thinking is probably due to the idea that these adolescents have of the images about the consequences of smoking in awareness campaigns (for example the broadcasting of images of smokers with throat cancer, mouth cancer).

In terms of perceived behavioural control, the lack of relationship observed between the illusion of vulnerability and this modality of the intention to smoke could be explained by the fact that smoking behaviour is most often beyond voluntary control, especially among individuals who already have some psychological dependence on cigarettes. On the other hand, these results could also be explained by the fact that the decision to start smoking requires resources and the existence of an opportunity to perform the desired behaviour. Thus, if adolescents do not perceive the existence of opportunities or resources (money to buy cigarettes for example) to carry out the desired behaviour, their intention will disappear due to the absence of facilitating conditions and resources (Ajzen, 2012). The optimism bias does not always seem to lead to negative behaviour.

Although the results we have arrived at offer a perspective on the explanation of smoking behaviour, this study has some limitations. The fact that other variables, such as socio-demographic variables, also influence the intention to smoke reduces the significance of these results. In fact, these so-called secondary variables in this study have considerable explanatory weight in the explanation of smoking behaviour.

A first limitation of this study is linked to the fact that it deals with a sensitive behaviour. This probably induced a social desirability bias among the participants, leading them to give incorrect answers. A second limitation of this study is related to the methodological approach used. This approach is likely to account for some of the weaknesses of this work, particularly in terms of the results. Firstly, the sample size was not large enough ($n=244$). Also, the population would certainly have allowed the study to gain internal validity if it had had a population of adolescent smokers as was the case in most previous studies (Borrelli et al, 2016 ; Masiero et al, 2015; Morell et al, 2015; Popova & Halpern-Felsher, 2016) , Third, the fact that this study is correlational in nature calls for caution in interpreting the results as a causal relationship was not established between comparative optimism and intention to use tobacco. Further studies are needed to corroborate the results obtained.

Conflict of interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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Fyodor Dostoevsky's Epilepsy: In Connection with His Novels

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Abstract

Fyodor Dostoevsky, aside from his intelligent structure use of epilepsy by combining it into his novels, essential idea "a moment of happiness is worth a lifetime" was perhaps stimulated by his epileptic aura. As mentioned in the article, he presented the first signs of epilepsy in early adulthood, but he was only diagnosed a decade later. For diagnosis, even Sigmund Freud, the father of psychoanalysis, theorized and wrote a book precisely for Fyodor's condition. Later, in the modern era with the new prognosis for epileptic types, so many neurologists with constant referral on his books and novels realized Fyodor had suffered from temporal lobe epilepsy. The most influential for this comprehension was *The Brothers Karamazov* (1879-1880). Freud defined *The Brothers Karamazov* as the most powerful novel and story ever written.

Keywords: Fyodor Dostoevsky, Epilepsy, Sigmund Freud, Neurologist, The Brothers Karamazov

Introduction

Fyodor Mikhailovich Dostoevsky (Moscow 1821, St. Petersburg 1881), one of the greatest authors and novelists in the world, suffered from epileptic seizures and gambling addiction throughout his tragic and literacy life. However, beyond good and evil, he presented interacting characters with contrasting views about freedom of choice, religion, socialism, and atheism. Some of his characters suffered, like Fyodor, from epilepsy. In accordance

with the spirit of that time (relate to Hegel's book-The Phenomenology of Spirit), Dostoevsky's epileptic characters were interpreted in a psychiatric–psychological manner.

Many authors, philosophers, and psychologists like Jean-Paul Sartre, Sigmund Freud, Franz Kafka, Anton Chekhov, Friedrich Nietzsche, Erich Fromm etc., who interpreted his novels praised him for his exceptional work. However, one of his books (*Notes from Underground*-1864-The only philosophical book by Dostoevsky) suggests lots of interpretations because it is very complex and contradictory. Friedrich Nietzsche refers to Dostoevsky as “the only person who has ever taught me anything about psychology (Janko Lavrin, 1964).”

However, the illness was very hard for him; although he used it to his own advantage by creating the characters, stories, and ideas along with his life.

Based on an enormous concept of Dostoevsky's literature about epilepsy, there were multiple references to the disease from the texts and descriptions. Therefore, it is possible to pursue his historical life condition and invent vision in the modern medical literature. However, Dostoevsky's wisdom and knowledge were extraordinary and fantastic. In addition, his great power for writing and creating was never reduced by his epilepsy episode attack. Incidentally, he used this opportunity to forge some characters. For this reason, the medical scientists with the novels characteristics (protagonist) could diagnose the epileptic type of Dostoevsky.

1. The Type of Dostoevsky Epilepsy

Many scientific reporters dealt with the problem of the kind of epilepsy Dostoevsky might have suffered. The few attitudes of Fyodor himself (diary), from his close friends, first and second wife, as well as the narrative of epileptic characters in his novels should be considered when dealing with this problem. In his childhood, he once stated: “I have all kinds of seizures”. Therefore, plenty of authors who dealt with this problem discussed the classification and type of Dostoevsky's epilepsy.

The first assessment at a retrospective diagnosis of Dostoevsky's status was made by Sigmund Freud in 1926 in a scientific article in response to the perceptions published by his countryman, Stefan Zweig, in 1920 (Zweig, 2001).

Freud considered his previous theories regarding the unconscious mind. Oedipus complex declared that Dostoevsky had not suffered in a long time from his epileptic attack, and this is contrary to an emotional disorder built by his relationship with his father (Parricide, influenced by the conspiracy of *The Brothers Karamazov* novel). Oedipus complex is the attachment of the child to the parent of the opposite sex, which is accompanied

by envious and aggressive feelings toward the parent of the same sex. Dostoevsky experienced his first seizure in 1846 at once after the death of his father. Secondly, his epilepsy was interpreted according to the psychoanalytic theory as a consequence of an Oedipus complex towards his father.

This disturbance was differentiated by psychogenic seizures (non-epileptic), which is a mood or disorder known as hysterio-epilepsy (grand hysterical attacks). As reported by Freud, "Dostoevsky called himself an epileptic and was regarded as such by other people, on the description of his severe attacks, which were accompanied by loss of consciousness, muscular convulsions, and subsequent depression. Now it is highly expected that this so called epilepsy was only a symptom of his neurosis (Freud, 1961)." Freud was perhaps misguided by Smerdyakov's factitious seizures in the Brothers Karamazov novel, and by his psychoanalytic theories, which may be reasonable under some prospects.

In respect to Freud, like the other expert witnesses in the Fyodor Pavlovich murder trial in the final part of "The Brothers Karamazov novel", the diagnosed Dostoevsky's seizure was incorrect. Moreover, Freud's interesting essay (Dostoevsky & Parricide, 1928) provides an explicit example of the problems that arise in diagnosing epilepsy, even if it is prospectively or retrospectively.

The Dostoevsky's epilepsy symptom complex was a partial and secondarily generalized subtype seizure. It therefore means that he had suffered with both subtypes of seizures. A seizure is a period when cells in the neurons (synapses) are synchronously active or active at a constant time. Complex partial seizures (CPSs) with secondarily generalized subtype demonstrate nocturnal seizures (or repeated seizure activity) and ecstatic auras. However, there is scientific evidence that Dostoevsky suffered from temporal lobe epilepsy (TLE) (Gastaut, 1970).

Temporal lobe epilepsy is the most frequent form of focal epilepsy and presents almost 2/3 of cases of intractable epilepsy managed surgically. A history of febrile seizures (exclusively complex febrile seizures) is usual in TLE and is often related to mesial temporal sclerosis (Labate et al., 2006). Researchers at the Montreal Neurological Institute (MNI) presented the psychic phenomena as experiential illusions or hallucinations based on clinical investigations and intra-operative stimulation surveys and studies.

Auras are simple partial seizures and may happen in isolation but arise in the majority of patients at the onset of a CPS. They may last from a few seconds to 1-3 minutes before losing consciousness (Ajmone-Marsan, 1987; Ajmone-Marsan, 1987; French et al., 1993).

The symptoms consist of viscerosensory signs which Dostoevsky has experienced, such as a rising epigastric sensation and experiential phenomena

such as visceral and auditory illusions, and complex auditory or visual hallucinations, fear, and déjà vu (Gloor, 1986; Gloor et al., 1982).

CPSs are correlated with amnesia and altered consciousness for an incident, behavioral arrest, and it starts with the duration of 25-30 seconds to 1 or 2 minutes. Healthily, consciousness has multiple features which consist of perception, cognition, voluntary motility, affect, and memory (Rodriguez et al., 2007).

Dostoevsky with a CPSs attack was unaware that he could have a seizure minutes earlier. He may also be unable to recall events that occurred before seizure onset as retrograde and anterograde amnesia is variable.

Temporal lobe seizures consists of three parts namely; simple partial, complex partial, and secondarily generalized. Several features of TLE semiology demonstrated how Dostoevsky struggled with those symptoms (see Table 1).

Table 1. Semiological Features (TLE) - Localizing Value

Aspects	Location
Unilateral limb automatism	Ipsilateral focus
Postictal cough	Temporal lobe
Postictal nose-wiping	Ipsilateral temporal lobe
Non-forced head turn	Ipsilateral focus
Clonic ending	Ipsilateral focus
Dystonic limb posturing	Contralateral focus
Postictal aphasia	Temporal lobe (dominant hemisphere)

Patients with temporal lobe epilepsy have these kinds of symptoms listed below: emotional alteration, hyperreligiosity, hypergraphia, euphoria, depression, hypo- or hypermoralism, altered sexual behavior, paranoia, and consciousness of guilt.

2. Epileptic Characters in Dostoevsky's Novels

In this section, three novels by Dostoevsky describe the protagonists' characters of those who have epilepsy.

1. ***The Idiot (1868)***: The most illustrious epileptic character in Dostoevsky's stories is Prince Lew Nikolaevich Myshkin (protagonist or the main character). Myshkin is a sample of virtue influenced by Victor Hugo and Jesus Christ. Myshkin, who has the same disease as his author, believes epilepsy to be a relief or gift and a means of reaching redemption in return for his ordeals (Dostoevsky Fyodor, 2004). He experienced epileptic auras as well as generalized epileptic attacks. When his love competitor, Rogoshin, wanted to kill him, he suffered from a generalized attack, fell down the stairs, and was not killed.

2. ***The Brothers Karamazov (1879-1880):*** *The Brothers Karamazov* narrates the story of the murder of Fyodor Pavlovich Karamazov at the hands of his valet and illegitimate son, Smerdyakov. Smerdyakov committed suicide after committing a spotless crime and framing his abominable half-brother, Dimitri Karamazov. Smerdyakov has always use his epilepsy as an alibi (a claim or piece of evidence that one was elsewhere when an act) since an early age. He pretends a series of seizures on the night of the murder and manages to deceive doctors in the forensic investigation. Outside the courtroom, Smerdyakov recklessly boasts of confessing to murder in various conversations with his other half-brother, Ivan Karamazov.

The third brother, Alexei, is the main character in the novel, a good-hearted man inspired by Prince Myshkin. *The Brothers Karamazov* includes all of the author's contradictions; the truth of love and hate, suicide, salvation through suffering, conflicts of beliefs, the matter of a single moment and recollection of that moment, and free will.

The Brothers Karamazov and *Notes from Underground* focus on scientific determinism, which is the brainchild of the great empirical physiologist Claude Bernard (1813-1878).

“Imagine, inside, in the nerves, in the head—that is, these nerves are there in the brain, there is sort of little tails, the little tails of those nerves, and as soon as they begin trembling “[...]” then an image appears “[...]” That's why I see and then think, because of those tails, not at all because I've got a soul, and that I am some sort of image and likeness. All that is nonsense (Dostoevsky Fyodor, 2004).”

Dostoevsky had criticized medical science and in the 20th century, Michel Foucault, sociologist and philosopher who was the author of *The Birth of The Clinic*, have criticized the same thing. Dostoevsky's skepticism can be summed up by a comment in *The Brothers Karamazov* on the differing criteria and therapeutic inability which once dominated our practice. These include; “I've tried all the medical faculty they can diagnose beautifully, they have the whole of your disease at their finger-tips, but they've no idea how to cure you.” Thereafter, he describes the contemptuous view of excessive expertise in medicine: “I don't cure the left nostril, that's not my specialty, but go to Vienna where there's a specialist who will cure your left nostril (Dostoevsky Fyodor, 2004).”

3. ***Notes from Underground (1864):*** In this novel, there is no any signs or symbols of epilepsy, but the contradictions and paradoxes are presented in the story. The narrator is forty years old when he starts writing the story. He writes his book in a corner of the underground, which can be considered a symbol of loneliness and isolation. He is

relatively aware of other people in the community and has started a revolt against the ignorance and misery of the people. The narrator complains about most things or complains about human behaviors and herd intellectuals. The author speaks of torment and pain. The pain and torment that arise from awareness and knowledge are enormous. The novel begins with the sentence “I am a sick person...” and the narrator calls himself vindictive and vicious. He talks about his physical pain but doesn't believe in the doctor. The narrator refers to a society that, no matter how literate and knowledgeable it is, does not give up its superstitious behavior and thought.

The narrator is a specific personality, powerless and full of contradictions, and an isolated person in society. The narrator subconsciously travels inside to find himself again by narrating his psychological complexities. Fyodor Dostoevsky portrays a man who seeks to deny everything. He describes a man who belongs to nothing and has reached conscious absurdity. He went further in describing a man in the underground who rises rapidly in hope and falls at the same speed. It is confused between predestination and will.

“Man is a frivolous and incongruous creature, and perhaps, like a chess player, he loves the process of the game and not the end of it.” “Why I would sell the whole world for a single kopek so that nobody would bother me? Should the world go to hell? or should I go without my tea now? I'll say, let the world go to hell as long as I can have my tea whenever I want it (Dostoevsky Fyodor, 2009).”

Conclusion

This paper shows that Dostoevsky, one of the world's prominent novelists, suffered from temporal lobe epilepsy. The thoughts and ideas of this great writer have not been underestimated. He withstood epilepsy and also struggled with gambling, yet wrote long interesting and influential novels. The symptoms of epilepsy were addressed, as was the connection, in some of his novels.

Biography

Fyodor Mikhailovich Dostoevsky was born on October 30th, 1821, in Moscow. He was the second son of Mikhail Andreevich Dostoevsky. His father was a medical doctor. The patriarchal and greedy character of his father was primitive for the artistic development of Fyodor. When he lost his mother in 1837, Fyodor was sent to St. Petersburg where he registered for the Army Engineering College. In 1839, Fyodor's tyrannical father died, probably of apoplexy. Fyodor graduated as a military engineer and started to work at the

War Ministration. With the relief of a small earning from the estate and also because of his boredom by this work, he resigned in 1844 from his commission to assign himself to write ("Poor Folk"-1846, "The Double"-1846) small novels which were considered a defeat. Due to his addiction to gambling, Fyodor was always pushed for money. He was apprehended and condemned to death in 1849 within a reading of a radical letter. He experienced mockery while he was expecting death during execution on December 22nd, 1849.

During that time, Fyodor's health was dramatically ruined and he suffered from his first generalized epileptic attacks. He got married to Maria Dmitrievna Isaeva during his military career. He was dismissed because of his bad health in 1859 ("The Insulted and Injured"-1859, "The House of the Dead-1861", "Winter Notes on Summer Impression"-1862).

At the bedside of his sick wife he wrote "Notes from Underground"-1864, a psychological study of an outsider ("Crime and Punishment"-1866, "The Gambler-1866", "The Idiot"-1868, "The Devils"-1872), and the great and final novel "The Karamazov Brothers" (1879-1880).

On the evening of January 28th, 1881, Dostoevsky pass away in St. Petersburg from his lung disorder. It is unclear whether it was emphysema or tuberculosis.

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Non-Governmental Organisations (NGOs) Role in Driving Urban Climate Governance: The Case of CIKOD and GAYO in Ghana

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Abstract

While cities are considered pivotal sources of global greenhouse gas emissions, they are also essential in urban climate governance. The role of NGOs in different contexts is increasing in terms of the mode of governance, but the empirical evidence of how they contribute to urban climate action in small and medium-sized cities, especially in developing countries is limited. Drawing evidence from Ghana, a case study research design was adopted and this facilitated an in-depth understanding of how NGOs contribute to urban climate governance in small and medium-sized cities in Ghana. The primary data collection methods included key informant interviews with two purposively selected NGOs: the Center for Indigenous Knowledge and Organisational Development (CIKOD) and the Green Africa Youth Organisation (GAYO), which is located in the Wa Municipality and the Cape Coast Metropolis respectively. Randomly selected residents made up of chiefs and assembly members, who are the representatives of the people in the municipality, were interviewed. All interviews were transcribed and analysed in generated themes. The study revealed that climate change adaptation actions included local empowerment through capacity building, climate advocacy, and waste management. As a result of the adaptation focus, the paper concludes that collaborations and partnerships among state and non-state actors will help generate greater resilience benefits for local

communities. Climate change adaptation programmes, which are often initiated by NGOs, are also steered by local residents outside of administrative systems.

Keywords: Climate Change, Urban Climate Governance, Non-Governmental Organisations, Small and Medium-Sized Cities, Ghana

Introduction

More people live in cities and urban areas than ever before and this phenomenon has created both challenges and opportunities. On one hand, cities are considered significant sources of greenhouse gas emissions due to intense energy consumption, buildings, and infrastructures (Bulkeley, 2010b; Castán Broto & Bulkeley, 2013b; Baker et al., 2012; Carter et al., 2015; Filho et al., 2019). On the other hand, cities play a very important role in adapting or mitigating the impacts of climate change. However, there is an empirical bias toward studies in developed countries (Klein et al., 2018; Wisner et al., 2015). This is because even though urban climate governance has been well researched, most scholars have focused on using case studies of developed countries as their units of analysis (Castán Broto & Bulkeley, 2013; Guyadeen et al., 2019; Reckien et al., 2018; van der Heijden, 2019). Additionally, while several good examples are available for large and megacities, few are available for small and medium-sized ones (SMCs) (Boehnke et al., 2019; Hoppe et al., 2016; Simon et al., 2021; Klein et al., 2018). As a result, Birkmann et al. (2016) argue that as the importance of the former is acknowledged, it is relevant to stress the latter since most of the world's population live in small and medium-sized cities. It is also widely recognised that they are more constrained in (fiscal) resources, staffing, 'critical mass', as well as organisation and leadership capacities within the regions in which they are situated.

In line with the Paris Agreement, which emphasises the role of sub-national climate action, the participation of non-state actors in urban climate governance has become essential due to its contribution in cities. This is partly because cities and urban areas play a vital role in building local adaptive capacities, especially among people already living at or close to the margins of survival (Musah-Surugu et al., 2019). Furthermore, the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) emphasises the importance of the private sector in urban climate action. Although research into the third sector is a growing academic field, the literature is quite limited in terms of the modes of governance used in steering climate action cities and urban areas. Globally, despite the increasing role of NGOs in different contexts, the empirical evidence of how they contribute to urban climate action in small and medium-sized cities, especially in developing countries is limited.

Drawing evidence from Ghana, a case study research design was adopted and this facilitated an in-depth understanding of how NGOs contribute to urban climate governance in small and medium-sized cities in Ghana.

1. Methods

Research Design

A qualitative research strategy was considered appropriate for this study because it offers a naturalistic approach for conducting research that relies heavily on context, perception, and lived experiences about a phenomenon. The study's research design encompasses case studies of two major cities in Ghana. Like most case study research designs, each case was studied in-depth while focusing on a detailed description of the phenomena which is relevant to how NGOs are driving urban climate action in the small and medium-sized cities.

Case Study Selection

The cases that have been selected are based in Ghana. Within Ghana, the cities are Wa municipality in the Upper West Region and the Cape Coast Metro in the Central Region. The differences in vulnerability to climate change impacts between the two regions justified the decision for the selection (see Ghana's 3rd communication to the UNFCCC). For instance, the northern savannah ecological zone remains poorer than the other regions after years of implementing poverty reduction programs. As a result, the different vulnerability indexes offered a comprehensive view of NGOs' nuanced roles in urban (local) climate governance. Wa doubles as the regional capital of the Upper West Region, and the municipality lies in the Savannah high plains. According to Ghana's Population and Housing Census (2021), the Municipality has a population of about 200,672. The Municipality further lies in the Savannah high plains, which is gently undulating with an average height between 160m and 300m above sea level. The low-lying areas have further given rise to two main drainage systems: the Sing-Bakpong and its tributaries to the South and Billi and its tributaries to the North. The streams are seasonal and thus dry up during the long dry season, thereby reducing availability of water for agriculture, domestic, industrial, and constructional uses. This implies the provision of dams, dugouts, and rainwater harvesting to provide adequate water to meet the domestic and agricultural needs of the increasing population in the area. The climate of the Wa Municipality is characterized by long, windy, and hot dry season followed by the short and stormy wet season. The northeastern trade winds from the Sahara Desert precipitates the cold harmattan winds between November and February which brings with it coughs, cold, and other respiratory diseases and skin diseases. The effect of climate change is becoming more manifest of late due to human activities in

terms of bush burning, felling of trees, poor farming practices, and infrastructural activities. The rainfall pattern is erratic and punctuated by periods of long droughts and heavy downpours and floods. The most predominant means of transport is the use of motorcycles.

With its administrative capital at Cape Coast, the Cape Coast Metropolitan Area is one of the oldest districts in Ghana. According to Ghana's Population and Housing Census (2021), the Metropolis has a population of about 189,925. More so, the landscape of the Cape Coast Metropolis is generally undulating. Many of the minor streams end up in wetlands, with the largest draining into the Fosu Lagoon at Bakaano. The landscape in the northern parts of the Metropolis is however generally low-lying and is suitable for crop cultivation. The Cape Coast Metropolis experiences high temperatures throughout the year. The hottest months are February and March, just before the main rainy season, while the coolest months are June, July, and August. The variability in climate in the Metropolis is influenced more by rainfall than temperature. The Metropolis has a double maximal rainfall, with annual rainfall total between 750 and 1,000mm. The present vegetation of the Metropolis consists of shrubs of about 1.5 metres high, grasses, and a few scattered trees. The original vegetation of dense scrub, which is supported by the rainfall, has been replaced by secondary vegetation as a result of clearing for farming, charcoal burning, bush fires, and other human activities. Presently, trees are less dense in the area compared to the interior forest areas. The northern parts of the Metropolis are an exception to what has been described above. In these areas, secondary forest can be found and has survived mainly due to lower population densities and relatively little disturbance of the ecosystem. The maps of the two study areas are presented in Figures 1 and 2.

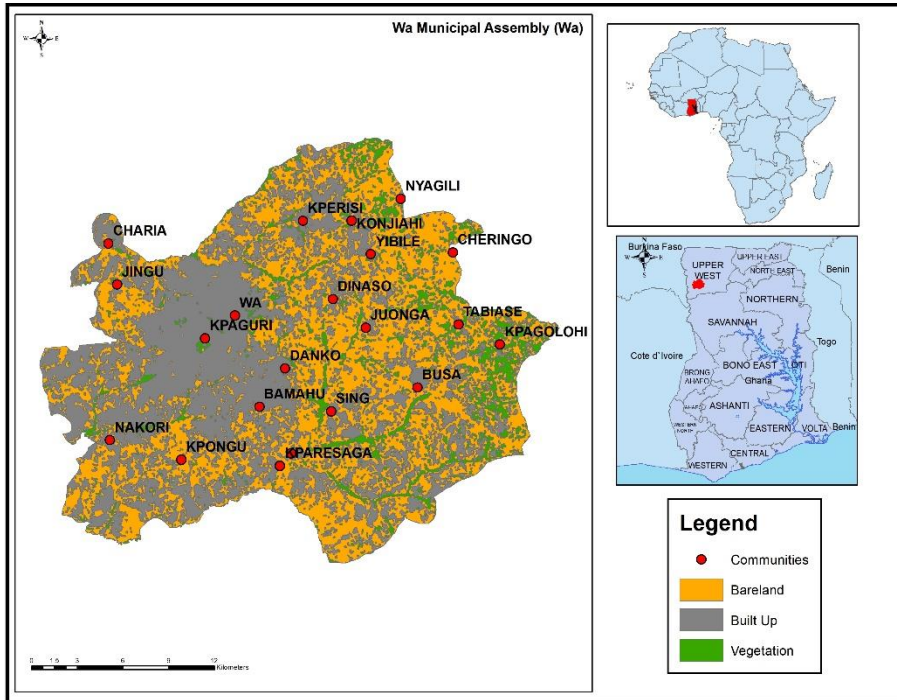


Figure 1. Map Showing the Wa Municipality

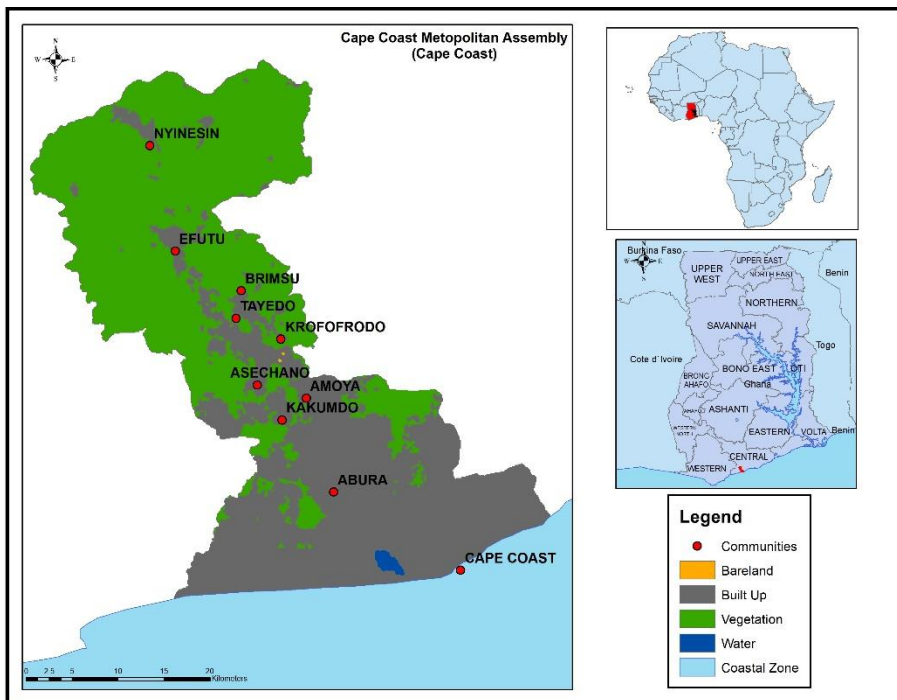


Figure 2. Map Showing the Cape Coast Metro

Data Collection and Analysis

Data used in this study were mainly provided through semi-structured interviews. This method provided an exploratory discussion on the topic. At the organisational level, officials including the heads of the two NGOs in question were selected and interviewed. Subsequently, at the community level, this method was applied on randomly selected local residents made up of chiefs and assembly members who are the representatives of the people in the municipality. This sampling method is appropriate because each category of persons have the relevant information that was needed for this study. Interviews were conducted for each key informants and data was collected based on the knowledge of climate change impacts, climate change initiatives, and the perception of local residents on the initiatives undertaken. The selection involved using criteria on whether the persons could provide informative, in-depth, and reliable information on involvement in climate actions by their respective organisations. In the selection, the professional expert network of the author was used. Each interview lasted for at least 40 minutes. To identify any loopholes, recordings of interviews and field notes were immediately reviewed after each interview. In addition to the interviews, online written articles and documents were retrieved by the researcher. These included workshops on climate change, natural resource governance, and waste management organised by the NGOs. Major themes were identified and data was analysed by way of narrations and discussions.

2. Results

Knowledge of Climate Change Impacts

The depth of knowledge of climate change did not differ significantly among research participants from NGOs and local residents who were randomly selected for the study. Majority of the interviewees started by explaining the causes and impacts of climate change. Most of the research participants perceived climate change as the new weather conditions they are currently experiencing. Participants mentioned floods, drought, bush fires, and land degradation as some of the devastating impacts of climate change. One of them remarked that,

“We don’t get the rains when we expect it; the rainy and dry seasons are no longer consistent.”

Another interviewee added, *“these days, we are experiencing extreme dryness in the northern part of Ghana and it is very difficult for us to survive”*.

He added that, *“ it is terrible when we experience continuous rains”*.

One of the fishermen from the Cape Coast Municipality also emphasized on how rising sea levels have affected the activities of fishermen in the municipality.

Climate Change Initiatives of the Center for Indigenous Knowledge and Organisational Development (CIKOD) and the Green Africa Youth Organisation (GAYO)

The Centre for Indigenous Knowledge and Organizational Development (CIKOD)

CIKOD is a Ghana-based non-profit organisation. Its objective is to transform indigenous institutions and local groups into vibrant grassroots civil society organisations that will improve rural communities' participation in their development processes. CIKOD aims to promote discussion about the role of indigenous knowledge and institutions in contemporary community development and empowerment. CIKOD has been working in many community development areas while focusing on building sustainable food systems, traditional health systems, natural resource management, and traditional women leadership in this environment. Since 2003, CIKOD has focused on strengthening chiefs and traditional women leaders in Ghana by allowing them to provide leadership at the community level to enhance community development efforts in the different disciplines listed above. In the Wa Municipality, CIKOD has been involved in various training programs aimed at strengthening the capacity of traditional leaders to provide effective leadership for their communities in natural resource management at the local level and the ability to articulate their views on poverty reduction. They collaborate with chiefs in the direction of the environment because they are the custodians of the land. For instance, they plant trees with chiefs and other government officials during festive occasions. Additionally, CIKOD engages with the local government (the Wa Municipality).

One of the interviewees stated,

“We advocate for the conservation of natural resources by promoting the use of appropriate indigenous knowledge adaptable to climate change”.

They also provide informal training to strengthen the capacities of traditional authorities, local government agents, grassroots civil society groups, and development facilitators to play more vital roles in the development process at the local level. This is done through workshops, seminars, and public lectures.

One of the interviewees mentioned,

“We use these platforms to sensitise the citizens about the impacts of climate change and what they can do to adapt”.

Another added that,

“We organise training programs for the smallholder farmers in agroforestry, seed production, soil water conservation, soil fertility management, and prevention of bush fires”.

Participants also mentioned the construction of irrigation dams for farming and domestic use as an adaptation measure.

The Green Africa Youth Organisation (GAYO)

The Green Africa Youth Organization (GAYO) is a youth-led, gender-balanced advocacy group primarily concerned with environmental sustainability and community development. They work directly with local communities to reduce the vulnerability of groups at risk to climate impacts such as children, youth, and women who have a comparatively less adaptive capacity due to social and structural inequalities. In the Cape Coast Metropolis, the Sustainable Community Project was designed by GAYO to help manage household waste, especially in urban areas. Through household education on pit composting, the project seeks to eliminate inappropriate disposal of solid organic waste and provide nutritious organic food to families through organic farming. One of the interviewees mentioned that they intend to add more households in the future as the project is still in its early stages. Additionally, GAYO has worked with the Cape Coast Metro and other key stakeholders to render sustainable waste management services, which is a challenge that has diverse implications in cities and urban areas (beach cleaning exercise).

GAYO also recently launched the “campus eco-clubs initiative-University of Cape Coast Chapter,” where they seek to educate and empower tertiary students to create public awareness of the need for environmental preservation and protection. Recently, GAYO and the Center for Coastal Management at the University of Cape Coast hosted a training program to raise public awareness about ocean conservation and resource management. They highlighted the importance of protecting the oceans for survival and the marine ecosystem.

Table 1. Summary of Climate Change Initiatives Undertaken by CIKOD and GAYO

Climate Change Initiatives/Programs	CIKOD	GAYO
Nature-based solutions and forest management	Manage the indiscriminate felling of trees by providing alternative livelihoods to local residents Engage in tree planting exercises	Active engagement in tree planting exercises (green Ghana Project)

Awareness and education programmes in local communities, capacity building	organise durbars to sensitise and educate chiefs and the entire community on the need to conserve the environment	Building capacity for youth development
Waste management		Zero waste communities Dumpsite clean-up Plastic-free campus Beach cleanup with the Cape Coast Metropolitan Assembly

Local Residents’ Perception of the Activities of the two NGOs Under Study

Interview participants from both the Wa Municipality and the Cape Coast Metropolis mentioned that the contribution of the NGOs cannot be over-emphasized. From the Cape Coast Municipality, the chief of the fisherfolks confirmed that there has been great improvement in terms of getting the right knowledge on when/how to build adaptive capacities as far as rising sea levels are concerned.

According to him, “most of the fisherfolks have come to terms with the impacts of climate change and they are doing everything possible to attend some of the sensitization workshops that are regularly organised in our local communities”.

In the Wa Municipality, interview participants mentioned how the provision of alternative livelihoods have ensured the reduction of indiscriminate felling of trees in the past years.

One of them mentioned that *“most of the women are well-informed of how trees serve as carbon capture hence, the reason to adhere to saving them”.*

3. Discussion

Interviews with research participants revealed that NGOs engage in various actions relating to climate change adaptation. Some identified initiatives included local empowerment through capacity building, climate advocacy, and waste management. For example, the capacity-building training program was evident in both cases. This is because most local communities in developing countries lack the needed capacity to adapt to the changing climate. As a result, the two NGOs under study seek to build adaptive capabilities for vulnerable people. This confirms the findings from the literature that most cities in developing countries focus on adaptation actions. It is also evident from the results that both NGOs have engaged in raising awareness of climate change because it is an essential step in adapting to climate change in local communities. This resonates with the findings of

Musah-Surugu et al. (2019) that NGOs play lead roles in awareness creation at the local level in Ghana. Based on the findings of this study, NGOs can influence climate adaptation in small and medium-sized cities at a broader scale through collaboration and partnerships according to their capacities. This will further help in achieving resilience benefits since many developing countries prioritise development objectives, which is closely related to livelihoods. In line with the NGOs policy to address the impacts of climate change, local residents confirmed that in terms of strategies and interventions, awareness raising and sensitization on climate change is one of the adaptation measures against the impacts of climate change. The introduction of alternative livelihood strategies is also mentioned by local residents to help minimise climate change impacts in the study areas. However, the fragmented initiatives create room for minimal collaboration at the local level. According to Adu-Boateng (2015), climate change programmes at the local level are duplicated due to the diverse climate change programmes within each city. Additionally, several studies have reported similar constraints (political, institutional, attitudinal, financial or resources, communication, and awareness).

Conclusion

The analysis of NGOs role in urban climate governance in the two major small and medium-sized cities has shown that most interviewees were aware of how climate change impacts cities and metropolitan areas, and how they have developed a systematic approach to adapt to the impacts. Overall, most of the identified initiatives aimed to reduce the vulnerabilities of climate change. This is primarily because the planned measures undertaken by both NGOs focused on capacity-building programs, thereby indicating the importance of waste and natural resource management. A further potential implication of this finding indicates that if more small and medium-sized cities worldwide make progress on their adaptation processes over time, urban adaptation will increase. Although urban climate governance in small and medium-sized cities is still emerging, informal institutions through the engagement of chiefs can enhance collaboration at the local level. Building relevant partnerships among state and non-state actors could further improve local communities' adaptive capacity, especially in the global south. In addition, an inclusive approach could increase an integrated and coordinated climate action in local communities, particularly in small and intermediate cities with fewer than 100,000 inhabitants who often have very limited resources to identify local climate risks and build appropriate adaptation capacities. Climate change adaptation programs, which are often initiated by NGOs, are also steered by local residents outside of administrative systems.

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Child Recruitment and Use during Armed Conflicts by Muslims between International Law and Islamic Law

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Abstract

Child recruitment is an ancient military concept but a modern legal term. The term is defined as a war crime and includes the acts of conscription, enrolment or use of children below the age of 15 during armed conflict. According to the 2018 report of the UN Secretary General, most of the violations documented against children during armed conflicts, in 2017, were perpetrated by Muslims and the majority of the violations were the cases of military recruitment and use. Meanwhile, Islam guarantees the human rights of children and safeguards their protection from military involvement. The Islamic primary and secondary sources entail considerable and substantial evidence according to which people under the age of puberty are exempted from and not allowed to participate in battle. Yet, Muslims have often recruited and used children in deadly political and sectarian conflicts, and Islamic courts have never prosecuted anyone for such a practice. This article, based on comparative and descriptive analysis, argues that the Muslim states and groups that recruit and use children during armed conflicts are in violation of international law and Islamic law. Islamic law works in tandem with international law in the prohibition and criminalization of child recruitment and use.

Keywords: Child recruitment and use, international law, Islamic law, puberty, *ta'zir* crime, the ICC

1. Introduction

“In obedience of the command of God Almighty, and thus the command of the Noble Messenger, Islamic State calls on the youth of Islam [...] to fight, and calls on them to join the convoy of their [*mujahidin*](*jihādi*) brothers in obedience to God and in support of His religion. [So, oh] you who love what is best and desire jihad (*jihād*), get up, hasten, and prepare the forearm of earnestness, perhaps you will be a just brick in the building of this blessed structure.”¹

The historical records include innumerable tragic sorties of children during war. Children have not only been killed, maimed, enslaved, and imprisoned as civilians but also recruited and used during battles throughout history. The phenomenon is not only historical but also actual, besides that international law has prohibited the practice since the last decades of the 20th century. The Additional Protocols of the Geneva Conventions (1977) firstly addressed and outlawed the practice. The Convention on the Rights of the Child (1989), along with its Optional Protocol (2000), the African Charter on the Rights and Welfare of the Child (1999) and the Labour Convention (1999), subsequently reaffirmed the unlawfulness of the act. The Statute of the International Criminal Court (ICC) (1998) included the prohibition of child recruitment and use among the war crimes and defined it as conscripting, enrolling or using children under the age of 15 during armed conflict.

The United Nations (UN) Secretary General published his annual report on children and armed conflict in 2018. The report included the violations committed against children in 2017. Accordingly, 21,000 violations were verified of which 6000 were committed by states' armed forces and the rest were attributed to armed groups. The analysis of the report shows that most of the criminal acts were perpetrated in the Islamic world as well as by Islamic groups fighting against non-Muslim countries. A

¹The announcement of the Islamic State in Iraq and Syria (ISIS) to the youth, in the province of al-Furat which comprised part of the territory of Iraq and part of the territory of Syria, to join its ranks. ISIS, other Islamic groups, and probably states justify the recruitment and use of children with this *Qur'ānic* verse: “[g]o forth, whether light or heavy, and strive with your wealth and souls in the cause of God. That is better for you, if you truly know”. However, the most famous and credible Islamic exegete, Ibn Kathir, has reported that this verse was abrogated by another verse in the same chapter (the verse will be mentioned and interpreted later). Besides the verse, the groups mention an authentic tradition of the Prophet Muhammad which states: “[a]nd when you are called to fight, go forth”. Yet, the tradition is a general order to Muslims and does not specifically refer to children. The Prophet has explicitly prohibited children from partaking in battles in some other traditions (the traditions will also be mentioned and interpreted later) (Benotman & Malik, 2016, 40).

great deal of the violations was the cases of recruitment and use for military purposes. The UN report did not include the age of all the victims but the children were generally aged between 4 and 17. The majority of victims were believed to be males but females also constituted a considerable number. Some of the children were used actively in hostilities while some others were entrusted with activities related to armed conflicts.

Islamic law consists of a set of rules which regulate the life of Muslims. The law is based on numerous references such as the Islamic Holy Scripture, the *Qur'ān*, the traditions of the Prophet Muhammad, scholarly consensus, analogical reasoning and discretion of jurists, public interest and inference, and reason and custom. However, Muslims are only unanimous in accepting the hierarchy of the first three sources and the superiority of the others vary from a jurisprudential school to another one (Zedan, 2001, 196-214; Al-Sais, 1996; Khallaf, 1971; Al-Tarifi, 1997; Mu'ammad, 2012; Musa, 2009; Al-Zakhili, 2001).

Islamic law regulates the life of children from the marriage of their parents.² The law provides children with sufficient rights including the rights to life, family, name, property, proper nutrition, health care, education, and social security (Muslim, 2007, 468- 473; Abu Dāwūd, 2008, 155; Tirmidhī, 2007, 158-159; Ibn Mājjah, 2007, 15, 16, 17, 18; Children in Islam, 2005, 12-24). The law safeguards the protection of children from harmful acts, *inter alia*, discrimination, hard labour, and armed engagement (Children in Islam, 2005, 81-85; Saiful Islam, 2015, 192-196).

War in Islam is defined as defensive and offensive *jihād*. However, the term is narrowly interpreted today and implies only self-defence against aggressive acts by most of the scholars.³ In Islam, self-defence is an individual duty upon Muslims. Yet, the *Qur'ān*, as a general rule, exempts weak, sick, and poor people who cannot afford to arm themselves from going for *jihād*. Scholars have reported some authentic traditions of the Prophet Muhammad according to which the Prophet has not given permission to young Muslims, under 15 years of age, to participate in battles. Although some jurists require everyone, even women and children, to participate in defensive *jihād*, they do not specify an age and the type of participation. The *Qur'ān* includes many verses as to the facilitation of the first principal

²The Prophet encouraged his companions to choose righteous spouses so that they would become righteous mothers (Al-Bukhārī, 1997, 32-33; Muslim, 2007, 119).

³ In Modern era, there have been some scholars who followed the classical categorisation of *jihād* and required Muslims not to abandon the fulfilment of the obligation of offensive *jihād* against non-Muslims. The Egyptian scholar, Sayid Qutb, and the Palestinian scholar, 'Bdullah 'Zzam, have been the most prominent and the ideologues of modern *jihādi* movements. Such scholars exist even today but they are few and almost unknown by the majority of Muslims (Khdir, 2018, 45-46).

obligations in exceptional circumstances and the extension of the religious requirements to only the limits of human capacity. The rules can generally be applicable by analogy as to the exemption and prevention of children from partaking in armed conflict.

However, Muslims have recruited and used children during battles many times in history. The most problematic aspect of Islamic law, as to the act of child recruitment and use, is perhaps the nature and punishment of the offence. The Islamic primary sources do not mention a specific criminal responsibility for committing such an act; thus, the crime is categorized as a *ta'zir* crime. The ruler or judge is alternatively to decide on the responsibility of the perpetrators. Although no court verdict is likely to be found in the history of Islam for recruiting and using children, the nature of the practice remains prohibited under the explicitness of the *Qur'ānic* verses and authenticity of the traditions of the Prophet Muhammad.

The rules of international law regarding the prohibition of child recruitment and use below the age of 15 are not new. They have been derived from the rules and customs of the ancient civilizations and religions, *inter alia*, Islam and codified into international instruments. Therefore, the Muslim states and groups that recruit children into their ranks do not only violate international law instruments but also the Islamic scriptural texts and prophetic traditions.

There might have been a great deal of research regarding the prohibition of child recruitment and use in international law, but there is still a lack of a comprehensive legal analysis of the practice under Islamic law. The objective of this study is to discuss the issue in light of Islamic law. The motivation behind conducting this study is today's prolific practice of child recruitment and use by Muslim states and Islamic groups on the basis of some textual misconceptions and misinterpretations, illustrating the true Islamic law perspective to the issue and attempting to prevent or restrict the practice in the world, particularly in Muslim countries through Islamic rules, ideals, and morals. This research is a comparative and descriptive analytical study that is mostly based on international instruments and principles derived from established customs, the *Qur'ān*, and traditions of the Prophet Muhammad.

The research answers some important questions: What is the concept and term of child recruitment and use? Who refers to the practice of child recruitment and use the most today? What is Islamic law? Does Islamic law allow the recruitment and use of children during armed conflict? Does Islamic law overlap international law in the prohibition and criminalization of the practice?

The research consists of three main arguments: the first argument addresses the concept and term of child recruitment and use in international

law along with the analysis of the report of the UN Secretary General on the violations committed against children during armed conflicts in 2017; the second main argument discusses Islamic law and the protection of children from military involvement under the law; and the third argument is a brief comparative study between international law and Islamic law.

2. The Concept and Term of Child Recruitment and Use

Historically, children have been among the most affected groups during war. They have not only been targeted as part of the civilian populations but have also been part of war and used to realize military aims (Waschefort, 2011, 8; Children and Armed Conflict, 2011, 47-48; Leggiere, 2007, 99–100; Rosen, 2005; Promotion and Protection of the Rights of Children, 1996). It is not possible that the phenomenon of military recruitment and use of children has ever been consistent with the popular morals and ideals of the world cultures, but it has also not been unlawful until late 20th century. Hence, children have not only been the victims of political and economic greed of war actors but also the gap of a comprehensive legal protection from military recruitment and use.

The historical fatal effects of war on children, either as a group of the civilian populations or as recruited soldiers, urged the international community to seriously campaign against the violations of the rights of children during armed conflict from the second half of the 20th century. Consequently, a number of international instruments were adopted in which special protection and scrupulous care for children was recognized. One of the safeguards that the instruments included was the protection of children from military involvement.

Modern international law addresses the issue of child recruitment in international humanitarian law, international human rights law, international labour law, and international criminal law. As most of the rules of these laws have now been articulated into national laws, the prohibition of child recruitment and use is also a rule in the domestic law of most of the world states.

Following the adoption of the Geneva Convention Relative to the Protection of Civilian Persons in Time of War (Geneva Convention IV) in 1949, children were granted the statutes of civilian (Geneva Convention IV, 1949, Art. 4). Under the Convention, civilians are individuals who belong to neither armed forces or groups of a conflict and do not actively partake in their hostilities (Additional Protocol I, 1977, Arts. 50, 43). Therefore, they enjoy legal protection and are immune from military attacks and armed recruitment (Additional Protocol I 1977, Art. 51). Yet, the Convention does

not explicitly define the child and does not specifically refer to the issue of military recruitment and use of children during armed conflict.⁴

The first explicit reference as to the protection of children from military involvement was made in the 1977 Additional Protocols of the Geneva Conventions. The Additional Protocol I is applicable during international armed conflict and aims to protect the victims of such a conflict. The Protocol regarding the military recruitment and participation of children in combat stated:

The Parties to the conflict shall take all feasible measures in order that children who have not attained the age of fifteen years do not take a direct part in hostilities and, in particular, they shall refrain from recruiting them into their armed forces. In recruiting among those persons who have attained the age of fifteen years but who have not attained the age of eighteen years, the Parties to the conflict shall endeavour to give priority to those who are oldest (Additional Protocol I, 1977, Art. 77 (2)).

Besides some imperfections, the article is a significant historical development in international humanitarian law. The wording of the article implies that the contracting parties are, to a good extent, obliged to refrain from the practice of child recruitment during and participation in armed conflict.

The Additional Protocol II is considered as the extension and development of article three common to the Geneva Conventions. It is applicable during conflicts of an internal nature with the aim of protecting people who have no direct participation in it. The Protocol similarly includes a provision regarding the protection of children from armed recruitment and participation, as stated: “[c]hildren who have not attained the age of fifteen years shall neither be recruited in the armed forces or groups nor allowed to take part in hostilities” (Additional Protocol II, 1977 Art. 4 (3) (c)).

The drafters of the Protocol II formulated this provision more carefully compared to the relevant article of the Protocol I. They avoided using some problematic terms like ‘feasible measures’ and ‘direct participation’ which consequently made the provision stronger in application.

⁴The Geneva Convention IV refers to children below the age of 15 in a number of articles as such (14, 23, 24, and 38). The Convention generally provides such children with a privileged treatment in these articles. Additionally, article (51) of the Convention prohibits the occupying power from compelling protected persons to serve in its ranks but does not specifically address children and their issue of military recruitment and use during armed conflict (Geneva Convention IV 1949, Arts. 14, 23, 24, 38, 51).

It is worth mentioning that both protocols extend the special protection to the time when children are recruited and used in armed conflict in violation of the previous provisions or captured by the adversary party:

If, in exceptional cases, [...] children who have not attained the age of fifteen years take a direct part in hostilities and fall into the power of an adverse Party, they shall continue to benefit from the special protection accorded by this Article, whether or not they are prisoners of war (Additional Protocol I, 1977, Art. 77 (3)).

The special protection provided by this Article to children who have not attained the age of fifteen years shall remain applicable to them if they take a direct part in hostilities [...] and are captured (Additional Protocol II, 1977, Art. 4 (3) (d)).

The prohibition of military recruitment and use of children mentioned by the Protocols has been reproduced in some international human rights instruments and, therefore, the protection of children from such a practice is also part of international human rights law these days.

The 1989 Convention on the Rights of the Child was the compilation of the human rights guaranteed for children in the previous human rights instruments. However, it was the first international human rights document that provided a legal protection for children from military recruitment and use during armed conflict. According to the Convention, “[...] a child means every human being below the age of eighteen years unless under the law applicable to the child, majority is attained earlier” (The Convention on the Rights of the Child 1989, Art. 1). The Convention defined the child for the first time and determined a specific age for his or her maturity. The Convention further paid attention to the issue of child recruitment for the first time and stated:

States Parties shall take all feasible measures to ensure that persons who have not attained the age of fifteen years do not take a direct part in hostilities (The Convention on the Rights of the Child, 1989 Art. 38 (2)).

States Parties shall refrain from recruiting any person who has not attained the age of fifteen years into their armed forces. In recruiting among those persons who have attained the age of fifteen years but who have not attained the age of eighteen years, States Parties shall endeavour to give priority to those who are oldest (The Convention on the Rights of the Child, 1989 Art. 38 (3)).

The legal gaps of these provisions, particularly regarding the age limit for the military recruitment and participation of children in armed conflict, raised concerns and criticism. The adoption of the Optional Protocol

to the Convention on the Rights of the Child on the Involvement of Children in Armed Conflict in 2000 was the reflection of an international consensus as to the need to further develop the relevant provisions of the Convention. The Protocol, in its preamble, confirms the fact that the protection of children from military involvement needs to be increased and thus the minimum age of recruitment and participation in armed conflict needs to be readdressed (Optional Protocol, 2000, Paras. 6, 8).

The Protocol notes the definition of the Convention and refers to the child as a person who is under the age of 18 years unless the national law determines a lower age for him or her (Optional Protocol 2000, Preamble, Para. 7). It raises the minimum age of armed recruitment and participation from 15 to 18 years, as stated:

States Parties shall take all feasible measures to ensure that members of their armed forces who have not attained the age of 18 years do not take a direct part in hostilities (Optional Protocol, 2000, Art. 1).

States Parties shall ensure that persons who have not attained the age of 18 years are not compulsorily recruited into their armed forces (Optional Protocol, 2000, Art. 2).

The Protocol also requires the states parties to raise the legal age for voluntary recruitment from the age of 15. Furthermore, the states ought to ensure that the recruitment is absolutely voluntary and accompanied with the consent of parents or legal guardians and the person is completely informed regarding his or her military duties (Optional Protocol, 2000, Art. 3). Another important provision of the Protocol is that irregular armed groups are prohibited from recruiting or using children below the age of 18 in hostilities whether the recruitment is voluntary or compulsory and their participation is direct or indirect (Optional Protocol, 2000, Art. 4 (1)).

Another important document which addresses the issue of military recruitment and use of children is the 1999 African Charter on the Rights and welfare of the Child. The Charter refers to the child as a person who is under 18 years of age (African Charter, 1990, Art. 2). It requires states parties to respect the humanitarian rules applicable during armed conflict regarding children (African Charter, 1990, Art. 22 (1)). In respect of the age limit, the measures that the states ought to take and the prohibited manner of child participation in armed conflict, the Charter stated: “State Parties to the present Charter shall take all necessary measures to ensure that no child shall take a direct part in hostilities and refrain in particular, from recruiting any child” (African Charter, 1990, Art. 22 (2)).

The International Labour Organization adopted the Convention Concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour in 1999. The Convention similarly defines

children as persons who have not reached the age of 18 (The Labour Convention, 1999, Art. 2). It refers to forced or compulsory recruitment of children as one of the worst forms of child labour, as stated: “[a]ll forms of slavery or practices similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labour, including forced or compulsory recruitment of children for use in armed conflict” (The Labour Convention, 1999, Art. 3 (a)).

It should also be mentioned that there are some other significant instruments adopted to prevent or restrict the recruitment and use of children during armed conflict. Some of the instruments are the Cape Town Principles and Best Practices on the Recruitment of Children into the Armed Forces and on Demobilization and Social Reintegration of Child Soldiers in Africa (1997), the Paris Commitments to protect Children from Unlawful Recruitment or Use by Armed Forces or Armed Groups (2007), and the Paris Principles and Guidelines on Children associated with Armed Forces or Armed Groups (2007). Hence, this is besides many resolutions of the UN Security Council, *inter alia*, 1261 (1999), 1314 (2000), 1379 (2001), and 1460 (2003).

Although most of the above-mentioned instruments require the formality of state consent to be applicable, their rules on the protection of children from armed recruitment and use are also part of customary international law. Under customary international law, the applicability of the rules is based on the occurrence of the specific situation of armed conflict and the perpetration of the act and not on the states’ consent. The customary rules are not only applicable to states but also to private groups when they are a side of a conflict. In 2004, the Defence Counsel challenged the jurisdiction of the Special Court for Sierra Leone⁵ regarding the prosecution of Sam Hinga Norman and other Sierra Leonean political and military commanders under article (4 (c)) of the Court’s Statute for perpetrating the crime of recruitment and use of children under 15 years of age. The Defence Counsel stated that child recruitment and use was not a crime under neither conventional nor customary international law when the accused committed it. The Court rejected the defence and reaffirmed that even before November 1996, the criminalization of child recruitment and use was clearly evident in many international documents. Additionally, the documents had created prolific state practice and *opinio juris* as to the prohibition of the act and,

⁵The Special Court for Sierra Leone was a hybrid tribunal that was established based on an agreement between the Government of Sierra Leone and the UN on 16 January 2002. The tribunal was mandated to try the crimes that were committed as the result of violations of international humanitarian law and Sierra Leonean law, during the civil war in the country, since 30 November 1996 (Agreement between the United Nations and the Government of Sierra Leone, 2002; The Statute of the Special Court for Sierra Leone (SCSL), 2002).

therefore, it was also an established rule in customary international law (Prosecutor v. Sam Hinga Norman, 2004, Paras. 1, 2, 17).

It is worth mentioning that the UN has considered the crimes against children, as part of the civilian populations, as a threat to international peace and security. It has called upon states to protect children from military involvement and condemned the practice of child recruitment and use. The organisation has established several bodies to guarantee the protection of the rights of children during armed conflict. The bodies are Special Representative of the Secretary-General for Children and Armed Conflict⁶ and Working Group on Children and Armed Conflict⁷.

The recruitment and use of children is also addressed by international criminal law. The ICC Statute recognizes such an act as a serious violation of the laws and customs of war in the context of international and non-international armed conflicts. The Statute states:

Conscripting or enlisting children under the age of fifteen years into the national armed forces or using them to participate actively in hostilities (The ICC Statute, 1998, Art.8 (2) (b) (xxvi)).

Conscripting or enlisting children under the age of fifteen years into armed forces or groups or using them to participate actively in hostilities (The ICC Statute, 1998, Art. 8 (2) (e) (vii)).

Under the Statute, the term of child recruitment and use includes conscription or enlistment or use of children, below the age of 15, by national armed forces⁸ or armed groups⁹ to actively partake in an international or non-international armed conflict.¹⁰

⁶The Special Representative of the Secretary General for Children and Armed Conflict was established by the UN General Assembly Resolution (51/77) in 1996. Although the mandate of the body was temporary and for three years, it has been extended since then due to its significant role. The mission of the body is promoting and protecting the rights of children during armed conflict. The body yearly presents reports to the UN General Assembly and the UN Human Rights Council regarding the impact of armed conflict on children. Additionally, the body informs the UN Security Council and concerned governments about the challenges that children face during armed conflict so that they take appropriate measures to prevent or restrict them.

⁷The Working Group on Children and Armed Conflict is an organ of the UN Security Council. The organ was established by the Council's Resolution (1612) in 2005. The mandate of the organ is reviewing the monitoring reports on the violations against children during armed conflict, reviewing the Council's relevant action plans, recommending the Council appropriate measures as to the promotion and protection of the rights of children during armed conflict, making requests to the other organs of the UN to support the implementation of its mandate.

⁸Article (43) of the Additional Protocol I, defines armed forces as follows:

The armed forces of a Party to a conflict consist of all organized armed forces, groups and units which are under a command responsible to that Party for the

3. The Practice of Child Recruitment and Use by Muslims

The reasons, methods, and motivations might have changed over the time but the recruitment and use of children during armed conflict is not a new phenomenon originated from the necessity of modern warfare. Rather, it has been a military practice throughout history. The practice is believed to have been implemented by the ancient peoples and continued through the Middle Ages to modern times. Although child recruitment was mostly practiced by states until World War II, it has been more prolific and regular among armed groups since then.

According to an interview conducted with the UN Special Representative for Children and Armed Conflict, Olara Otunnu, the number of children who were involved in armed conflict in 2005 was estimated to be more than 300,000 (2005 Olara Atunnu on Child Soldiers, 2013). Although

conduct of its subordinates, even if that Party is represented by a government or an authority not recognized by an adverse Party. Such armed forces shall be subject to an internal disciplinary system which, *inter alia*, shall enforce compliance with the rules of international law applicable in armed conflict.

The International Committee of the Red Cross in the commentary on the Additional Protocols, stated:

[I]t is perfectly clear that the Protocol has extended its field of application to entities which are not States [...] If they conform to the requirements of the present article, liberation movements fighting against colonial domination [...] and resistance movements representing a pre-existing subject of international law may be “Parties to the conflict” within the meaning of the Conventions and the Protocol. However, the authority which represents them must have certain characteristics of a government, at least in relation to its armed forces [...] the notion of “Party to the conflict”, within the meaning of the Protocol, is fairly wide, involving not only resistance movements representing a pre-existing subject of international law and governments in exile, but also those fighting for conflicts of “self-determination” or “national liberation” (Sandoz & Swinarski *et al.* (eds.), 1987, 507).

⁹Article (1) of the Additional Protocol II refers to armed groups in the context of internal armed conflict as follows:

This Protocol [...] shall apply to all armed conflicts [...] take place in the territory of a High Contracting Party between its armed forces and dissident armed forces or other organized armed groups which, under responsible command, exercise such control over a part of its territory as to enable them to carry out sustained and concerted military operations and to implement this Protocol.

¹⁰The ICC Pre-Trial Chamber, in the case of Lubanga Dyilo, referred to conscription and enlistment as two forms of recruitment. Accordingly, conscription implies forcible recruitment while enlistment signifies voluntary recruitment. The judge of the Special Court for Sierra Leone, Robertson, elucidated the term of ‘using children to participate actively in hostilities’ in his separate opinion appended to the judgment of the Appeals Chamber, as putting the lives of children at the risk of combat after conscripting or enlisting. Thus, the term of child recruitment and use is conscripting or enlisting children to directly take part in combat or actively involve them in combat related duties (Prosecutor v. Lubanga Dyilo, 2007, para. 246; Prosecutor v. Sam Hinga Norman, 2004, para. 5).

the figure has been estimated less and less as a result of the UN efforts (The UN Security Council Action Plans and UN General Assembly relevant campaigns), the number of the recruited children is still estimated to be tens and thousands.

The UN Secretary General, António Guterres, published his annual report on children and armed conflict on 16 May 2018. The report covered the violations committed against children during armed conflicts from January to December 2017. According to the report, the UN verified 21,000 violations of which 6,000 were committed by the states' armed forces and 15,000 were perpetrated by irregular armed groups (Children and Armed Conflict, 2018, 2). The countries in which the violations were reported were Afghanistan, Central African Republic, Colombia, Democratic Republic of Congo, India, Iraq, Israel and the State of Palestine, Lebanon, Libya, Mali, Myanmar, Nigeria, Pakistan, Philippine, Somalia, South Sudan, Sudan, Syria, Thailand, and Yemen. The violations included killing, maiming, imprisoning, subjecting to sexual violence, abducting, recruiting and using children during armed conflicts. A great part of the violations were the cases of military recruitment and use. The cases were attributed to both national armed forces and armed groups fighting with one another. Most of the above-mentioned countries were either Muslim-majority countries or countries that were conflicting with Islamic groups on their territories. The most well-known Islamic groups were Taliban, Islamic State in Iraq and Syria (ISIS), al-Shabab, and Boko Haram (Children and Armed Conflict, 2018, 5-34).

The UN documented 643 cases of child recruitment and use in Afghanistan. The Organisation was able to verify 84 cases of which 23 cases were attributed to the national defence and security forces, 40 to Taliban, 19 to ISIS (Khorasan Province), and 2 to unidentified armed groups (Children and Armed Conflict, 2018, 5).

In the Central African Republic, the UN verified 299 cases of recruitment and use of children. Some of the children were only 8 years old. Except for 41 cases which were attributed to the Christian groups (32 children to the Anti-Balaka elements and 9 to the Lord's Resistance Army), all the cases were attributed to the factions of the Muslim Séléka group. The Union for Peace in the Central African Republic, known as UPC, recruited or used 89 children; the Popular Front for the Rebirth of Central African Republic, known as FPRC, recruited or used 62 children; the Central African Patriotic Movement, known as MPC, recruited or used 53 children; the FPRC and MPC jointly recruited or used 23 children; ex-Séléka Renovéé recruited or used 16 children; The Democratic Front of the Central African People, known as FDPC, recruited or used 14; and the Return, Reclamation,

Rehabilitation, known as 3R, recruited or used 1 child (Children and Armed Conflict, 2018, 7).

The UN reported 523 cases of child recruitment and use in Iraq. It verified 109 cases of which 59 children were recruited or used by ISIS (Children and Armed Conflict, 2018, 12), and the rest of the children were recruited or used by the Kurdish nationalist and unknown groups¹¹ (Children and Armed Conflict, 2018, 12).

The report mentioned three verified and three alleged cases of child recruitment in Lebanon. The verified cases were attributed to ISIS and the alleged ones to Hezbollah. The groups recruited the children from Lebanon into Syria to be used there. The report also referred to the allegations of child recruitment and use by other armed groups in Ain al-Hilweh, Lebanon, although it did not mention any group (Children and Armed Conflict, 2018, 15).

The UN received limited information regarding child recruitment and use by the Libyan armed forces but confirmed that the armed groups operating in the country continued to recruit and use children. It reported that the government released 125 adolescents, who were formerly associated with the armed groups, in the Zintan Municipality (Children and Armed Conflict, 2018, 16).

In Mali, the report mentioned 159 verified cases of child recruitment and use. However, 114 cases had taken place in the previous years but were only documented in 2017. The children were recruited or used by the following groups: 9 by Ansar al-Din, 3 by al-Mourabitoun, 1 by the Movement for Unity and *jihād* in West Africa, 1 by the Macina Liberation Front (Children and Armed Conflict, 2018, 17), and the rest of the children were recruited or used by the nationalist and unidentified groups¹² (Children and Armed Conflict, 2018, 17).

The UN report showed that child recruitment and use was a very prolific practice in Somalia. The Somali National Army and the Somali Police Forces recruited 130 children across the country. Al-Shabaab recruited 1,770, Ahl al-Sunna wal-Jama‘at recruited 66 (Children and Armed Conflict, 2018, 21), and the other autonomous forces of the country and

¹¹According to the UN report, the armed wing of the Kurdistan Workers Party and People’s Defence Forces recruited 9 children, the Yazidi Sinjar Resistance Units recruited 4 children, the Protection Force of Ezidkhan recruited 1 child, the Kurdistan Region Zeravani forces recruited 1 child, and the unknown armed groups recruited 35 children.

¹²Based on the UN report, 47 children were recruited by the Coordination of the Azawad Movements, 73 children were recruited by the Platform, 12 children were recruited by the Movement for the Salvation of Azawad, and 13 children were recruited by unknown armed groups.

unknown armed groups recruited 159 children¹³ (Children and Armed Conflict, 2018, 21).

In Sudan, the UN reported 24 cases of child recruitment and use but verified only one case. The report did not mention the parties who perpetrated the recruitment or use except for the case of a 14-year-old boy who was recruited by the Sudan Liberation Army-Abdul Wahid (Children and Armed Conflict, 2018, 24).

Syria is also on the top in the list of the UN report for the practice of child recruitment and use due to the intensity of its conflict in that year. According to the report, 961 children were recruited or used in that country in 2017. The report indicated that 26% of the children were below 15 years of age and 90% actively participated in the conflict. Among the children, 36 were foreign nationals and at least 16 of them lost their lives during that year. The government and its militia allies recruited or used 73 children, ISIS recruited or used 284 children,¹⁴ the other Islamic groups recruited or used 136 children¹⁵, and the nationalist movements recruited or used 468¹⁶ children (Children and Armed Conflict, 2018, 26).

In Yemen, the UN verified 842 cases of recruitment and use of children in the country's on-going conflict. The Houthis perpetrated two-thirds of the violations (534), the Security Belt Forces recruited or used 142 children, the Yemeni Armed Forces recruited or used 105 children, pro-government Popular Resistance recruited or used 50 children, and al-Qaeda in Yemen recruited or used 1 child. Although most of the children were between 15 and 17, some were as young as 11. The parties used 76 of the children actively in the conflict as combatants. Consequently, 31 children were killed and 14 others were maimed (Children and Armed Conflict, 2018, 28).

India is another country in which children are recruited and used during armed conflict including by Islamic groups in Jammu and Kashmir. The UN reported three incidents of child recruitment and use in 2017. Accordingly, one case was attributed to Jaish-e-Mohammed and the two

¹³The Galmudug Forces recruited 40 children, the Jubbaland Forces recruited 40 children, the Southwest Forces recruited 21 children, and the unknown clan militias recruited 58 children.

¹⁴According to the UN report, one of the children whom ISIS recruited was only 4 years old.

¹⁵The recruitments were perpetrated by 'Arakat A'rar al-Sham al-Islamiyyah (The Islamic Movement of the Free Men of the Levant), Jabhat al-Nusrah (al-Nusrah Front), Hai'at Ta'rir al-Sham (the Levant Liberation Committee), and some other unidentified groups.

¹⁶The Free Syrian Army recruited 244 children and the Kurdish armed forces known as the People's Protection Units recruited 224 children.

other cases were attributed to Hizbul Mujahideen¹⁷ (Children and Armed Conflict, 2018, 30).

The UN also reported the recruitment and use of children in the Nigerian situation. Accordingly, besides a substantial decrease in the practice,¹⁸ the verified cases were still 1,092 in 2017. Of the children, 1,051 were recruited or used by Boko Haram and 41 others were recruited or used by the pro-government Civilian Joint Task Force (Children and Armed Conflict, 2018, 31).

In Pakistan, children were continually recruited including from religious schools. Moreover, children were trained and instructed on the commission of suicide attacks. The UN report did not mention the number of the incidents and did not refer to any specific group as to the recruitment practice but attributed the training and instruction of children on the perpetration of suicide attacks to the Tehrik-e-Taliban Pakistan (Children and Armed Conflict, 2018, 32).

Finally, the UN report referred to the situation of Philippine and documented 30 verified cases of recruitment and use of children by the Islamic and other¹⁹ groups in the country. According to the report, the Bangsamoro Islamic Freedom Fighters used 16 children as human shields in an incident and the Maute group recruited or used 8 children (Children and Armed Conflict, 2018, 33).

The total number of the verified cases of military recruitment and use of children by the armed forces of the Muslim countries and the Islamic armed groups in 2017 was 5,661 cases. The list of the countries are as follows: Somalia (2,125), Nigeria (1,092), Syria (961), Yemen (842), Central African Republic (258), Mali (159), Iraq (109), Afghanistan (84), Philippines (24), India (3), Lebanon (3), and Sudan (1). The number of the children who were recruited or used by the states' national forces was 433 (7.6 %), and the number of the recruited or used children by the armed groups was 5,228 (92.4 %). The violations committed through only military recruitment and use against children during armed conflicts by Muslims constituted 27% of the total violations (21,000) verified by the UN in 2017.

¹⁷The report also mentioned unverified claims of child recruitment and use by the Communist Naxalites Party, in Chhattisgarh and Jharkhand, and use of children as informants and spies by the Indian National Security Forces.

¹⁸According to the report, the number of the recruited children in 2016 was 2,122. The figure showed that the practice of child recruitment and use decreased by 50% in 2017. The reasons for the decrease were that Boko Haram lost a large territory and a large number of civilians left the areas under the control of the group, besides the commitment of the Civilian Joint Task Force to the 'UN Action Plan' that the group signed in 2017.

¹⁹The UN report attributed 6 cases of child recruitment and use to the armed wing of the Communist Party of Philippines, New People's Army.

The UN report did not include the age of the victims except in the most extraordinary cases. Most of the children were, however, aged between 15 and 17 and at least one-fourth of them were under 15 years of age (Children and Armed Conflict, 2018, 5-34). The report further determined the sex of 4,845 out of 5,661 children. Accordingly, 4,244 (87.6%) were boys and 601 (12.4%) were girls (Children and Armed Conflict, 2018, 5-34). The UN also did not report the methods of the use of the children in every country and by every armed group but verified that the children were generally used to guard checkpoints, patrol military bases, transport logistics and supplies to military positions, cook, spy, transmit information, manufacture explosive devices, combat on the front lines, and carry out suicide bombing missions. Some of the girls were used for sexual purposes or married the fighters of the groups (Children and Armed Conflict, 2018, 5-34).

Finally, it should be mentioned that the number of the children who were recruited and used during armed conflicts, in 2017, was much more than the figure of the UN report. The UN only reported the verified cases and not all the incidents took place in that year. The number could be estimated ten times more and most of the incidents took place in Asia and Africa, particularly in the situations where Muslims are involved in either as states national forces or irregular armed groups.

4. Islamic Law

Islamic law is a comprehensive legal system which has been derived from various sources.²⁰ The primary sources of the law are known as *sharī'ah*. *Sharī'ah* is literally translated as the path by Islamic scholars (Abdal-Haqq, 2006, 4; Doi, 1981; Weiss, 1998). It is theologically a set of methodological principles and rules to guide Muslims. Islamic *sharī'ah* emerged after the revelations of the *Qur'ānic* verses and the recognition of the prophethood of the Meccan Qurayshi member, Muhammad Ibn Abdullah, in the first three decades of the 7th century. The *Qur'ān* introduced basic principles and the Prophet applied them in *hadīth* (teaching) and *sunnah* (practice). Thus, the first sources of the law were the *Qur'ān*²¹ and

²⁰In this article, we will only mention and rely on the primary sources and the secondary sources that Muslims unanimously or mostly accept.

²¹The Prophet received the Quran as revelations and orally transmitted it to his companions. The early companions were used to memorize it but compiled and wrote it down after the death of the Prophet. The *Qur'ān* includes general principles that are known as 'guidance'. The principles generally regulate the relation of man with God and then the relation of men with one another. The *Qur'ān* is, in other words, a constitution for Muslims (Abdal-Haqq, 2006, 11; Auda, 2007, 77-79; The *Qur'ān*, 2:185, 17:9, 14:1, 3:138, 2:2, 4:105, 16:64, 21:10, 26:2, 39:41).

traditions of the Prophet Muhammad²². Following the growing of Islam and the expansion of the Islamic Caliphate to outside of the Arabian Peninsula, Muslims faced new socio-religious issues which could not be decided by the comprehensive *Qur'ānic* texts and prophetic traditions. They, in other words, needed a much elaborated and detailed legal regime to settle the issues. Therefore, they started to rely on some other sources including *ijma'* (scholarly consensus)²³ and *qiyas* (analogical reasoning)²⁴ (Izzi Dien, 2004, 40-56).

Although Islamic law was not officially codified until late the Ottoman era (Zanki, 2014, 130; Qazi Zada & Qazi Zada, 2016, 160), it governed every aspect of life from the acts of worship (testimony of faith, prayer, fasting, charity and pilgrimage) to human interactions (financial transactions, endowments, inheritance, marriage, divorce, child custody, foods, drinks, criminal punishments, war and peace and judicial issues). It should be mentioned that Islamic law is still in force in some countries and is the primary source of legislation in many other countries.²⁵

²²The *Qur'ānic* principles are very comprehensive in nature. Muslims may not clearly find solutions for every issue that they face and therefore they alternatively refer to the life of the Prophet. Thus, the words and actions of the Prophet are also the second authoritative reference of Islamic law. During the era of the Prophet, Muslims would perform whatever the Prophet commanded and encouraged, and they would refrain from whatever he forbade and discouraged. The death of the Prophet made Muslims afraid of losing his intellectual heritage. As a result, scholars started to compile and write his traditions so that the latter generation would have access to them along with the *Qur'ān*. The traditions were collected by many scholars including Imam Bukhārī, Imam Muslim, Imam Abu Dāwūd, Imam Tirmidhī, Imam al-Nasā'ī, and Imam Ibn Mājjah (Rehmaanee, 2006).

²³The scholarly effort to solve the new socio-religious issues led to the emergence of *fiqh* (scholarly investigation of the *sharī'ah* principles and rules). The emergence of *fiqh* was accompanied with the formation of schools. The most long-lived and followed schools are the four *Sunni* schools of Hanafi, Maliki, Shafi'i, and Hanbali and the *Shiite* schools of Twelver and Zaidi. The schools generally do not revoke the validity of each other and following each makes one to be within the boundaries of the Islamic faith (Auda, 2007, 56-75).

²⁴Analogical reasoning simply means deriving a rule from the *Qur'ān* or the Prophetic traditions for an issue by analogy. Analogical reasoning is, in other words, the extension of the legal effect of the *Qur'ān* or traditions of the prophet from an issue to another issue, not covered by the two, based on the cause that the two issues share. It should be mentioned that analogical reasoning, as the source of law, has been the subject of controversy and debate among scholars and some have rejected it and relied on *Aql* (reason) instead of including the scholars of Twelver *Shiite* School (Izzi Dien, 2004, 52; Al-Salami, 1999, 18-20; Moaddel, 2005, 32-33).

²⁵Saudi Arabia and Iran are the only two countries which enforce Islamic law in all areas of governance these days. The rest of the Muslim countries consider Islam as the main source of legislation within secular political systems or at least retain the Islamic rules that govern personal status.

5. Islamic Law and Child Recruitment and Use during Armed Conflict

Islam generally prohibits Muslims from involving in violence for human material purposes but permits and commands *jihād* in some specific times and circumstances. *Jihād* is known as a violent historical concept that has caused many bloody wars. The argument may not be incorrect if one analyzes *jihād*, based on the common historical and political theories, from only a military perspective. Yet, Muslims believe that *jihād* is much broader than being confined to war. The concept includes any human exertion that benefits mankind or takes humanity out of discomfort for the sake of God (Khadduri, 1955, 55; Maududi, 1980, 5). Some scholars refer to war as only minor *jihād*.²⁶

Scholars classically divide combative *jihād* into defensive and offensive categories: defensive *jihād* is the self-defence of Muslims against the aggression of outsiders, while offensive *jihād* is the military campaign of Muslims to deliver Islam to other people around the world. However, most of the modern scholars prohibit Muslims from directing offensive *jihād* due to the availability of the alternative modern civil and cultural means that can play the same role (Khdir, 2018, 45-46). Additionally, classical scholarship does not consider both categories of *jihād* to be equal in terms of obligation and performance. Accordingly, defensive *jihād* is a compulsory individual obligation, whereas offensive *jihād* is a voluntary collective obligation (Moussalli, 2009, 18).

Defensive *jihād* is the protection of Muslims and Islamic land from actual or imminent military threats. The declaration of *jihād* is generally the primary and independent responsibility of ruler (Kalin & Kamali (eds.), 2013, xvi). Muslims must obey such a commandment at any time and under any circumstance. However, the lack of a legitimate ruler and his permission to *jihād* does not deprive Muslims from defending themselves and their land. Nevertheless, Islam specifies some conditions to Muslims to participate in *jihād*. One of the conditions is that the person must be physically and mentally capable to perform the obligation. God says in the *Qur'ān*: “(there is) not upon the weak, nor upon the sick nor upon those who find no means to spend (on the cause) any blame, if they are sincere (in their duty) to Allah and His messenger [...]”²⁷ (The *Qur'ān*, 9:91). The verse provides general

²⁶Many scholars have reported a tradition of the Prophet Muhammad according to which war is just a minor *jihād* and the greater *jihād* is a *jihād* against desires. Although the tradition does not seem to be technically authentic, it does not contradict the spirit of *jihād*. One cannot fight in the way of God unless he has completely taken control of self and curbed his fleshly desires (Hamid, 2008, 72; Ali & Rehman, 2005, 330).

²⁷As-Suddi states that before the revelation of this verse, Muslims would perform *jihād* according to the following verse: “[m]arch forth, whether you are light or heavy”. Ibn

exemptions from participating in *jihād*. The first person who is allowed not to perform *jihād* is a weak person. Although neither Tabari nor Ibn Kathir mentions or refers to children in the interpretation of the word of ‘weak’ (Ibn Kathir, 1999, 198-199; Al-Tabari, 2001, 623), modern scholarship includes immaturity (Children in Islam, 2005, 84) along with disability such as blindness, lameness, and elderliness. The verse further refers to sickness and poverty as two other excuses for not going for *jihād*. However, illness and financial incapability are temporary exemptions and become invalid following the recovery and returning to the state of normality.

The *Qur’ān* includes many verses which affirm that nothing is required from human beyond his or her physical, psychological, and mental strength, as says: “[a]nd strive for Allah with the striving due to Him. He has chosen you and has not placed upon you in the religion any difficulty” (The *Qur’ān*, 22: 78). The verse requires Muslims to strive hard (perform *jihād*) by any means in the first part but in the second part, confirms that religious obligations do not require strength beyond human capacity. Ibn Kathir gave many examples in the interpretation of this verse. Accordingly, prayer is the first and most important obligation in Islam after the testimony of faith but can be shortened based on the circumstances from four *Rak’has* to two during travelling and even to one *Rak’ha* at time of fear. Prayer may be performed however Muslims can perform it. Muslims may pray without facing the *Qiblah*²⁸ while travelling. A sick Muslim may pray sitting down or lying down (Ibn Kathir, 1999, 455-456).

The *Qur’ān* also says: “Allah does not intend to make difficulty for you but He intends to purify you and complete His favour upon you that you may be grateful” (The *Qur’ān*, 5:6). This verse is part of a longer verse regarding the way of carrying out prayer. Muslims generally must wash their faces and hands (to the elbow), pass lightly their wet hands over their heads and wash their feet up to their ankles. Then, they may stand to perform prayer. However, if one was in a state of ceremonial impurity, he must purify himself by taking a full bath. If he was ill or on a journey or has just relived

Kathir reported many stories of the companions of the Prophet Muhammad according to which Muslims had to fight whether they were young or old, healthy or ill, strong or weak and rich or poor. According to As-Suddi, the performance of *jihād* was very hard on Muslims and therefore God revealed the above-mentioned verse and abrogated this one. However, the verses of chapter nine were revealed before, during, and after the battle of Tabuk (630 AD). Before the aforesaid battle, Muslims had fought many battles and the Prophet had not allowed young Muslims to take part except in one exceptional case that would be mentioned later. Therefore, the phrase ‘whether young ...’ did not refer to children who were younger than 15 but young Muslims who were older than this age (the *Qur’ān*, 9:41; Ibn Kathir, 1999, 155-157).

²⁸*Qiblah* is the direction towards Ka’ba in Mecca, Saudi Arabia, where Muslims face during the performance of prayer.

himself or has had sexual contact and could not find water, he can use pure dust instead: passing it lightly over his face and hands. The reason is that God wants to make the obligation easy for Muslims and not to cause them any difficulty (The *Qur'ān*, 5:6).

The *Qur'ān* further says “Allah intends for you ease; He does not want to make things difficult for you” (The *Qur'ān*, 2:185). The verse is interpreted in the context of the obligation of fasting. It generally requires Muslims to fast during the month of Ramadan. However, if one were sick or on a journey, he may break the fast and make the day up after Ramadan. The implication is similarly that God wants to ease the obligation by allowing Muslims not to fast or break the fast when there is a valid excuse such as the hardship of illness or travelling even though fasting is the second principal obligation after the testimony of faith (The *Qur'ān*, 2:185). Ibn Kathir mentions many traditions of the Prophet Muhammad in the interpretation of this verse. Accordingly, the Prophet has often fasted and often not fasted while travelling. Yet, it is recommended not to fast or break it when the performance of fasting becomes hard on a journey (Ibn Kathir, 1999, 501-505).

The *Qur'ān* says: “Allah does not burden anyone beyond his capacity” (The *Qur'ān*, 2: 286). The verse signifies that God does not require anyone to carry out anything that is more than his physical, psychological, and mental endurance. He indeed lays responsibility on man to the extent of his strength and thus charges him with that within his capacity (Ibn Kathir, 1999, 737). It should be mentioned that there are three other chapters of the *Qur'ān* that include a similar verse (The *Qur'ān*, 6:152, 7:42, 23:62).

The scholars of *hadīth* have reported from the companions of the Prophet Muhammad that the Prophet once said: “[t]he pen has been lifted from three: from the sleeping person until he awakens, from the minor until he grows up, and from the insane person until he comes to his senses” (Ibn Mājjah, 2007, 168-169; Bukhārī, 1997, 130). The interpretation of the *hadīth* is that the bad deeds of these people are not recorded. Thus, children are among the categories of people whose deeds have no religious effect until they reach a certain age which is when they are physically and mentally mature.

Islam defines maturity as the onset of human capability to marriage. Thus, it sets the age of marriage as the age of maturity. The *Qur'ān* says: “[t]est the orphans when they reach the age of marriage. Then if you discern in them maturity, deliver to them their property” (The *Qur'ān*, 4:6). Orphans need guardians to manage their properties. The properties can only be delivered to them once they sexually and mentally become mature (Al-Tabari, 2001, 402-404; Ibn Kathir, 1999, 215). However, one may have

attained sexual maturity but is not yet mature mentally. Nevertheless, the general rule is that maturity begins from the age of marriage.

Islam conditions marriage with the realisation of puberty. Puberty is a biological phenomenon that makes one becomes capable of reproduction and intellectual comprehension (Gazanfari, 2016, 2-3). Human generally experiences the phenomena between the age of 10 and 18 depending on sex and social, cultural, and climate influence on his or her biological development. Islam basically connects puberty to physical development but alternatively refers to it as human age. Accordingly, puberty has been realized when one starts to experience wet dreams or menstruation, finds hair in the genital area or reaches the age of 15²⁹.

Some scholars of *hadīth* have reported from one of the Banu Qurayzah³⁰ survivors that Muslims separated women and children from men. The method that they used to determine maturity was looking at the private parts of the young males to ensure if their pubes had started to grow. The ones who had pubic hair were considered mature while the ones who did not were considered children (Abu Dāwūd, 2008, 45-46).

One of the young companions of the Prophet Muhammad, named al-Barā' Ibn 'Azb, has narrated that he and another companion, named 'Abdullah Ibn 'Umar were considered too young during the battle of Badr (624) and therefore the Prophet did not allow them to participate in it (Bukhārī, 1997,181). Although al-Bara has not reported his age in the year when the battle took place, 'Abdullah has explained his own in another tradition reported by some scholars of *hadīth*. According to the narration of 'Abdullah, he went to the Prophet and asked his permission to take part in battle on the day of Uhud (625). The prophet refused his request as he was very young. One year later during the battle of Trench (626), he approached the Prophet with the same request. The Prophet agreed this time and he

²⁹The Hanafi School presumes that puberty normally occurs at the age of 15. However, females experience it no later than the age of 17 and males no later than 18 years of age. The Hanbali and Shāfi'ī schools determine the age of 15 for both sexes, while the Maliki school sets the age of 18. Most of the *Shiite* scholars also believe that puberty takes place between the age of 9 and 15 depending on the sex (Al-Jaziri, 2003, 313-315; Gazanfari, 2016, 4-5).

³⁰ Banu Qurayzah was a Jewish tribe resided in Medina along with two other Jewish and two Arab tribes. Before, the migration of the Prophet from Mecca to Medina in 622, the tribes were all in conflict with each other. After the Prophet arrived there, he initiated a peace process and reconciled the tribes through mediation and organized peace pacts amongst them. In the battle of Trench (627), Banu Qurayza breached its peace pact and sided the Quraysh-led army against Medina and Muslims. Consequently, Muslims besieged the tribe, after the battle ended with their victory, and killed the male members and spared women and children. The execution of the tribe members was carried out based on the decision of an arbitrator who was appointed by an agreement of both sides. Scholars have reported that the arbitrator was from the Arab tribe of Aws which was the ally of Qurayza (Bukhārī, 1997, 270-271; Muslim, 2007, 59-60; Ibn Ishaq, 2004, 458-464).

fought alongside the adult Muslims. ‘Abdullah has further stated that he was 14 years old when the battle of Uhud occurred and had turned to 15 during the battle of Trench (Muslim, 2007, 201-202; Abu Dāwūd, 2008, 46). According to al-Tabbari, the Prophet sent back dozens of young Muslims home along with ‘Abdullah Ibn ‘Umar and al-Barā’ Ibn ‘Azb on the day of Uhud among whom were his famous companions: Zayd Ibn Thābit, Usayd Ibn Zuhayr, Arabāh Ibn Aws, and Abu Sa’īd al-Khudrī (Tabari, 1987,111). However, he has also reported a funny story of two young companions who were overzealous to participate in the battle. Accordingly, when the Prophet reviewed his troops to return young Muslims home, a young skilful archer named Rafī’ Ibn Khadij “stood on his pair of patched shoes and stretched himself on tiptoe to his full height, and when the messenger of God saw him, he passed him”. Among the young Muslims who were to go back home, there was Rafī’'s rival in wrestling, Samurah Ibn Jundub. When Samurah saw Rafī’ passed, he complained and claimed that he could beat Rafī’ in wrestling. Then, the Prophet asked them to wrestle; Samurah beat and threw Rafī’ and then he was also allowed to stay. Al-Tabari has not mentioned the exact age of the two companions but indicated that they were also considered too young (Tabari, 1987,111).

As we mentioned before, *jihād* is regarded an obligation upon Muslims. Offensive *jihād* was to be based on the parental consent. Yet, defensive *jihād* does not require any permission and Muslims may participate in it with or without the consent of parents. Scholars have reported various traditions of the Prophet Muhammad regarding the significance of parental permission in the participation in *jihād*. Accordingly, many people came to the Prophet and asked his permission to go for *jihād* but the Prophet refused them all and sent them back home to serve their parents or ask permission from them. According to one narration, a man came to the Prophet and sought his permission to go for *jihād*. The Prophet asked him if his parents were alive and the man replied that both were alive. The Prophet then asked him to go back home to serve them (Bukhārī, 1997, 152). According to another narration, a man came to Medina from Yemen. The Prophet asked him if he had any relatives in Yemen and the man replied that he had his parents there. The prophet then asked him if he had sought their permission and the man replied that he had not. The prophet asked him to go back home and ask permission from them. If they accepted, he could go for *jihād*. If they did not, then he would have to stay and serve them (Abu Dāwūd, 2008, 222). Another companion of the Prophet has narrated that he approached the Prophet and requested his permission to take part in *jihād*. The Prophet asked him if his mother was still alive. The companion replied that she was. The Prophet then asked him to go back home and honour her. The companion continued approaching the Prophet from the other side and

in front with the same request but the Prophet refused him every time and finally said: “[g]o back and serve her, for there is Paradise” (Ibn Mājjah, 2007, 57). Imam Ibn Mājjah comments on this tradition and argues that if one was the only family son, serving his parents is more important than taking part in *jihad* (Ibn Mājjah, 2007, 58).

The Islamic jurists similarly divide *jihād* into defensive and offensive categories. They unanimously agree that the obligation of offensive *jihād* is collective and voluntary. It only extends to male Muslims who are free, mature, sane, healthy, and financially able (Al-Sha’rawi, 1998, 44-45; Bin Mar’i, 2003, 62-68; Al-Sa’imi, 2008, 51- 71). Yet, they differ regarding defensive *jihād*. Some believe that everyone, who is capable of fighting, ought to take part in defensive *jihād* including women and children while some are of the opinion that women and children are not required to fight (Al-‘Anafi, 2003, 379-382; Al-Dardir, 1991, 274-276; Al-Gamrawi, 1337 (1919), 540-543; Ibn al-Quddamah, 1997, 33-37; Al-Tusi, 1980, 289). The first group of jurists refer to aggression as the most serious threat to Muslims as a whole. The gravity of the threat makes them derogate from certain humanitarian rules such as the participation of children in battle. However, they do not specify an age and do not mention the way of participation of children.

As far as war is concerned, the story of ‘Abdullah Ibn ‘Umar and the other young Muslims who voluntarily and enthusiastically wanted to participate in battles, alongside the Prophet Muhammad, must be taken as the only true Islamic practices regarding the participation of young people. The battle of Trench, in which ‘Abdullah Ibn ‘Umar took part for the first time, was a defensive war in nature for Muslims. The war took place on the outskirts of Medina. The battle of Trench can militarily be defined as the most important battle in the history of Islam. It was a decisive war and decided on the future of Islam and Muslims. Besides, the adversary party consisted of the alliance of many tribes and their army was much larger than Muslims. According to some accounts, the number of Muslims did not exceed 3,000 while the number of the Quraysh led allies was 10,000 well equipped warriors (Ibn Kathir, 2000, 91). Additionally, the Qurayzah tribe breached its pact with Muslims and sided Quraysh and its allies from the inside of Medina. Thus, the permission of the Prophet on the participation of ‘Abdullah Ibn ‘Umar was probably not only because he was fifteen but also all the critical conditions that Muslims faced during the battle. Nevertheless, scholars have reported that when the Umayyad Caliph, ‘Umar bin ‘Abdul ‘Aziz (680-720) (As-Sallabi, 2011, 54), heard the *hadīth* of Ibn ‘Umar, he said: “[t]hat is the dividing line between child and adult”. He commanded his agents to consider all those who were younger than fifteen as children (Abu Dāwūd, 2008, 46; Muslim, 2007, 201-202).

6. Islamic Law and Criminal Responsibility for Child Recruitment and Use during Armed Conflict

Islamic law introduces a set of rules to characterize the behaviour of Muslims. Accordingly, the acts of Muslims are classified into obligatory, recommended and permitted, and disliked and forbidden (Aroua, 2013, 40). These rules regulate the relation of Muslims with God as well as the interaction of Muslims with one another. Islam does not only promise reward and punishment for the acts in the hereafter but also in this life. These rules, in other words, constitute criminal rules and establish criminal responsibility.

Islam, like the other religions, defines the violation of its law as 'sin'. However, sin is theologically understood to be broader. It may entail acts that do not involve common human criminal responsibility. Nevertheless, Islamic law recognizes the conduct of a prohibited act as a crime but does not mention and specify the punishments of all crimes. Islam, in other words, characterizes the most serious crimes of concern to the Muslim community and specifies their punishments but leaves the lesser grave crimes and their penalties for the discretionary power of the judge or ruler.

Islamic law characterizes criminal acts through their punishments. The crimes that the law recognizes are known as *Hadud*, *Qisas*, and *Ta'zir* Crimes ('Awdah, 1993, 78-81). A culprit is condemned based on his or her confession or the testimony of not fewer than two witnesses (in some cases four witnesses are required). The punishments are imposed based on the gravity of the act and may include fine, imprisonment, lashing, amputation, exile, and execution.

The first category of the crimes is *Hudud* Crimes. The *Hudud* Crimes are defined as trespassing the limitations demarcated by God. The crimes are mentioned in the *Qur'an* and traditions of the Prophet and their punishments are specified as well. The *Hudud* Offences are theft, adultery and fornication, defamation (unfounded accusation of fornication and adultery and impugning the legitimacy of a child), highway robbery, consuming wine and other intoxicants, and according to some jurists, apostasy and rebellion (Al-Mawardi, 1996, 312, 314; Hallaq, 2009, 310-311; 'Awdah, 1993, 79; Bassiouni, 1997, 269). Although these offences are pardoned neither by the victim nor by the state, they are conditioned with strict evidentiary requirements. The offences generally require confession or the testimony of at least two eye witnesses. In case of adultery or fornication, there must be four eyewitnesses to decide on the punishment of stoning to death ('Awdah, 1993, 81-83). A small doubt or a slight ambiguity is sufficient for the judge or ruler to avert the punishment. The punishments for the *Hudud* Crimes are amputation, stoning death and lashing, and imprisonment and beheading (Lippman, 1989, 39-42).

The second category of the crimes is *Qisas* Crimes. The *Qisas* Crimes are known as offences against person and his or her body. The term is linguistically meant as equivalence and theologically understood as similar retaliation. *Qisas* includes all categories of murder as well as battery. It is based on the principle of a soul for a soul and an eye for an eye (The *Qur'ān*, 5:45). Islamic law provides an alternative punishment for *Qisas* Offences which is compensation (blood money or ransom) (The *Qur'ān*, 4:92). The victim or his or her heirs may receive the compensation and forgo the retaliation. Besides the entitlement of the victim or his or her family to retaliation and compensation, Islam encourages pardon for *Qisas* Crimes out of charity. It considers it as a high moral and benevolent act that leads the victim and his or her heirs to expiation (The *Qur'ān*, 16:126, 5: 45, 2: 179, 42: 40, 7: 199, 24: 22, 42: 43).

The third category of the crimes is known as *Ta'zir* Crimes. *Ta'zir* linguistically means chastisement. The *Ta'zir* Crimes do not have specific punishments in the *Qur'ān* and prophetic traditions. Their punishments are rather left to the authority of the ruler or judge ('Awdah, 1993, 80). The *Ta'zir* Crimes consist of the offences qualify not as *Hudud* and *Qisas* Crimes (due to doubt, ambiguity, the lack of sufficient evidence or witnesses or other technical requirements) but offences against public welfare and morality. The examples of the *Ta'zir* Crimes are attempted theft, attempted murder, embezzlement, bribery, usury, false testimony, sodomy, fortune telling, nudity, and not performing religious obligations (Lippman, 1989, 45). The *Ta'zir* Crimes similarly require the confession of the culprit or the testimony of at least two witnesses. The punishment for the *Ta'zir* Crimes entails fine, lashing and imprisonment, and exile and execution (Lippman, 1989, 45).

The recruitment and use of children under the age of 15 during armed conflict is a prohibited act in Islam. The act does violate Islamic law and thus attracts individual criminal responsibility. However, it does not constitute a serious crime and does not have a high-level gravity like theft, murder, etc. The crime can, in other words, be categorized as a *ta'zir* crime and its prosecution and punishment can be based on the discretion of the ruler or judge. Besides that, Islamic law is very explicit in the prohibition of the practice, Muslims have recruited and used children below the age of 15 during armed conflicts throughout the medieval and modern history.³¹ Yet, there is no reference as to the punishment of the perpetrators in the Islamic historical literature. The issue stems not from the fact that Islamic law contains no criminal responsibility and punishment for the crime but from the nature of the crime under the law and irresponsibility and recklessness of

³¹See for example the *Devşirme* System practiced by the Ottoman Empire in Eastern and South-eastern Europe from the fifteenth century to the middle of the seventeenth century (Yilmaz, 2009, 119-134).

Islamic judges in bringing the perpetrators before justice and restore rights for victims. The reasons might have been the sacredness and significance of the concept and campaign of *jihād* in Islam. However, no one could have ever been as eager as the Prophet to spread Islam and protect Muslims but he refrained from and prohibited such a practice. Nevertheless, the lack of previous court decisions and juristic discretions on the crime of child recruitment, and use during armed conflict, is a legal gap in Islamic criminal law. To fill this gap, the countries that enforce Islamic law ought to establish a proper and just practice and the countries which have adopted secular penal codes ought to incorporate relevant criminal rules into their criminal codes.

7. International Law and Islamic Law: Comparison on Child Recruitment and Use during Armed Conflict

International humanitarian law does not explicitly define the child and leaves it to the applicable law of states but prohibits military recruitment and use of children below the age of 15. The law undergoes gaps, shortcomings and loopholes, besides its inconformity with international human rights law and international labour law regarding the minimum age of military involvement of children.

The Geneva Convention IV refers to children as part of the civilian populations. The Convention protects children as long as they have no part in armed conflict but when they participate in a conflict whether internal or international, they will fall outside of the scope of the applicability of the Convention and lose their civilian status and the promised protection (Geneva Convention IV, 1949, Arts. 3, 4, 5). Additionally, the Convention does not specifically refer to the issue of child recruitment and use during armed conflict in none of its articles.

The Additional Protocol I addresses the military recruitment and use of children but the wording of the relevant article is not strong enough to prohibit the practice. The terms ‘feasible measures’, ‘direct participation’, ‘giving priority to the oldest’, and the issue of ‘voluntary enrolment’ make the article incomplete and its protection not effective enough (Additional Protocol I, 1977, Art. 77 (2)). In other words, the Protocol does not require the states to take ‘necessary measures’.³² The type of participation that the Protocol refers to is direct and hence indirect participation, such as gathering intelligence, transmitting information, transporting arms and providing supplies, is not covered by the Protocol (Additional Protocol I, 1977, Art. 77 (2)). Furthermore, voluntary enrolment does not constitute any violation of

³²The International Committee of the Red Cross suggested the term of ‘necessary measures’ during the negotiations on drafting the Protocol but the suggestion was not accepted and the term of ‘feasible measures’ was finally included instead (Sandoz & Swinarski *et al.* (eds.), 1987, 900).

the article. Finally, the Protocol does not prohibit the direct participation of children above 15 but prioritizes those who are the oldest (Additional Protocol I, 1977, Art. 77 (2)).

Although the drafters of the Protocol II avoided using the terms ‘feasible measures’ and ‘direct participation’ in order for the article to cover compulsory and voluntary recruitment and direct and indirect participation of children under 15 years of age during armed conflict (Additional Protocol II, 1977, Art. 4 (3) (c)), the effect of the Protocol extends only to the most serious situations and excludes internal disturbances and tensions (Additional Protocol II, 1977, Art. 1 (2); Sandoz & Swinarski *et al.* (eds.), 1987, 1349). Besides, some certain criteria from the side of insurgents as such a responsible command, controlling part of the territory and the possibility to implement the Protocol (Additional Protocol II, 1977, Art. 1 (1); Sandoz & Swinarski *et al.* (eds.), 1987, 1349).

Among dozens of international and regional human rights instruments, there are only the Convention on the Rights of the Child along with its Optional Protocol and the African Charter on the Rights and Welfare of the Child that refer to the issue of child recruitment.

The Convention on the Rights of the Child sets a clause in its definition for the child. The clause is respecting the national law in the determination of a lower age for the child (The Convention on the Rights of the Child, 1989, Art.1). The provisions of the Convention regarding the prohibition of child recruitment and use are the copy of the relevant article of the Additional Protocol I (Additional Protocol I, 1977, Art. 77 (2); The Convention on the Rights of the Child, 1989, Art. 38 (2) (3)). Hence, the Convention becomes the subject of the same criticisms. The Convention redefines the child in the latter provisions and decreases the child’s age from 18 to 15 in the process of military recruitment and use during armed conflict (The Convention on the Rights of the Child, 1989, Art. 38 (2) (3)). In other words, the Convention determines 18 years of age as the beginning of maturity in the definition but prohibits only the direct participation of children below the age of 15 in the latter provisions. From a *contrario* reading, the indirect participation under the age of 15 and the recruitment and participation of children from the age of 15 above do not constitute any breach under the Convention. Additionally, the Convention is the subject of many reservations. The states may object some certain provisions and the provisions will have no legal effect on them. Furthermore, the Convention has no specific mechanism to enforce it except the periodic reporting system from the states parties to the UN Committee on the Rights of the Child, regarding the implementation of the Convention, which can only make suggestions on the compliance and not punish them for not adhering to the Convention (Hackenberg, 2000, 429-430).

The Optional Protocol is although stronger in formulation than its Convention, it still includes loopholes and cannot be considered as a comprehensive legal protection for children during armed conflict. The issues of the Protocol are again the terms ‘feasible measures’, ‘direct participation’, and ‘compulsory and voluntary recruitment’ which eventually leave spaces for interpretation and implementation of the provisions of the Protocol (Optional Protocol, 2000, Arts. 1, 2, 3).

The wording of the African Charter on the Rights and Welfare of the Child is probably the strongest among the human rights instruments. Yet, the word ‘direct’ is a gap in the relevant provision and a *contrario* reading of it signifies that indirect participation is not unlawful (African Charter, 1990, Art. 22 (2)). The Charter’s legal effect extends only to those states that have ratified it and its enforcement mechanisms are almost similar to the Convention on the Rights of the Child (Hackenberg, 2000, 431-432). Finally, the implementation of the Charter’s provisions could be based on the stipulation of customary, traditional, religious, and cultural consistency (African Charter, 1990, Art. 1 (3)).

The Labour Convention covers only compulsory recruitment of children and not voluntary enrolment. In other words, children who voluntarily participate in armed conflict are not protected under the Convention (The Labour Convention, 1999, Art. 3 (a)).

The military recruitment and use of children below the age of 15 is a war crime under modern international criminal law but the crime has been prosecuted few times. The Special Court for Sierra Leone was the first international criminal body that indicted some political and military commanders and eventually convicted them for committing such a crime (Prosecutor v. Norman, 2003; Prosecutor v. Fofana, 2003; Prosecutor v. Kondewa, 2003; Prosecutor v. Norman, 2004; Prosecutor v. Brima, Kamara *et al.*, 2007; Prosecutor v. Sesay, Kallon *et al.*, 2009; Prosecutor v. Taylor, 2012). The ICC might have also indicted some people (Joseph Kony; Vincent Otti *et al.*, 2005) but has only charged and sentenced the head of the Union of Congolese Patriots, Thomas Lubanga Dyilo, for committing such an act in 2012 (Prosecutor v. Lubanga Dyilo, 2007; Prosecutor v. Lubanga Dyilo, 2012, para. 98).

International law rules governing the protection of children during armed conflict were adopted based on the compilation, combination, and codification of the customs which had initially been established by the ancient religions and civilizations. The law has brought nothing new regarding the prohibition of child recruitment and use during armed conflict except the incorporation of the relevant customs into international conventions. However, it has established individual criminal responsibility

and international and hybrid criminal mechanisms to prosecute the perpetrators.

The history of the Islamic rules, protect children from military involvement, can be traced back to the first three decades of the 7th century. Yet, the wording of the relevant *Qur'ānic* verses and Prophetic traditions is not weaker than the modern international instruments. Although the *Qur'ānic* verses are much more comprehensive than that which can be compared to modern secular rules, the stories of 'Abdullah Ibn 'Umar and other companions entail all the specific elements of the relevant modern international law rules. The stories generally indicate a ban on the military engagement of children in armed conflict. The request of 'Abdullah and others to take part in battles, along with the Prophet under the age of 15, equates to the modern legal terminologies of voluntary enrolment and participation in armed conflict. The refusal of the Prophet implies taking necessary measures to protect children from military recruitment and use. Although the traditions and narrations do not include further details as to the return of children to Medina, there is no evidence to affirm that they carried out activities linked to the battles "such as scouting, spying, sabotage" or they were used "as decoys, couriers or at military checkpoints".³³ Hence, the traditions could be strictly interpreted as 'Abdullah and others did not even partake in the battles indirectly.

Nevertheless, neither international law guarantees complete protection of children from military recruitment and use nor Islamic law does legitimize and justify child involvement in armed conflict. International law may play a greater role these days through raising the minimum age of military recruitment and triggering the jurisdiction of the ICC but the

³³The Preparatory Committee on the Establishment of an International Criminal Court explained the words of "participating" and "using" in the context of the relevant article of the ICC Statute and stated:

The words "using" and "participate" have been adopted in order to cover both direct participation in combat and also active participation in military activities linked to combat such as scouting, spying, sabotage and the use of children as decoys, couriers or at military checkpoints. It would not cover activities clearly unrelated to the hostilities such as food deliveries to an airbase or the use of domestic staff in an officer's married accommodation. However, use of children in a direct support function such as acting as bearers to take supplies to the front line, or activities at the front line itself, would be included within the terminology (The Report of the Preparatory Committee on the ICC Establishment, 1998, 21).

The ICC Trial Chamber in the Lubanga Dyilo Case also referred to report of the Preparatory Committee in the interpretation of the article and stated: "Active participation" in hostilities means not only direct participation in hostilities, combat in other words, but also covers active participation in combat-related activities such as scouting, spying, sabotage, and the use of children as decoys, couriers or at military check-points" (Prosecutor v. Lubanga Dyilo, 2007, Para. 261).

relevant Islamic rules are also dynamic and flexible which allow Muslims to reinterpret them in light of modern standards. Besides, Islam does not prevent Muslims from signing and ratifying international instruments and becoming ICC member states as such acts do not violate any core Islamic principle but fill legal gaps and complete legal and judicial systems in Muslim countries (Bsoul, 2009, 19-22; Ibn al-Qaiyem, 1994; Al-Shatbi, 1997; Zarkashi, 1985; Al- Jassas, 1980).

Conclusion

Child recruitment has been a military phenomenon since the ancient periods but it was legally prohibited in late 20th century. Under international law, child recruitment is a legal term these days and is used for the war crimes of conscripting, enrolling, or using children under 15 years of age during armed conflict.

Based on the annual report of the UN Secretary General in 2018, the armed conflicts in the world resulted in 21,000 violations against children in 2017. Most of the violations were perpetrated in either Muslim-majority states or states that were involved in armed conflicts with Islamic groups. The cases of military recruitment and use of children constituted a great part of the violations. The number of such cases committed by Muslims was 5,661. Of the cases, 433 (7.6 %) were reported from national armed forces and 5,228 (92.4 %) were documented from irregular armed groups. These cases made up 27% of the total violations reported and verified by the UN. According to the report, the victims were mostly boys and aged between 4 and 17. The perpetrators used the victims either actively in combat or in activities related to combat. The report demonstrates that the practice of child recruitment and use is very prevalent among Muslims.

However, Islam prohibits its followers from such an act. Islamic law basically consists of the *Qur'ān*, traditions of the Prophet Muhammad, scholarly consensus, and analogical reasoning. The law completely regulates the life of children and grants them sufficient rights. It refers to them as the most vulnerable group and protects them from the effects of warfare, *inter alia*, armed recruitment and use. The *Qur'ān* includes a verse according to which children are exempted from performing the obligation of *jihād*. The Prophet has refused the request of young Muslims below the age of 15 from participating in battles. The Islamic jurists similarly consider immaturity as a valid reason to stay away from battle unless Muslims face aggression that endangers the Muslim community as a whole. Children may further be protected from partaking in battle by the analogy of the *Qur'ānic* verses on the exceptional circumstances of the main obligations like prayer and fasting and the verses that extend Islam to the boundaries of human capacity.

Yet, Muslim politicians and military commanders have often

recruited and used children in violations of these rules and no one has likely been prosecuted in the history of Islam. The issues do not lie in the law itself but rather in the nature of the offence and its punishment and improper administration of criminal and judicial authority. Child recruitment and use during war is classified as a *ta'zir* crime under Islamic law. The punishment of the *Ta'zir* Crimes is not specified in the Islamic primary sources and hence it is alternatively derived from the discretionary authority of the judge or ruler.

Nevertheless, Islamic rules and practices on the prohibition of child recruitment and use are a precedent of modern international law along with the customs of the other religions and civilizations. International law did not innovate none of the rules but just codified them in the late 20th century. However, it, for the first time, defined it as a serious war crime and established criminal mechanisms for its perpetrators. If the responsible Muslim states and groups reject to obey the relevant conventional international law rules, they at least ought to adhere to their own religion and refrain from military involvement of children because Islamic law works completely in conjunction with international law in protecting children from and criminalizing armed recruitment and use below the age of 15 during armed conflict.

Recommendation

1. The Islamic states, Muslim-majority states, and Islamic groups should refrain from the act of child recruitment and use as a moral requirement and obligation of their religion.
2. Islamic scholars and jurists should reinterpret the relevant *Qur'ānic* verses and Prophetic traditions in light of the contemporary sociological needs and obligations and derive humanitarian and criminal rules out of it regarding the act of child recruitment and use.
3. The Islamic *fatwa* committees and unions should exercise their ruling authority on the issue of child recruitment and use and consider the practice as a sin based on the *Qur'ān* and traditions of the Prophet Muhammad.
4. The Islamic states of Iran and Saudi Arabia should incorporate Islamic humanitarian and criminal rules into their relevant laws to prohibit the act of child recruitment and use and punish the perpetrators of such an act based on the Islamic primary references or relevant *fatwas*.
5. The Muslim-majority-states should become states parties to any regional and international instruments and courts on the prohibition and criminalization of child recruitment and use, particularly the Rome Treaty (1998) and the International Criminal Court.

6. The Islamic academia should spread awareness among people and political and military authorities on the issue of child recruitment and use through further researching, debating and meetings.

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La Pérennité Concurrentielle de la Petite et Moyenne Entreprise Camerounaise: Enjeux, Défis et Perspectives

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Résumé

La question de la pérennité concurrentielle est aujourd'hui au centre de toutes les stratégies concurrentielles. Longtemps fondé sur une logique transactionnelle qui implique une élimination des moins compétitifs par les plus compétitifs, l'avantage concurrentiel au regard de la réalité économique actuelle semble avoir une assise plutôt relationnelle. Si non comment pouvons-nous expliquer la pérennité concurrentielle des petites et moyennes entreprises face à une concurrence féroce des grandes entreprises dans un contexte de globalisation concurrentielle. Cette étude est centrée sur la compréhension des facteurs qui expliquent la pérennité concurrentielle des PME au Cameroun. Nous avons procédé à travers une analyse qualitative à des entretiens avec des hauts responsables de 18 PME du Cameroun. Il ressort de l'analyse des informations recueillies que l'avantage concurrentiel des PME camerounaises fondé sur des facteurs classiques comme l'innovation, l'accès au capital financier, l'accès au marché est réel. Cependant le paramètre central qui explique la pérennité concurrentielle est relationnel et fondé sur une coopération entre les PME concurrentes. Nous avons mis en évidence trois types de coopérations au sein des PME camerounaises concurrentes: une coopération sociale entre les PME dont les responsables ont des antécédents sociaux ; une coopérative géographique entre les PME ayant un marché commun ; une coopération économique entre des PME éloignées socialement et géographiquement. C'est cette coopération concurrentielle qui fonde l'avantage concurrentiel au plan stratégique par une stabilisation de l'environnement concurrentiel immédiat et au plan opérationnel par la gestion

de la clientèle.

Mots-clés: Petite et moyenne entreprise ; pérennité concurrentielle ; coopération concurrentielle

Understand the Competitive Sustainability of the Cameroonian Small and Medium Enterprise

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Abstract

The question of competitive sustainability is now at the center of all competitive strategies. Long based on a transactional logic that involves the elimination of the least competitive by the most competitive, competitive advantage with regard to the current economic reality seems to have a rather relational basis. If not, how can we explain the competitive sustainability of small and medium-sized enterprises in the face of fierce competition from large companies in a context of competitive globalization. Our study focuses on understanding the factors that explain the competitive sustainability of SMEs in Cameroon. It emerges from the analysis of the information collected that the competitive advantage of Cameroonian SMEs based on classic factors such as innovation, access to financial capital, access to the market is real. However, the central parameter that explains a long-term competitive advantage is relational and based on cooperation between competing SMEs. We have highlighted three types of cooperation within competing Cameroonian SMEs: social cooperation between SMEs whose managers have a social background; geographical cooperation between SMEs having a common market; economic cooperation between socially and geographically distant SMEs. It is this competitive cooperation that establishes competitive advantage at the strategic level by stabilizing the immediate competitive environment and at the operational level through customer management.

Keywords: Small and medium enterprise; competitive sustainability ; competitive cooperation

Introduction

La petite et moyenne entreprise représente le centre névralgique de l'économie mondiale ¹(United Nations, 2005). Si depuis 1972 (Lindberg & Cohn, 1972) et un peu plus récemment (Knight, 2000) il était reconnu des différences entre le style de gestion des grandes entreprises et celui des PME, les recherches en marketing dans les PME ont cependant connu une longue influence des connaissances issues des analyses propres à la grande entreprise (Chaston and Mangles, 2002). La principale question de recherche porte à cette époque sur les éléments absents ou qui font barrière à la pratique du marketing par les PME eu égard à leur incapacité à appliquer les concepts développés par des recherches au sein des entreprises de grandes tailles (Brooksbank, 1999) et donc de justifier d'un avantage concurrentiel. Les principes de base du marketing sont supposés scientifiques donc universels, applicables simultanément aux grandes entreprises et aux petites entreprises (Siu and Kirby, 1998).

L'étude fondamentale de Reijonen en 2010 marque une rupture fondamentale en soulignant une différence fondamentale des pratiques du marketing entre les entreprises selon leurs tailles (Reijonen, 2010). La PME dispose de ses propres logiques de marketing qu'il faut explorer et expliquer. Avant cet auteur, Simpson et Al. (2006) examinant les définitions du mot « marketing » existant dans la littérature soulignaient une carence de définition propre à la PME. Cette carence fait de la PME un objet d'étude très peu exploré sous l'angle des pratiques marketings. L'enjeu des recherches sur le contenu marketing des pratiques des PME est d'avantage capital car il constitue un sujet de débat ardent entre les chercheurs et les chefs d'entreprises depuis plus de 20 ans (Gilmore et al., 2001).

Si l'avantage concurrentiel est reconnu comme élément déterminant dans la lutte concurrentielle (Prasanna et Al. ; 2021 ; Sibel A. ; 2015), la question de la pérennité du-dit avantage reste très peu examinée dans la littérature. Une bonne gestion des facteurs sources de l'avantage concurrentiel devrait permettre aux managers des PME non seulement de créer l'avantage mais surtout de les maintenir sur le long terme. La pérennité de l'avantage concurrentiel est une des critiques majeures du modèle de référence des cinq forces de Porter (1980) que les modèles matriciels prétendent comblés. Mais

¹ Elle représente en suisse, plus de 99 % des entreprises (Portail PME ; 2019) ; En Inde, la PME emploie 40 % de la main d'œuvre et contribue à hauteur de 45 % à la production industrielle (Trivedi Jay, 2013) ; La petite entreprise représente 99,7 % du marché de l'emploi aux Etats-Unis (Shiina Pai, 2017). Au Nigeria les données de base sur les entreprises de 2012 classent dans la catégorie des PME 17 284 671 entreprises ; ces PME emploient 32 414 884 personnes et contribuent à hauteur de 46,54 pour cent au produit national brut (Alochenu J. 2014).

les éléments palliatifs de ces derniers modèles sont plus exploitables dans le cadre des grandes entreprises que dans des petites et moyennes entreprises.

Cet ensemble des considérations fonde notre question fondamentale de recherche que nous formulons comme suit : ***comment comprendre la pérennité concurrentielle des PME camerounaises en contexte de globalisation ?***

Cet article s'articule autour de trois points : Premièrement il interroge la littérature afin d'explorer les concepts d'avantage concurrentiel et circonscrire la notion de PME ; l'occasion sera aussi saisie pour examiner les sources de l'avantage concurrentiel des PME. Deuxièmement il est consacré aux considérations méthodologiques pour finir par les résultats ainsi que la discussion de ces résultats.

I- L'avantage concurrentiel de la PME : un concept, plusieurs sources.

Selon Sibel (2015) la théorie de l'avantage concurrentiel trouve son origine dans les travaux des auteurs classiques comme Adam Smith et David Ricardo. Cette théorie va connaître un apogée avec les travaux de Micheal Porter en 1980. Cependant, on enregistre une divergence scientifique sur la nature du concept d'avantage concurrentiel. Cette divergence est selon Sibel (2015) à l'origine d'une absence de définition consensuelle. Nous faisons dans les lignes suivantes un effort de synthèse des définitions du concept d'avantage concurrentiel, de la notion de PME et en fin nous explorons les sources de l'avantage concurrentiel de la PME.

I.1- Définition de l'avantage concurrentiel

L'avantage concurrentiel d'une entreprise a été longtemps réduit à la compétitivité du produit (Kumar and Motwani, 1995). Ainsi, lorsque le produit d'une entreprise est préféré sur un marché, ladite entreprise dispose d'un avantage concurrentiel. Cette conception de l'avantage concurrentiel est fragile de nos jours avec la globalisation économique. Les mutations fréquentes des besoins des consommateurs suite à la porosité des frontières économiques obligent les entreprises à trouver un autre fondement de l'avantage concurrentiel. Une évolution sensible est à relever dans la conception de O'Farrell P. et Hitchens D. (1988) pour qui, la compétitivité du produit incorpore un indicateur du niveau de marketing et de management. Pratten (1991) va plus loin en indiquant que la compétitivité du produit englobe l'efficacité de la production, l'expérience marketing et des faibles coûts administratifs.

Toutes les approches ci-dessus examinent le produit comme l'unique encre de l'avantage concurrentiel. Hors l'importance du produit dans le mix marketing de nos jours est réelle, mais étroite et conditionnelle. Dans une conception plus ouverte, Altenbourg et al. (1998), pensent que la compétitivité

des entreprises est la capacité à soutenir une position sur un marché, notamment en fournissant des produits de qualité dans les délais et à des prix compétitifs grâce à l'acquisition de la flexibilité, une réaction rapide aux changements de la demande et grâce à une gestion réussie de la différenciation des produits, par la constitution d'une capacité d'innovation et d'un système de commercialisation efficace. Cette définition est originale non seulement par la prise en compte du concept de marché mais surtout la nature fondamentalement changeante de ce marché. Ainsi l'avantage concurrentiel est une résultante d'une bonne gestion du changement. Nous sommes ici dans le sillage des travaux Porter (1980) pour qui l'avantage concurrentiel est la résultante d'une stratégie. Les analyses de Porter (1980) représentent selon Kemp et Gibcus (2003), le paradigme dominant dans le champ de la stratégie. La stratégie concurrentielle est la capacité d'une entreprise de mener ses activités d'une façon distincte non accessible aux concurrents (Ylvijo K. et E. Osomani E. (2013). Porter (1980) distingue trois grandes stratégies de lutte concurrentielle à savoir la stratégie de domination par les coûts, la stratégie de différenciation et la stratégie de concentration. Les avis sont divergents dans la littérature en ce qui concerne la stratégie pouvant permettre à la PME d'avoir un avantage concurrentiel. Pour certains comme Mumbua (2013) la PME doit adopter deux stratégies à savoir la domination par les coûts et la différenciation. Pour d'autres, il existe une stratégie meilleure pour les PME que l'autre. Selon Dess and Davis (1984) la meilleure option pour les PME est la domination par les coûts. Pelham (2000) ainsi que Julita et Tanjung (2017) pensent plutôt que la meilleure stratégie pour la PME est la différenciation.

Sans toutefois choisir une stratégie particulière, nous concevons l'avantage concurrentiel dans le cadre de ce travail comme la résultante d'une stratégie permettant à une PME de mener une activité non seulement de façon distincte que les concurrents mais surtout avant tout les concurrents.

La pérennité concurrentielle se traduit par le développement d'un avantage concurrentiel durable. Elle peut provenir de la maîtrise d'une source d'avantage concurrentiel et/ou de la création des nouvelles sources.

I.2. La PME: conception et rôle en économie camerounaise

La littérature mentionne deux types d'indicateurs utiles pour définir une PME : les indicateurs quantitatifs et les indicateurs qualitatifs. Il est important de retenir que les deux catégories des indicateurs sont souvent utilisées de façon complémentaire. Les indicateurs quantitatifs les plus courants sont : le nombre d'employés, le montant du capital, la valeur des investissements et la valeur de ventes annuelles (du chiffre d'affaires). Cependant compte tenu des difficultés liées à l'évaluation des investissements, de l'influence de la conjoncture économique sur les ventes, ces deux indicateurs ne sont pas pertinents pour définir la PME.

L'utilisation simultanée du nombre des employés et du montant du capital pouvait donner une précision dans la définition de la PME. Mais l'Agence des Consultants Associés dans son rapport de 2008 relève une divergence significative dans les informations obtenues par usage de ces deux critères au Cameroun. Nous allons dans le cadre du présent travail retenir le critère du nombre des employés car faisant partie de la loi n° 2010/001 DU 13 AVRIL 2010 portant promotion des petites et moyennes entreprises au Cameroun.

Par ailleurs le nombre des employés de la PME ne fait pas l'unanimité. Pour le Bureau International du Travail (2015), l'effectif des PME varie entre 10 et 250 employés. Cette définition est celle adoptée logiquement par Bello (2009) car ses travaux traitaient une dimension internationale de la PME camerounaise. Sur le plan national, des divergences subsistent. L'effectif des PME au Cameroun selon le Ministère des Petites et Moyenne Entreprises, de l'Economie Sociale et de l'Artisanat varie entre 5 et 50 employés. Si l'Institut National de la Statistique du Cameroun (INS) adopte la même borne supérieure de 50 employés, il ne fait pas mention expresse de la borne inférieure. La loi n° 2010/001 DU 13 AVRIL 2010 portant promotion des petites et moyennes entreprises au Cameroun dans ses articles 5 et 6 retient comme effectif pour la PME l'intervalle [6-100]. Nous restons comme mentionné ci-dessus dans le cadre de cette loi pour le présent travail.

Malgré cette difficulté de conception, la PME au Cameroun est au centre du développement économique et social. La promotion de la PME cumule à elle seule deux des sept priorités du document de stratégie pour la croissance et la réduction de la pauvreté de l'Etat du Cameroun (priorités 3 et 6). Ces priorités sont reprises en grande partie dans la stratégie nationale de développement à l'horizon 2030. Au regard du rôle cérébral de la PME, l'Etat du Cameroun à travers le Ministère des Petites et Moyennes Entreprises, de l'économie sociale et familiale a sollicité l'intervention du Japon pour rédiger un plan directeur de développement de la PME. En 2009, Japan International Cooperation agency a fourni un rapport qui propose l'intervention de l'Etat sur quatre plans : le développement des marchés des PME, l'amélioration de l'accès des PME aux financements, le soutien des PME en matière de management et de développement technologique et l'amélioration de l'environnement des affaires de la PME. Selon ce même rapport et en se basant sur les données de l'Institut National de la Statistique pour la période allant de 1993 à 1999, la PME couvre environ 92 % du tissu économique du pays. Il est donc fondamental d'examiner avec beaucoup d'attention le comportement concurrentiel de la PME.

I.3. Les sources de l'avantage concurrentiel de la PME : Dialyse à travers la membrane de la pérennité.

Au regard du rôle capital des PME dans les économies en développement (Analoui F. and Azhdar K. ; 2003), l'étude de leur avantage concurrentiel est une nécessité. Cette étude doit permettre de modérer le taux élevé de mortalité des PME durant leurs premières années d'existence (Rumanti and Syauta 2013).

Selon Borocki et al. (2019), une bonne évaluation de la position stratégique des PME est vitale puisqu'elles sont confrontées à des défis externes et internes tels que les finances et les ressources humaines. La finance semble donc être un facteur déterminant important de l'avantage concurrentiel de la PME. Sibel (2015) retient l'accès au financement comme un déterminant important de l'amélioration de la compétitivité des PME en Bulgarie. Dans ce même sens (Mambula, 2002) présentent l'accessibilité au marché de crédit comme un paramètre essentiel dans la réduction du coût du capital des PME et permettre ainsi une production avec des coûts faibles. Selon Beck et al. (2008), le développement du secteur financier d'un pays joue un rôle capital dans la croissance des PME.

Dans une étude récente des PME du secteur agricole au Sri Lanka, Prasanna et Al. (2021) à travers une analyse des données primaires de 463 PME ont mis en évidence sept variables stratégiques ayant un impact sur la position concurrentielle : l'innovation en terme de production et de marketing, la participation à des expositions locales, le genre, la position stratégique du marché, la soutenabilité des pratiques d'affaires, l'efficacité marketing et la réputation de l'entreprise avec des services supérieurs. Ces mêmes auteurs exposent sept variables dont la contribution à la position concurrentielle de la PME est marginale : la spécialisation dans la production, l'expérience dans le domaine d'affaire, l'expérience dans la participation aux expositions étrangères, l'accessibilité au marché du crédit, la qualité supérieure du produit, la recherche et le développement, la position stratégique de l'entreprise.

Dans son étude de 2012 au sein des PME en Malaisie, Rosli identifie trois variables ayant un impact fort sur la position concurrentielle des PME : le management, le marketing et la gestion des ressources humaines. La contribution de l'innovation à la position concurrentielle est plutôt moyenne. Certains éléments de l'innovation ont même des contributions faibles ainsi que tous les indicateurs d'orientation globale.

Les résultats de ces études démontrent à suffisance la complexité du concept de l'avantage concurrentiel de la PME. Des éléments comme le financement et l'innovation représentent pour certains des facteurs explicatifs majeurs de la position concurrentielle de la PME. Ces mêmes facteurs donnent pour d'autres une explication mineure voire nulle de l'avantage concurrentiel de la PME. En plus l'accès au financement est présenté dans la littérature

comme un des défis majeure de la PME africaine (St. Pierre J. et Al., 2015 ; Obokoh, 2008). Cette divergence au niveau des vecteurs de l'avantage concurrentiel rend complexe l'explication de la pérennité de l'avantage concurrentiel de la PME. Aussi les principaux résultats des études ci-dessus se fondent sur une lecture transactionnelle de la concurrence qui implique une élimination des moins compétitifs. Si nous inscrivons le taux élevé de mortalité infantile (Rumanti and Syauta 2013) des PME dans cette logique, la question demeure posée quant aux sources réelles de la pérennité concurrentielle des PME.

Nous cherchons dans la présente étude à contribuer à la compréhension de la pérennité concurrentielle de la PME. Nous nous fondons plus sur logique relationnelle que transactionnelle. Les lignes qui suivent nous permettent de dévoiler la méthodologie.

II. Choix méthodologiques et justification

La méthodologie est construite autour de l'orientation épistémologique, de la collecte et de l'analyse des données.

II.1. Orientation épistémologique

Une démarche qualitative dans une posture interprétative est utilisée dans le cadre de ce travail. Deux arguments justifient ce choix. Premièrement, nous avons la densité des informations qu'il faut prendre en compte (Langley, 1997) afin de comprendre le sens que les parties prenantes donnent à la pérennité concurrentielle de la PME. Deuxièmement, nous notons l'intérêt accordé à la signification de l'avantage concurrentiel par les parties prenantes (Cléret, 2013).

L'étude empirique est menée sur un échantillon de taille réduite sans aucune volonté de représentativité au sens statistique, mais en donnant le privilège à la pertinence de la structure de la population étudiée (Evrard et al., 1997).

Dans le même ordre d'idées que Nkomo & Cox (1996) , Sanchez & Brock (1996) , les méthodes qualitatives qui privilégient la compréhension des phénomènes sont en contraste avec les techniques quantitatives orientées vers la généralisation, essentiellement centrées sur les faits et les chiffres. Ce choix se justifie aussi par la particularité de notre étude qui est de comprendre la signification donnée par les parties prenantes à la pérennité concurrentielle de la PME au Cameroun. L'objet de l'étude est ainsi individuel et le phénomène essentiellement social.

II.2. Echantillonnage et collecte des données

Les entreprises de notre base doivent avoir au maximum 100 employés et au minimum 6 employés. Nous avons dans un premier temps retenu le

critère de chiffre d'affaires comme critère de sélection. Sur la base des informations financières des PME mis à notre disposition par l'Institut national de la Statistique du Cameroun nous avons sélectionné 56 entreprises qui ont connu une croissance globale du chiffre d'affaire pendant 5 ans (période de 2014 à 2018). Les dirigeants et les employés participants doivent être dans l'entreprise depuis au moins cinq ans et doivent avoir un poste de responsable permettant une implication dans la prise de décision. Un premier entretien avec les responsables de ces 56 entreprises nous a permis d'identifier 18 PME qui ont eu des relations stables et satisfaisantes avec leurs principaux clients. Aussi les entreprises retenues après ce premier filtrage doivent avoir vécues au cours des cinq dernières années une reconfiguration de la carte concurrentielle (apparition des nouveaux concurrents, disparition des anciens concurrents).

Nous avons fait usage de la technique des récits de vie pour collecter les données. Elle consiste selon Bertaux (2003) pour un narrateur, de raconter à une autre personne un épisode de son expérience vécue. Elle est initiée par une requête externe, un chercheur demandant à une personne de lui raconter en toute liberté son expérience. Ce premier travail de terrain s'est effectué sur une durée totale de huit mois (Février 2021 à Septembre 2021).

Nous avons dans un second temps tenu des entretiens avec les responsables de 18 PME retenues afin de comprendre leur comportement concurrentiel. Ce deuxième travail de terrain s'est déroulé sur une période de cinq mois (Novembre 2021 à Avril 2022). Les responsables interrogés doivent occupés au moins un poste de Directeur et être dans l'entreprise depuis au moins cinq ans.

Nous y avons effectué 42 entretiens d'une durée moyenne de 45 minutes chacun. Trois grandes phases ont meublé la collecte des données :

- La phase 1 : nous avons envoyé le guide d'entretien aux potentiels participants cinq semaines avant pour une première imprégnation.

- La phase 2 constituée par des entretiens dont le guide est présenté en annexe 1, d'une durée moyenne de 45 minutes chacun. Pour permettre une concentration sur l'étude, nous convenons avec les participants que le travail se fasse dans un milieu clos. C'est ainsi que les entretiens ont eu lieu dans des bureaux fermés. Ces échanges ont donné lieu à des enregistrements dans une carte mémoire à l'aide d'un téléphone. Ainsi nous avons évité les pertes de temps liées à la prise des notes manuelles et les déformations pouvant en résulter. A la fin des échanges, nous avons pris le temps de faire écouter l'audio par l'interrogé pour éliminer les éventuelles incohérences.

- la phase 3 intervient après l'analyse des données. Nous demandons aux interviewés de prendre connaissance des interprétations que nous avons faites de leurs déclarations. Nous cherchons ainsi à faire de nouveaux cadrages pour des verbatims mal exploités.

II.3. Analyse des données

Elle s'est faite selon la méthode de l'analyse de contenu thématique qui nous permet de découper les informations brutes par thèmes et selon l'importance de ces thèmes. Cette pratique nous permet de nous focaliser plus sur le sens des informations collectées et interprétations des parties prenantes sur les pratiques concurrentielles des PME qu'à la fréquence d'apparition des thèmes. Les données ont fait l'objet d'une retranscription sur un fichier Excel. Le logiciel d'analyse qualitative NVIVO dans sa version 12 nous a servi d'instrument pour coder les données et les regrouper en thèmes.

III. Résultats et discussions

Cette partie est structurée autour de deux points. Pour rappel, notre question centrale de recherche porte sur la compréhension de la pérennité concurrentielle de la PME camerounaise. Deux objectifs majeurs en découlent : découvrir les facteurs qui expliquent la position concurrentielle et comprendre la pérennité de l'avantage concurrentiel.

III.1. Fondements de l'avantage concurrentiel de la PME camerounaise

A l'issue de l'analyse des données, quatre facteurs sont considérés par les responsables des PME camerounaises comme déterminants dans la position concurrentielle.

III.1.1.L'accès au financement

La question financière est au centre de toutes les stratégies concurrentielles des PME au Cameroun. Les responsables des PME énoncent les considérations financières comme source d'action ou de réaction concurrentielle. Des projets sont cités de nombreuses fois dans le registre de l'abandon ou de non maturation à cause des considérations financières. Les responsables des entreprises étudiées soulignent que non seulement les moyens de financement propres de leurs entreprises sont maigres mais surtout la mobilisation du financement institutionnel est difficile. Plusieurs fois les responsables des PME ont obtenu des avis favorables des institutions financières mais le déblocage effectif des fonds a pris considérablement du retard sur l'enjeu concurrentiel du financement sollicité.

Un des paramètres importants qui caractérise les clients des PME étudiés est l'irrégularité des commandes des clients principaux. Ainsi les responsables des PME déclarent faire des efforts de financement important pour satisfaire le surplus de la demande en période de pic. Le même effort est parfois un peu plus déployé par les responsables des PME en cas de changement dans les habitudes des clients. En période de baisse de la demande, les responsables des PME déclarent faire face à des difficultés

importantes de financement pour accéder à de nouveaux marchés et écouler le surplus des produits ou des marchandises.

Abdul B. et Al. (2017) soulignait déjà que le manque d'accès au financement limite considérablement le développement des PME. Pour Adeola O. (2020), le financement des PME est limité à la fois du côté de la demande que du côté de l'offre. Du côté de la demande, les PME ne sollicitent pas suffisamment les crédits à cause de leurs connaissances limitées des crédits disponibles. Du côté de l'offre, les établissements financent rarement les PME à cause du risque important inhérent à leur fonctionnement. Au regard des déclarations des responsables des PME camerounaises, l'accès au financement est une source capitale de l'avantage concurrentiel de la PME car ayant un impact à la fois sur le cycle d'investissement et le cycle d'exploitation. La préférence traditionnelle du financement interne des PME Cohen (2017) trouve donc une limite en contexte de lutte concurrentielle. Mais il demeure important de pousser le raisonnement plus loin au regard des effets controversés du financement externe sur la performance des PME souligné dans la littérature. De même le coût élevé de certaines sources de financement des PME peuvent augmenter le coût global du capital ((Mambula, 2002). La hausse consécutive du coût du capital est préjudiciable pour l'avantage concurrentiel de la PME lorsqu'il est fondé sur la domination par les coûts.

III.1.2. L'accès au crédit fournisseur

Vingt-cinq responsables des PME sur les quarante-deux interrogés considèrent l'accès au crédit fournisseur comme un paramètre essentiel dans la lutte concurrentielle. En effet l'importation est l'une des principales voies d'approvisionnement des PME camerounaises. L'obtention de la confiance des fournisseurs étrangers est complexe et se transforme en un enjeu concurrentiel important. Les responsables des PME du Cameroun signalent l'existence d'un marché interne pour les concurrents qui n'ont pas la confiance des fournisseurs étrangers. Ces derniers s'approvisionnent auprès de leurs paires bénéficiant de la confiance des fournisseurs. Ce marché interne peut avoir une influence considérable en augmentant les coûts d'approvisionnement portant considérablement préjudice à l'avantage concurrentiel axé sur la domination par les coûts.

Le problème de l'accès au crédit fournisseur est un prolongement des difficultés d'accès au financement pour les PME camerounaises. Pour les responsables des PME le crédit fournisseur permet de faire une économie financière qui, est exploitée pour la motivation des employés et la recherche des clients. Le crédit fournisseur dans les PME camerounaise à une durée longue (en moyenne 1 ans 2 mois) dégageant ainsi une ressource de financement. La disponibilité de ressources d'exploitation réduit considérablement le recours à l'endettement. Ainsi le coût du capital est

considérablement réduit permettant une amélioration de l'avantage coût de la PME.

Le marché aval (Sibel, 2015) constitue le champ de prédilection des études de l'avantage concurrentiel de la PME. La présente étude explore l'importance du marché amont non pas en terme de son étendu mais sous l'angle relationnel. La confiance des fournisseurs permet aux responsables des PME de limiter de nombreux impacts de leur faible surface financière sur le coût du capital.

III.1.3. L'innovation

L'innovation est très perceptible et diversifiée dans les PME camerounaises de notre échantillon. Elle est déterminante dans la configuration concurrentielle selon de nombreux responsables. Ainsi, l'apparition dans le secteur des services (transport, finance, expertise comptable et juridique) des nouveaux concurrents est justifiée par les participants comme une conséquence d'une innovation de procédé. L'application des nouvelles technologies dans le secteur des services est source d'un gain considérable en temps et en confort pour les clients. Ainsi même si le coût direct (prix payé contre le service) ne diminue pas ou même peut connaître une augmentation, le coût indirect en terme de perte de temps diminue sensiblement induisant une chute du coût global du service.

La résistance de plusieurs PME du Cameroun est justifiée par les responsables comme une résultante d'une innovation en termes d'organisation du temps de travail. Cette restructuration doit permettre à la PME d'adapter son temps de service aux plages de temps ou la probabilité de rencontre avec le client est forte. Travailler la nuit, tard dans la soirée, le dimanche ou les jours fériés fait partie des grandes considérations des responsables des PME camerounaises.

Une innovation de grande envergure dans les PME de service porte sur la stratégie de distribution. La stratégie classique qui consiste à choisir un emplacement et d'attendre le client est progressivement remplacée par une nouvelle consistant à aller vers le client. Cette stratégie est particulièrement déterminante dans la lutte concurrentielle en ce qui concerne le secteur du transfert d'argent. Les responsables des PME dudit secteur pensent que le développement des nouvelles technologies de l'information et de la communication agit de sorte que l'information du client de l'existence d'un service n'est plus déterminante dans sa prise de décision. Il faut en plus que le service soit disponible et adapté aux exigences des clients. Ainsi, le temps de déplacement vers un point de service doit être réduit à la limite.

Prasanna et Al (2021) ont démontré que l'innovation contribue positivement à l'avantage concurrentiel des PME fondée sur la domination par les coûts. Ces derniers auteurs s'appuient sur une innovation de produit mais

aussi et surtout une innovation marketing au sens large. Dans le même sens et selon Kanagal (2015), l'innovation conçue comme une modification dans l'organisation et les offres de marché est un facteur déterminant que le marketing exploite pour établir et exploiter un avantage concurrentiel. Le développement des nouvelles technologies de l'information et de la communication en contexte de globalisation économique permet aux PME de se construire un avantage concurrentiel solide en important à moindre coûts des technologies. Ceci est déterminant pour les PME des pays en voie de développement comme le Cameroun où nous avons des niveaux faibles d'investissement en recherche et développement

III.1.4. L'accès aux marchés secondaires

Les responsables des PME étudiées évoquent de manière récurrente l'impact positif de l'exploitation des marchés secondaires sur la position concurrentielle. Cette possibilité ouvre non seulement la PME aux nouveaux clients mais surtout permet d'éliminer ou au moins d'affaiblir les concurrents actuels et potentiels. Ainsi, les PME du Cameroun en plus du marché principal sur lequel des efforts importants sont consacrés (par exemple l'implantation d'un point de vente), exploitent des marchés secondaires avec un déploiement réduit en termes d'efforts marketing. Ces marchés secondaires des PME sont constitués des places de marché des localités environnantes ou tout simplement par une vente ambulante organisée le long d'une voie routière.

Pour Prasannal et Al. (2021), la localisation stratégique de l'entreprise, considérée comme la façon unique pour une entreprise de créer la rencontre entre des produits et les clients est une source de l'avantage concurrentiel. Selon ces derniers auteurs, il s'agit d'une source de différenciation concurrentielle. Pour les PME du Cameroun l'exploration des marchés secondaire s'inscrit dans le cadre d'une localisation stratégique mais dynamique. Elle peut se traduire par une diminution du coût total d'approvisionnement pour les clients à travers une suppression des charges de déplacement.

Fort de ces sources diverses mais certaines de l'avantage concurrentiel des PME du Cameroun, notre interrogation porte sur les paramètres pouvant permettre à la PME camerounaise de conserver son avantage concurrentiel sur le long terme.

III.2. Facteurs de pérennité concurrentielle des PME camerounaises.

L'analyse des résultats des entretiens avec les responsables des PME du Cameroun montre que des relations diverses existent entre les PME concurrentes. Ainsi dans leurs déclarations, les responsables considèrent qu'il existe une « stabilité » dans le champ concurrentiel. Les entreprises concurrentes sont plus des partenaires que des véritables concurrents. Les

luttons concurrentielles sont moins prononcées. Les responsables des PME placent la coopération entre les concurrents dans un même marché comme déterminant important de la politique de prix. Cette coopération géographique consiste à éviter la pratique des prix pouvant nuire aux concurrents. Ainsi la probabilité d'une forte diversité des prix sur le même marché est faible. Le sens de variation du prix d'un produit dans un marché chaque fois qu'une variation est enregistrée est unique et ne s'explique pas uniquement par les considérations économiques. En plus de cet aspect opérationnel, les considérations relationnelles sont au centre des aspects stratégiques tel que la gestion des clients. Les responsables des PME se réserve d'effectuer toutes transactions avec les clients importants des concurrents. Les responsables des PME camerounaises déclarent que les relations avec les concurrents sont capitales en matière de protection sociale contre le grand banditisme et même les abus de l'administration.

En ce qui concerne les PME dont les responsables ont des antécédents sociaux communs, la coopération est densifiée. Premièrement de façon directe et financièrement à travers des plans de soutien (tontines, prêts) qui contribuent sensiblement au financement du besoin en fonds de roulement. Deuxièmement de façon indirecte la coopération entre PME concurrentes est un paramètre important dans la gestion des autres partenaires (clients et les fournisseurs). Plusieurs responsables des PME affirment avoir des relations stables avec des clients suite à l'existence des liens sociaux entre les dits clients et certains concurrents. Les concurrents interviennent en cas de besoin dans la relation afin de trouver les solutions aux difficultés. Les antécédents sociaux expliquent aussi des coopérations techniques entre responsables des PME concurrentes (par exemple la formation) mais aussi des coopérations logistiques. La coopération logistique est plus marquée lorsque les PME sont éloignées géographiquement. A titre d'illustration, un transporteur commun est désigné par des groupes de PME concurrentes situés d'une part à Douala et d'autre part à Bafoussam. La négociation des clauses du contrat de transport est assurée par le responsable d'une PME qui prend des engagements au nom des autres.

Longtemps expliquée dans la littérature par les théories déterministes fondées sur l'approche de la sélection naturelle par l'environnement (Hannan & Freeman, 1989), la pérennité de l'entreprise a connu une innovation majeure en 1996 avec les travaux de Koenig qui le fonde d'avantage sur l'adaptation environnementale. La pérennité concurrentielle des PME du Cameroun s'inscrit dans le cadre de cette dernière conception car les relations entre entreprises sont devenues incontournables au regard de la complexité de l'environnement.

Conclusion

Ce travail avait pour objectif d'examiner le phénomène de pérennité concurrentielle des PME camerounaises, ceci à partir des perceptions des employés et des employeurs. De façon spécifique, nous cherchons à connaître les sources de l'avantage concurrentiel tout d'abord et par la suite nous explorons les paramètres de pérennité concurrentielle des PME. En mettant l'accent sur la densité des informations qu'il faut prendre en compte (Langley, 1997) et en donnant le privilège à la pertinence de la structure de la population étudiée (Evrard et al., 1997) (39), des entretiens ont été menés avec les employés et dirigeants des PME selon la technique des récits de vie de Bertaux (2003). La méthode de l'analyse de contenu thématique de Barthe & Igalens (1995) nous a permis de comprendre la perception desdits responsables non seulement en ce qui concerne les déterminants de l'avantage concurrentiel mais aussi les fondements de sa pérennité. C'est ainsi que les principaux résultats montrent que certains facteurs tels l'accès au financement, l'accès au crédit fournisseur, l'innovation, l'accès aux marchés secondaires sont des sources fondamentales de l'avantage concurrentiel en contexte de PME au Cameroun. En ce qui concerne la pérennité de l'avantage concurrentiel, elle à un fondement plus relationnel que transactionnel. Elle provient de la coopération entre les PME concurrentes.

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ANNEXE 1 : Guide d'entretien

- 1- Comment appréciez-vous votre environnement concurrentiel (national et international)
- 2- Quels sont les facteurs qui expliquent la réussite ou la résistance de votre entreprise face à la pression concurrentielle (interne et externe) ?
- 3- Qu'est-ce qui différencie votre entreprise par rapport aux concurrents ?
- 4- Selon vous quels sont les facteurs qui peuvent permettre à votre entreprise de demeurer devant les concurrents ?
- 5- Que souhaitez-vous partager en plus avec nous sur le comportement de votre entreprise face à la concurrence ?

ANNEXE 2 Profil des responsables des PME étudiées

Code	Nombre de personnes	Secteur	Nombre des
E1	3	Couture	16
E2	3	BTP	63
E3	4	Transport	55
E4	2	Commerce	12
E5	1	Restauration	9
E6	2	Fournitures	12
E7	2	Finance	21
E8	3	Cabinet	6
E9	2	Service	14
E10	3	Commerce	10
E11	1	Commerce	11
E12	4	Entretien	10
E13	2	Commerce	8
E14	3	Agricole	10
E15	3	Entretien auto	12
E16	4	Fournitures	9
E17	1	Restauration	19
E18	2	Finance	77

ANNEXE 4 : Quelques thèmes et citations illustratives

Thèmes	Citations illustratives
Accès au financement	Lorsqu'on réussit à mobiliser l'argent nécessaire pour satisfaire les clients à temps, les concurrents ne font plus peur. En même temps les problèmes les plus difficiles de notre entreprise c'est d'assurer le paiement des fournisseurs.
Innovation	Le secteur est devenu trop difficile avec l'arrivée des nouveaux concurrents. Pour résister il faut sortir de l'agence et aller vers les clients.
Accès au marché secondaire	Les marchés des agglomérations voisines constituent un important support concurrentiel pour nous. Il faut que les routes soient praticables et que l'entreprise dispose des moyens humains et financiers pour les exploités.
Accès au crédit fournisseur	Dans notre secteur, les investissements sont lourds et nécessitent beaucoup d'argent. Ceux qui résistent sont bénéficiaires de la confiance des fabricants qui accordent des livraisons à crédit.
Pérennité de l'avantage concurrentiel	<p>Nous sommes ensemble sur ce marché avec les amis. S'il me manque les marchandises je peux prendre chez les autres. Aussi nous n'avons pas besoin d'arracher les clients des autres. C'est parce que chacun considère l'intérêt de l'autre dans sa décision que nous résistons à toutes les pressions concurrentielles.</p> <p>Les échanges avec notre entreprise sœur de Douala est très bénéfiques pour nous. Non seulement nous gagnons en temps nous permettant de mieux nous occuper des clients, nous avons des marchandises de qualité. Quand le chef de cette entreprise voyage hors du pays, il nous trouve des produits de qualité.</p>



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Facteurs Géographiques Explicatifs des Inondations en Milieu Urbain: Cas du Bassin Versant du Cours d'eau Goley a Sinfra (Centre-Ouest Côte d'Ivoire)

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Résumé

Les inondations urbaines du Goley de Sinfra sont-elles liées à la forme de son bassin versant ou aux usages socio-économiques de cet espace ? Cette étude veut saisir les facteurs explicatifs des inondations du bassin versant urbain du Goley. La méthodologie a associé les SIG, les enquêtes socioculturelles et administratives. Les résultats montrent que les inondations ne sont pas liées à la forme du bassin versant mais aux usages de l'espace urbain lié au fonctionnement hydrologique du Goley. Ces usages se traduisent par les installations d'habitats hors lotissement et d'autres formes d'anthropisation dans les servitudes et lits du réseau hydrographique urbain. A cela, s'ajoutent l'absence d'aménagement des lits urbains contre les inondations et la présence de divers aménagements obstacles aux libres écoulements des eaux dans les lits dont les voiries aux canaux des ponts obstrués par la matière plastique formant ainsi des digues de barrages dans l'espace urbain. En outre, la sacralisation d'une partie du tronçon du réseau

hydrographique urbain montre encore la mainmise des populations sur cet espace dédié au fonctionnement hydrologique qui empêche d'avance tout projet d'aménagement urbain du Goley contre les inondations.

Mots clés: Bassin versant urbain du Goley, inondation, habitats, lits et la servitude, Sinfra

Geographical Factors Explaining Urban Flooding: Case of the Goley River Watershed in Sinfra (Midwest Côte d'Ivoire)

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Abstract

Are the urban floods of the Sinfra Goley linked to the shape of its catchment area or to the socio-economic uses of this space? This study aims to understand the explanatory factors of flooding in the Goley urban watershed. The methodology combined GIS, socio-cultural and administrative surveys. The results show that the floods are not linked to the shape of the watershed but to the uses of the urban space linked to the hydrological functioning of the Goley. These uses result in the installation of habitats outside subdivisions and other forms of anthropization in the easements and beds of the urban hydrographic network. Added to this is the lack of development of the urban beds against flooding and the presence of various structures that impede the free flow of water in the beds, including the roads to the canals of the bridges obstructed by the plastic material thus forming dykes of dams in the urban space. In addition, the sanctification of part of the section of the urban hydrographic network further shows the control of the populations on this space dedicated to hydrological functioning which prevents in advance any urban development project of the Goley against floods project to develop the Goley watercourse against flooding in the urban catchment area.

Keywords: Goley urban catchment, flooding, habitats, beds and easement, Sinfra

Introduction

Parlant du rôle des conditions naturelles dans la géographie du sous-développement (Y. LACOSTE, 1976, P.127) constate que « les réflexions sur le sous-développement n'y font pas références dès qu'il s'agit de mettre en œuvre un programme de développement dans une région... c'est dans une grande mesure aux difficultés "naturelles" qu'il faut s'attaquer :

...problème de lutte contre la submersion... ». L'homme s'installe toujours à proximité d'un point ou d'un cours d'eau qui lui sert comme source d'approvisionnement en eau, car l'homme ne peut vivre sans eau. Partant de ces constats et avec le temps, l'extension spatiale des sites humains finissent par rattraper et intégrer les points ou cours d'eau dans le tissu urbain. Ainsi, les espaces des cours d'eau sont incorporés, parfois sans des dispositions ou aménagements adéquats au sein de nombreux tissus urbains ivoiriens posant des problèmes d'insécurité diverses dominées par les inondations récurrentes et meurtrières en période de saisons pluvieuses, malgré les avertissements et les sensibilisations de l'Etat ivoirien. La ville de Sinfra n'échappe pas à ces inondations récurrentes et spontanées qui exposent les populations locales à ces risques naturels. C'est donc pour comprendre les raisons géographiques des inondations des villes, à l'image de Sinfra, que cette étude a été initiée. Au plan de la recherche scientifique, elle s'inscrit dans le programme 10 de recherche sur la Gestion Intégrée des Ressources en Eau de la Côte d'Ivoire qui vise la prévention des inondations (République de Côte d'Ivoire, Ministère des Eaux et Forêts, 2003, P.56). En effet, Sinfra est l'une des villes du Centre-Ouest de la Côte d'Ivoire qui subit de nombreuses inondations fréquentes dans des différentes parties de son site urbain riverain au cours d'eau Goley. L'espace urbain de Sinfra est drainé par des bassins versants ayant des cours d'eau constitués des « bas-fonds et des marigots aux débits importants pendant la saison des pluies » (BNETD, 1997, P.9) qui font le beau et le mauvais temps des inondations de la ville pendant les saisons pluvieuses. Cette étude veut savoir quels sont les fondements géographiques des inondations urbaines du Goley ? Elle veut connaître les raisons des inondations du Goley dans le milieu urbain. En s'appuyant sur les études de J. GOGUUEL (1980, p.99), cette recherche veut savoir si les facteurs des inondations dans les quartiers riverains du Goley de Sinfra sont liés à la forme du bassin versant ou à l'urbanisation matérialisée par l'anthropisation des espaces des lits et des servitudes dédiés au fonctionnement hydrologique du cours d'eau urbain par le plan du schéma directeur. Ainsi, elle se pose la question de savoir quelles sont les caractéristiques du bassin versant urbain du cours d'eau Goley de Sinfra ? Quels sont les éléments qui concourent aux inondations dans le bassin versant urbain de Goley ?

Méthodologie

Présentation de la Zone d'Etude

Notre site d'étude est situé au Centre Ouest de la Côte d'Ivoire dans la zone de la ligne de partage des eaux des bassins versants du Bandama à l'Est et du Sassandra à l'Ouest (figure 1). Cette zone est située dans l'espace du cours moyen des deux fleuves.

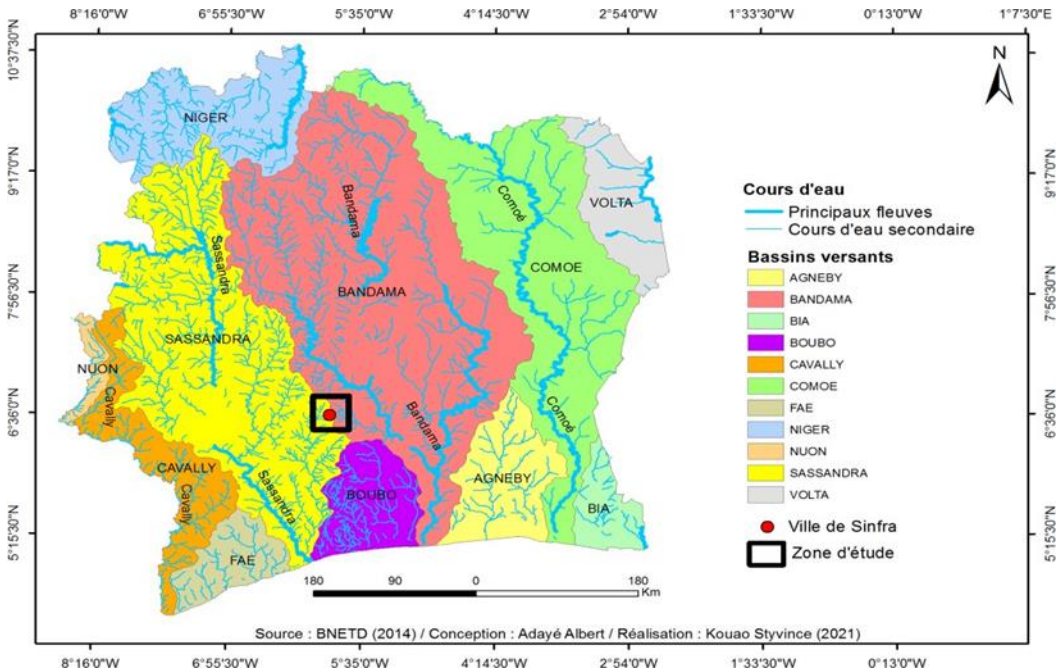


Figure 1: Localisation du bassin versant urbain du Goley de Sinfra

Sinfra est l'une des rares villes en Côte d'Ivoire qui a à la fois les caractéristiques hydrologiques de deux bassins grands fluviaux à cause de sa situation topographique. Selon le BNETD (1997, P.10), le climat de « type tropical (...) se caractérise par deux saisons de pluies et deux saisons sèches. Les saisons de pluies s'étalent d'avril à novembre avec un minimum de précipitation en Juin et en Octobre. La hauteur annuelle de pluies est d'environ 1200 mm ». Selon la même structure, « la végétation est constituée essentiellement de couvert forestier mais la ville de Sinfra se trouve au cœur de la forêt secondaire. Deux forêts sacrées existent dans l'espace urbain, l'une au quartier Douafla et l'autre au quartier Blontifla ». Selon le BNETD (1997, P.9), au plan de la géologie « Sinfra est une région où affleurent (...) le granite, grès et des schistes. (...) Les sols sont à prédominance argileux et s'avèrent peu perméables. Ils sont également hydromorphes dans les nombreuses plaines alluviales».

Présentation du bassin versant urbain du cours d'eau Goley de Sinfra

Le bassin versant est situé au nord-ouest de la ville de Sinfra autour d'un complexe de micro-bassins. Il est délimité par la ligne de crête comprise entre 270 et 280 m des bassins versants du Bandama et du Sassandra des côtés Nord, Est et Sud. De l'autre côté Ouest, la limite de l'espace urbain approuvé par le Ministère de la Construction, du Logement, de l'Assainissement et de l'Urbanisme (figure 2) constitue son exutoire avec un niveau qui se situe entre 225 et 240 m.

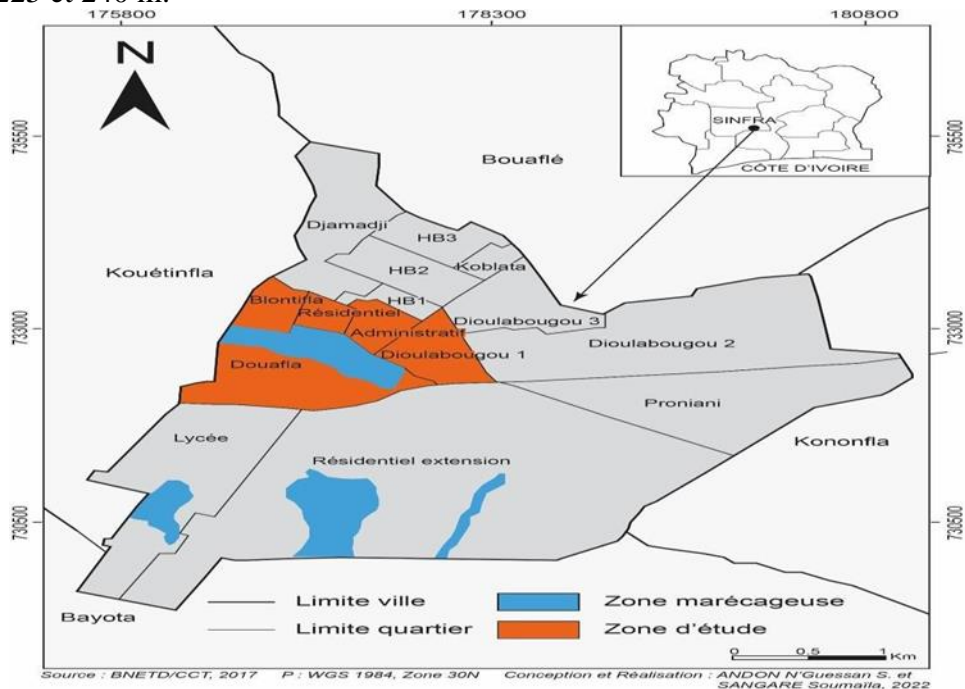


Figure 2: Localisation de la zone d'étude du bassin versant urbain du Goley à Sinfra

Le bassin versant urbain du cours d'eau Goley de Sinfra est situé selon les coordonnées géographiques suivantes : 6°36'00W- 6°38'00N/5°54'00W-5°56'00W. Il couvre partiellement au Sud les quartiers Douafla, au Nord les quartiers Blontifla, Résidentiel HB1 (Houphouët Boigny 1) et Administratif en aval. En amont Nord, on trouve les quartiers Dioulabougou 1, en amont Sud le quartier résidentiel. Il est drainé par un cours d'eau principal nommé Goley par les peuples autochtones qui se positionne dans la direction Sud-Est et Nord-Ouest. Il s'écoule dans la direction Sud-Est-Nord-Ouest en jettant dans un affluent du Sassandra (figure 3). Ce cours d'eau d'ordre 2 dans la classification de Stralher a des affluents constitués de rus de part et d'autre sur ses deux rives. Ce bassin versant urbain est traversé entre le cours supérieur et le cours moyen par la voie bitumée de l'axe Gagnoa-Yamoussoukro et en aval par une autre voie comme la montre la figure 3.

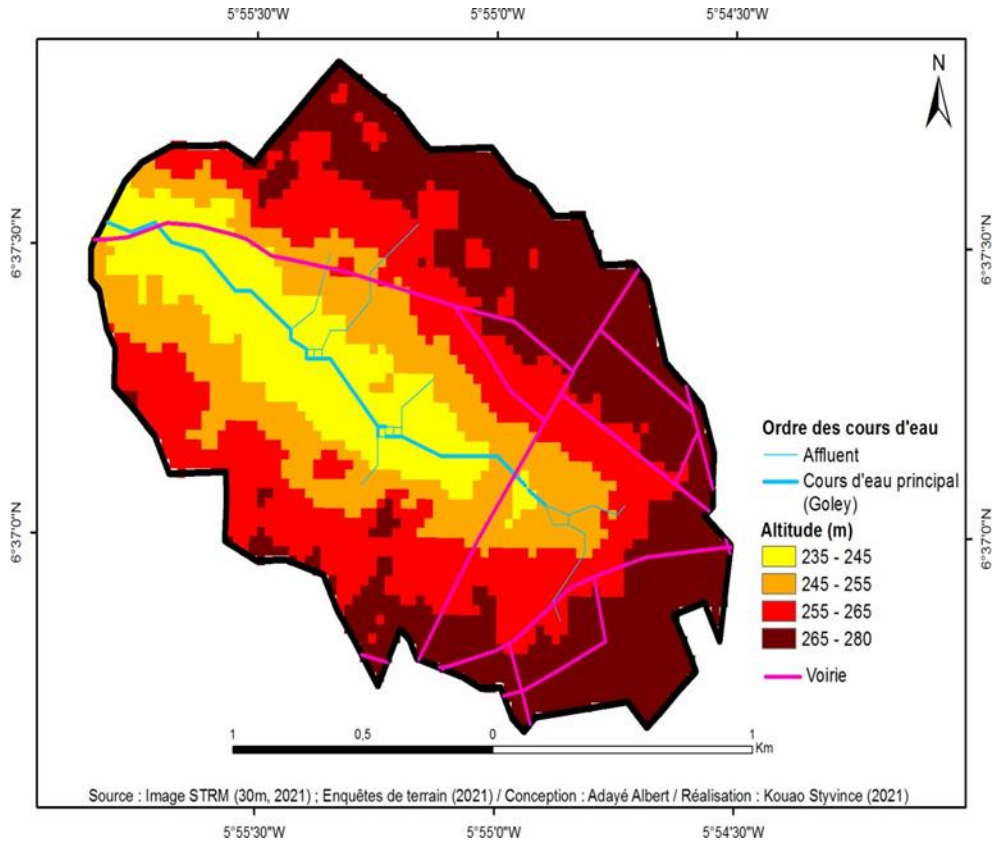


Figure 3 : le bassin versant urbain du Goley de Sinfra

Matériels et Méthode

Matériels et Outils

La mise en œuvre de la recherche a mobilisé les outils et matériels répertoriés dans le tableau 1.

Tableau I : Outils et matériels utilisés

Matériel / Outils	Rôle
Guide d'entretien	Recueillir les informations nécessaires à l'analyse et à l'interprétation de l'occupation du sol par des bâtis et des activités agricoles ainsi que des risques naturels et anthropiques.
Questionnaires	Comprendre le mode d'occupation du sol et sa dynamique auprès des exploitants de la servitude urbaine du Goley (arboristes, riziculteurs, maraîchers, pisciculteurs et aviculteurs) et des chefs des ménages riverains de part et d'autre du cours d'eau principal.
Appareil photographique Androïde	Prendre des photos pour l'illustration des résultats
Logiciel Excel	Présenter les illustrations graphiques et réaliser les tableaux
Logiciels Sphinx Millenium 14.5	Élaborer le questionnaire, saisir les données du résultat et présenter les illustrations.
Un décamètre	Pour mesurer la hauteur des eaux des inondations à travers les traces laissées sur les arbres, bâtiments, les aménagements riverains et la largeur d'étalement des inondations dans la zone riveraine lotie bâtie et non bâtie le long du réseau hydrographique urbain.
Le Plan de lotissement approuvé par le Ministère de la Construction et de l'Urbanisme (MCU) de Sinfra	Guider la recherche dans la zone d'étude et lever les coordonnées GPS
Logiciels ARGIS 10.5 et Adobe Illustrator CS3	Cartographier la zone d'étude et des résultats spatiaux

Méthode de collecte et de traitement des données et information

La méthodologie de cette étude a associé les Systèmes d'Informations Géographiques (SIG) notamment les Modèles Numériques de Terrain (MNT) et les enquêtes de terrain dans la ville de Sinfra.

Les SIG ont utilisé une image satellitaire de type STRM avec une résolution de 30 m couplé au MNT et le levé de terrain avec un GPS des coordonnées de l'exutoire du bassin versant urbain du cours d'eau situé à l'extrémité de la zone de construction urbaine approuvée par le Ministère de la Construction du Logement de l'Assainissement à l'aide d'un agent du dit ministère, pour réaliser la cartographie et la délimitation du bassin versant urbain. L'image satellitaire et les MNT ont permis de ressortir quelques données morphologiques, du relief et morphométriques nécessaires à notre étude.

Les enquêtes de terrain se sont articulées autour des observations, des entretiens et une enquête par questionnaire des ménages riverains vivant le long du cours d'eau et des exploitants des lits mineur et majeur du réseau hydrographique urbain jusqu'au espace approuvé par le Ministère de la Construction. Les entretiens se sont déroulés auprès des gestionnaires de l'espace urbain constitués du service technique de la Mairie et du Ministère de la Construction, du Logement, de l'Assainissement et de l'Urbanisme (MCLAU) de Sinfra d'une part et d'autre part la chefferie traditionnelle des villages autochtones (Gouro) Douafla et Blontifla situés au sein du bassin versant urbain.

Les observations ont permis de saisir les risques naturels et contraintes anthropiques auxquels sont exposés les écoulements du réseau hydrographique urbain du Goley. Un décimètre a servi à mesurer la hauteur des eaux des inondations à travers les traces laissées sur les arbres, bâtiments, les aménagements riverains (digues des étangs et des voiries traversant le cours d'eau). Il a servi également à mesurer la largeur d'étalement des inondations dans la zone riveraine lotie bâtie et non bâtie le long du réseau hydrographique urbain.

Les questionnaires des enquêtes ont été administrés à 63 personnes dont 23 exploitants de l'espace des lits et servitudes urbains et 40 chefs de ménages des habitats proches des deux rives du cours principal. La méthode de l'échantillon accidentel a été appliquée pour obtenir les exploitants enquêtés des lits et la méthode des itinéraires pour les chefs de ménages enquêtés des habitats situés le long des servitudes et en bordure immédiate du cours d'eau Goley.

Resultats

Pour la caractérisation du milieu physique du bassin versant, les paramètres de l'espace physique du bassin, indices morphométriques et leur influence sur l'écoulement des eaux superficielles du réseau hydrographique urbain du Goley ont été exploités.

Les Caractéristiques Physiques du Bassin Versant a l'Etude

Les caractéristiques physiques du bassin versant hydrographique permettent d'apprécier les écoulements de ses eaux de surface. Ainsi, certains paramètres géométriques, du relief et du réseau hydrographique du bassin versant urbain du Goley de Sinfra ont été considérés.

Les paramètres géométriques du bassin versant du Goley

La superficie et le périmètre du bassin versant

La superficie du bassin versant du Goley est de 323 ha soit 3,23 Km² avec un périmètre de 8,2 Km déterminés à l'aide du logiciel QGIS. Ces deux

paramètres sont utilisés pour calculer d'autres paramètres dont la forme spatiale et le rectangle équivalent du bassin versant.

La forme spatiale du bassin versant : coefficient de compacité de Gravelus KG
Ce coefficient permet d'apprécier la forme géométrique du bassin versant et par conséquent de juger par rapport au temps de concentration des eaux à son exutoire. C'est le rapport du périmètre au périmètre du cercle ayant la même surface. Il est calculé par la formule suivante :

$KG = P/2 \sqrt{\pi A} = 0,28P/\sqrt{A}$. Avec KG: Coefficient de compacité de Gravelus, P: périmètre du bassin versant 8,2 km, A : superficie du bassin versant = 3,23 km² et $\pi = 3,14$. $KG = 1,27$.

Le rectangle équivalent du bassin versant du Goley

Le rectangle équivalent permet d'apprécier l'influence des caractéristiques géométriques du bassin versant sur les écoulements longitudinaux et transversaux. On a L et l qui sont respectivement la longueur et la largeur du rectangle équivalent du bassin, A et P étant respectivement la surface et le périmètre du bassin versant du Goley. En considérant le rectangle, on a $A = L \times l \rightarrow L = A/l$. $P = 2(L+l) \rightarrow L + l = P/2$. Ainsi, on a $L = P/4(1 + \sqrt{1 - 16A/P^2})/2$ et $l = P/4(1 - \sqrt{1 - 16A/P^2})/2$

La longueur $L = 3,036$ km et la largeur $l = 1,063$ km. A partir de la longueur L obtenue, le bassin versant urbain est reparti en cours supérieur, moyen et inférieur; de 1km chacun utilisé pour séquencer le micro-bassin lors des enquêtes de terrain.

Les paramètres du relief

Les données du relief affectent l'hydrométéorologie locale et influencent l'écoulement des eaux de surface sur le bassin versant. Ces paramètres concernent les altitudes maximales et minimales, la dénivellation et la pente longitudinale du bassin versant. Les altitudes maximale et minimale du bassin versant urbain fournies par le logiciel QGIS sont respectivement de 280 m et de 235 m. La dénivellation qui est la différence entre les deux altitudes est de 35 m. La pente longitudinale fournie le MNT est de 2,15%. Elle joue sur la vitesse d'écoulement des eaux de surface de notre espace d'étude. Ce paramètre topographique permet d'apprécier le phénomène de l'érosion et du transport des sédiments sur le bassin versant et dans les lits de son cours d'eau urbain.

Les Caractéristiques du réseau hydrographique urbain du Goley

L'exutoire du bassin versant est situé selon les coordonnées géographiques suivantes : 6°37'30N – 5°56'00W. Le cours principal du réseau hydrographique urbain du Goley possède un lit mineur et majeur avec des rus

comme affluents. Les caractéristiques du réseau exploitées pour cette étude sont la densité de drainage du bassin versant, la fréquence du cours d'eau et le coefficient de torrentialité. La densité de drainage du cours d'eau est égale rapport de la longueur total du réseau hydrographique sur la surface du bassin versant. Ainsi, celle du Goley de Sinfra est égale à la longueur du réseau hydrographique dudit cours d'eau sur la surface de son bassin versant. $Dd = Lt/Sb = 3,072 \text{ Km} / 3,23\text{Km}^2 = 0,95 \text{ km/km}^2$ avec Dd : Densité de drainage. Lt : longueur total du réseau hydrographique du Goley= 3,072 Km. Sb : la surface du bassin versant du Goley= 3,23 Km². La fréquence des cours d'eau (F) représente le rapport du nombre des cours d'eau d'ordre 1 à la surface du bassin versant d'étude. Elle s'exprime comme suit : $F = N1 / Sb = 6/3,23\text{Km}^2 = 1,857$. N1= 6 cours d'eau d'ordre 1 qui sont des rus. Le coefficient de torrentialité d'un bassin versant est le produit de la densité de drainage par la fréquence de cours d'eau élémentaires d'ordre 1. Il s'exprime par la formule suivante : $Ct \text{ du Goley} = Dd \times F = 0,95 \times 1,857 = 0,176$ avec Ct : coefficient de torrentialité du Goley.

Les Résultats des Enquêtes de Terrain sur le Bassin Versant du Goley de Sinfra

Les travaux de terrain ont concerné la partie dédiée à l'urbanisation, les servitudes et les différents lits du Goley dans le bassin versant. Le constat général de l'observation du réseau hydrographique urbain du Goley et de ses servitudes est qu'il ne dispose pas d'aménagement en vue d'empêcher les inondations mais possède des contraintes qui s'opposent au libre écoulement des eaux. Les espaces devant contenir les inondations sont occupés par les habitats et autres activité anthropiques. Le libre écoulement des eaux est contraint par certains aménagements dans les lits notamment les digues et l'étroitesse des canaux des ponts des voies traversant ces espaces. Les résultats des travaux sur le bassin sont structurés en trois parties dont le cours supérieur, moyen et inférieur sur le bassin versant urbain.

Le cours supérieur du Goley de Sinfra

L'espace du cours supérieur du Goley est situé dans le centre-ville de Sinfra. Il draine des parties des quartiers Douafla et Résidentiel au Sud et du quartier Dioulabougou 1 au Nord. Ce sont des anciens quartiers densément construits et exposés à l'érosion. Les différentes parties de ces quartiers sont situés sur les versants et la ligne de partage Sud, Est et nord du tiers supérieur du bassin. L'espace autour de cette partie du bassin versant est fortement imperméabilisé par l'urbanisation et des affleurements de roches dû à l'érosion. Le matériel minéral érodé dans cette partie du bassin, les ordures ménagères et des artisans transportés par les eaux de ruissellement sont transportés dans le réseau hydrographique et contribuent à combler les lits et

à obstruer le canal du pont de la voie séparant le cours supérieur et moyen. Ainsi, on observe un étalement du sable érodé des versants, des ordures ménagères et des artisans avec en tête la matière plastique constitué des sachets, des pneus usés dans les lits du cours supérieur. Ces apports d'ordures ménagères des eaux de ruissellement sont amplifiés par 27 sites de dépotoirs d'ordures divers dont des pneus et vitres d'engins roulants, sons de riz provenant des décortiqueuses et autres qui jonchent et comblent les lits du réseau hydrographique de cette partie. La servitude mesurée autour du réseau hydrographique est moins de 5 m alors que les normes urbanistiques imposent 25 m face au cours d'eau selon le MCLAU. Les populations après avoir fini de greffer des habitats dans la servitude du cours supérieur du Goley sont entrées à l'intérieur de l'espace du lit majeur du cours d'eau comme le montre la photo 1 de cette maison en construction dans le réseau hydrographique.



Source : ADAYE K. Albert, (2021)

Photo 1 : Des bâtiments construits dans le lit majeur urbain du Goley dans sa partie supérieure modifiant ainsi le plan urbanistique de Sinfra

En première vue, la fondation d'un bâtiment abandonné et un peu éloigné des bâtiments en construction sur lequel on observe des insignes d'arrêt des travaux du ministère de la construction et du service technique de la mairie de Sinfra. Ces ouvrages sont des contraintes au libre écoulement des eaux et des facteurs explicatifs des inondations urbaines.

Le lit mineur du réseau hydrographique qui permet d'encaisser les écoulements dans le réseau hydrographique du cours supérieur est par endroits bouché par les usagers notamment les maraichers, les riziculteurs pour orienter ou étaler les écoulements dans leur espace. L'espace du lit de cette zone est fortement marqué par l'agriculture des espèces saisonnières et pérennes. Les cultures saisonnières sont les maraichères et la riziculture

irriguée. Les maraichères sont cultivées sur des aménagements qui modifient le sol en élevant le niveau par des billons, des planches et par contre la riziculture qui utilise des aménagements comme les quartiers et casiers hydrauliques dans les lits qui stagnent l'eau. Les cultures pérennes de cet espace sont constituées des cocoteraies, des bananeraies, palmeraies, des arboricultures dont des manguiers et des citronniers. La voie bitumée de l'axe Gagnoa-Yamoussoukro dont la digue dans le basfond du Goley est élevée à 1,5 m autour du pont sépare le cours supérieur du cours moyen. Ici, les traces laissées par les eaux des inondations sont plus d'un mètre de hauteur. Le canal de ce pont, seul passage des eaux des lits mineur et majeur, est obstrué par le sable érodé, la matière plastique (pneus usés et sachets). Tous ces usages, occupations et aménagements du cours supérieur sont des contraintes favorisant les inondations urbaines.

Le cours moyen du Goley de Sinfra

Cette partie du bassin versant structurée autour des lits mineur, majeur, des servitudes, des versants et de la ligne de crête est occupés par le quartier Douafla et une forêt sacrée au Sud tandis que ceux de Blontifla, Houphouët Boigny et une forêt sacrée sont au Nord. Douafla et Blontifla sont des villages des autochtones Gouro dans le tissu urbain de cette partie du bassin. Ces quartiers sont densément bâtis en dehors des forêts sacrées. La partie amont du tronçon du lit du cours moyen qui borde la voie bitumée, sur environ 50 mètres en aval, là se trouve une source hélocrène sacrée et adorée des populations autochtones. Cette source fournissait jadis de l'eau aux populations villageoises pendant les grandes sécheresses. Cette zone est interdite d'activité humaine selon les entretiens réalisés avec la chefferie traditionnelle des villages de Blontifla et Douafla. Les servitudes mesurées sont entre 5 et 10 m sur les rives du cours moyen sauf le long de la zone sacrée où la servitude de 25 m est respectée dans le bassin versant urbain. Les lits et les servitudes sont occupés par des habitats, la riziculture, les maraichères, les bananeraies, les cocoteraies, et de fermes piscicoles comme le montre la photo 2.



Source : ADAYE K. Albert, (2021)

Photo 2 : Une ferme piscicole avec une cocoteraie dans le lit majeur du Goley

L'aménagement des fermes piscicoles avec ses grandes digues dans le lit majeur du cours moyen contribuent à étaler les eaux des inondations sur les servitudes et l'espace loti riverain du cours moyen du Goley.

La hauteur des traces des inondations laissée sur les troncs d'arbres, les digues et les murs des lits de cette zone est comprise entre 50 cm et 75cm.

Le cours inférieur du Goley

Dans cette partie du cours inférieur de ce bassin versant urbain, du lit mineur aux crêtes du bassin, l'espace loti n'est pas densément bâti. C'est la partie du bassin versant où l'espace végétal noie l'espace bâti. Dans le lit majeur ordinaire de cette partie, sont installés deux forages de la SODECI (Société de Distribution d'Eau de Côte d'Ivoire), des quartiers hydrauliques et casiers de la riziculture pluviale, des espaces maraîchers, des étangs piscicoles. Dans l'emprise des eaux d'inondation de cette partie du cours inférieur du bassin versant, on trouve des bornes implantées qui indiquent que cette zone est lotie. Les inondations exceptionnelles submergent de part et d'autre des bornes du lotissement selon les usagers (riziculteurs et maraichers) du lit de cette partie du bassin. Ces inondations majeures ont eu lieu généralement dans les mois de juin et ou d'octobre selon que l'année ou le mois est pluvieux. Elles peuvent durer quatre jours voire une semaine et plus avant la décrue selon les explications des usagers des lits du Goley de cette partie interrogée. Une autre voie aménagée traversant le réseau hydrographique dans la zone proche de l'exutoire avec une hauteur de digue de 2m. Le canal de ce pont est obstrué en partie par le sable et les déchets urbains dont la sacherie et les pneus usés. Les caractéristiques des inondations des habitats des ménages des rives Nord et du Sud ainsi que des cours supérieur, moyen et inférieur sont consignées dans le tableau II.

Tableau II : Caractéristiques des inondations des habitats des ménages riverains du Goley

Rive	Nord			Sud		
	Supérieur	Moyen	Inférieur	Supérieur	Moyen	Inférieur
Effectif des ménages riverains enquêtés	7	7	6	7	7	6
Ménages subissant les inondations/ceux enquêtés	7/7	7/7	0/6	7/7	1/7	0/6
Durée de l'inondation dans l'habitat du ménage	10 à 8 jours	8 à 6 jours	8 à 6 jours	10 à 7 jours	7 à 5 jours	7 à 5 jours
Hauteurs de l'inondation dans l'habitat	30 à 45 cm	20 à 25 cm	20 à 35 cm	30 à 45 cm	Lame d'eau	Lame d'eau
Emprise de l'inondation dans la servitude et l'espace loti bâtis	35 à 30m	25 à 20 m	25 à 15 m	20 à 15 m	15 à 10 m	15 à 10 m

Source : les enquêtes de terrain, 2021

L'état des espaces inondables : lits et servitudes du Goley

L'enquête par questionnaire le long des ménages riverains de part et d'autre du Goley révèle que les eaux des inondations envahissent latéralement les bâtiments riverains avec une largeur moyenne comprise entre 22,5 m et 16,66 m selon le niveau du relief. Les habitats des ménages bordant le Goley se sont retrouvés au moins 5 fois dans les eaux des inondations pour les ménages totalisant plus de 10 ans de présence selon 27,27% de chefs de ménage riverains enquêtés soit 6/22 ménages. 68,19 % de chefs de ménages soit 15/22 ménages totalisant entre 10-5 ans de présence dans la zone riveraine ont été inondés au moins 4 fois et 4,54% de chefs de ménage soit 1/22 totalisant entre 0-5 ans de présence sur le site a subi 2 fois l'inondation du Goley. Ces types d'inondations ont obligé les ménages à quitter leurs habitats. Les enquêtes auprès des exploitants (agricoles, fermiers et autres usagers) des lits et servitudes ont révélé les inondations fréquentes de leurs structures pendant les saisons pluvieuses. La période d'écoulement des eaux du Goley se situe entre début avril et fin décembre voire mi-janvier selon 96% des usagers des lits et servitudes. Comment ces espaces inondables sont gérés dans la ville ?

Gestion des espaces urbains inondables : lits et servitudes

A Sinfra, ces espaces bien qu'étant domaniaux sont gérés par les expropriétaires terriens qui sont les populations autochtones des villages urbains à travers la chefferie traditionnelle d'une part, et d'autre part par le Ministère de la Construction, du Logement, de l'Assainissement et de l'Urbanisme

(MCLAU) et le service technique de la mairie. Ces acteurs sont interrogés pour comprendre l'occupation de ces espaces urbains dédiés au fonctionnement hydrologique du Goley.

La gestion selon la chefferie traditionnelle des villages urbains

Les entretiens avec la chefferie traditionnelle des quartiers Douafla et Blontifla ont révélé que la partie amont du cours moyen du Goley en bordure de la voie bitumée est un site sacré et adoré dans le milieu urbain. La sacralité de cette partie du lit du cours d'eau explique l'état plus ou moins intact de cette zone et son non attribution aux exploitants du réseau hydrographique urbain. Le foncier des lits et des servitudes est géré par les familles des expropriétaires fonciers. Comme preuve, 78, 26 % des exploitants enquêtés dans les lits et servitudes urbains sont installés par les autochtones des lieux (les gouros). Les autorités coutumières de Douafla et de Blontifla ont informés que les expropriétaires fonciers du bas-fond du Goley l'exploitent encore de nos jours à travers les activités agricoles ou agropastorales ou y installent des exploitants agricoles. Toutefois, ces autorités disent qu'elles ne sont pas responsables des installations des bâtiments en dur dans la servitude du Goley.

La gestion selon le Ministère de la Construction, du Logement, de l'Assainissement et de l'Urbanisme (MCLAU) de Sinfra

Selon le MCLAU de Sinfra, la servitude urbaine a été délimitée par les urbanistes à partir de la limite atteinte par les eaux d'inondation du cours d'eau. Elle est de deux fois 25 mètres (de part et d'autre du lit majeur) à partir des limites atteintes par les eaux des grandes inondations du Goley. Sur le terrain, les dimensions de la servitude du Goley ne sont pas respectées, celles mesurées dans les différentes parties du réseau hydrographique urbain varient de 5 à 10 mètres. Seul dans la partie sacrée du tronçon hydrographique urbain qui borde la voie bitumée où la servitude mesurée est de l'ordre de 26 mètres donc respecte la distance de 25 mètres. Sur la rive nord de cette zone sacrée, 4 tas de briques en ruines destinées à la construction vieille de plus de 15 ans. Selon des exploitants proches, elles sont déposées sur la seule partie où la servitude est respectée. Selon le responsable du ministère de la construction, l'équipe de l'administration précédente ne faisait pas les contrôles de ces domaines. Certaines personnes ont profité pour tronquer cet espace en greffant des lots dans la servitude urbaine du Goley. Cette pratique justifie la présence l'alignement des habitats bifurqués, des briques abandonnées dans la servitude et les distances réglementaires des servitudes non respectés sur le terrain. En plus, les anciens propriétaires du site de la servitude urbaine du Goley continuent encore à exercer leur droit foncier sur ces espaces domaniaux en installant des cultures pérennes, des riziculteurs, des maraichers, des aviculteurs et pisciculteurs qui sont tolérés. Le pire, ils installent des habitats

en briques (en dur) dans la zone inondable. Ce que le MCU empêche en mettant des croix rouges sur les bâtiments illégaux et en convoquant les propriétaires des dits bâtiments. Malgré ces empêchements, des bâtiments en dur sont construits. Comme preuve, il cite un bâtiment de lavage d'engins roulants en construction dans la servitude du Goley aux abords de la voie bitumée, au vu et au su de toute la ville, malgré l'opposition de leur service, la construction est arrivée à terme.

La gestion selon le service technique de la mairie de Sinfra

La mairie de Sinfra confirme une fois de plus, la présence des constructions en briques dans le lit et la servitude du cours d'eau Goley. Des familles autorisent certaines personnes ou des membres de leur famille à construire au sein de ses zones à risque dédiées à l'écoulement du Goley selon le service technique de la mairie de Sinfra. Les propos des propriétaires des bâtiments situés dans les lits et la servitude du Goley après leur interpellation par les agents de la police municipale révèle qu'ils sont installés soit par des riverains de la servitude ou des anciens propriétaires fonciers du site des lits et de la servitude. Les constructions dans cette zone se font nuitamment ou les jours non-ouvrables (samedi, dimanche et les jours fériés). Malgré leur intervention, des habitats abritant des ménages, des églises et des moulins de riz construits en briques (en dur) squattent cette zone exposée aux inondations selon le service technique de la mairie.

Discussion

Inondations Non Liées à la Forme de l'Espace Drainé du Bassin Versant Urbain du Goley

Les inondations dans le bassin versant urbain du Goley sont-elles liées à la forme de son espace drainé ? La valeur caractéristique de la forme du bassin versant permettant d'exprimer l'inondation est le coefficient de compacité de Gravelus. Celui du bassin versant urbain du Goley soumis à notre étude est de 1,27. Cette valeur étant supérieur à 1, selon les hydrologistes cela signifie que le bassin versant à une forme allongée donc le temps de concentration des eaux à l'exutoire est lent. Autrement dit, $KG > 1$ alors la forme de l'espace du bassin drainé n'est pas responsable des inondations du site de la ville (ADAYE K.A., 2016, P.205) car le temps de concentration des eaux dans le lit du Goley et particulièrement à l'exutoire est lent. Selon A. LAABIDI et al (2016, p. 263), lorsque cet indice est supérieur à 1,12, le bassin est de forme allongée. Ce type de bassin versant devrait connaître très peu de cas d'inondation des localités riveraines même pendant les hautes pluies. Dans le cas du bassin du Goley, le $KG = 1,27$ donc il ne devrait pas avoir des inondations dans ce bassin au regard de sa forme liée à l'interprétation du coefficient de Gravelus. L'interprétation de la faible valeur du coefficient de

torrentialité du Goley qui est de 0,176, symbolise un relief modéré, une faiblesse de sa densité de drainage et une forte perméabilité des formations lithologiques du réseau hydrographique du bassin (K. BABA HAMED et A. BOUANANI, 2016, p. 28). Ces deux coefficients attestent que ce bassin ne doit pas être l'objet d'inondations.

Causes d'inondation : Anthropisation Anarchique des Servitudes et du Lit Urbains du Goley et Absence d'aménagements Anti-Inondations

Les servitudes larges dans les normes de 25m de part et d'autre à partir de la limite atteinte par les eaux des grandes inondations selon le MCU de Sinfra (Enquête, 2021) sont réduites entre 5 et 10m par les habitats illégaux sur les rives du Goley d'une part et d'autre part les lits sont aussi occupés par des habitats hors lotissement alors que les grandes inondations vont au-delà de 30 m dans certains endroits de l'espace bâti. Les murs de ces habitats modifient la trajectoire des ruissellements par leur présence d'après les travaux de B. CHOCAT (1997, p. 120). Les populations riveraines rapprochées du cours d'eau et celles des habitations hors lotissement sont régulièrement envahies des eaux d'inondation du Goley à Sinfra telle que confirmées par les résultats d'ADAYE K.A. (2016, P.210) dans le bassin versant urbain du wamo de Bondoukou. L'installation des habitats dans les servitudes et les lits du Goley relève de l'incivisme urbanisme (G. GABO, 2022, P. 5) et contribuent aux inondations urbaines. Ces résultats sont aussi confirmés par ceux d'Henri PROST cité par (J. P. LACAZE, 2012, P.11) qui stipule que «faire l'urbanisme, c'est savoir où il ne faut pas construire». Cette installation des habitats dans les servitudes et lits urbains du Goley est due à l'urbanisation anarchique de la ville. En conséquence, l'urbanisation et ses acteurs à Sinfra sont en grande partie responsables des inondations urbaines du Goley. Ces pratiques des acteurs de l'urbanisation à Sinfra relèvent de l'ignorance ou de l'inexpérience. C'est pourquoi, J. GOGUEL (1980, p.100) veut que les urbanistes ou édiles empêchent des constructions dans les zones inondables qui appartiennent au domaine de la rivière. Mais, le constat est que l'ignorance ou le mépris de l'expérience conduit certains citoyens à prendre dans l'inconscience des risques graves et onéreux. Les lits mineur, majeur et majeur exceptionnel urbains sont des espaces domaniaux à risque et leur occupation comme des espaces de cultures, de construction d'habitats et autres aménagements qui génèrent des catastrophes n'est pas spécifique au cours d'eau Goley. Les travaux de (J. TRICART, 1960, p. 211) sur les types de lits fluviaux les confirment par ces lignes « l'homme agit un peu de même, par imprévoyance : il a tendance à pousser ses cultures dans le lit majeur exceptionnel, souvent riche en eau et doté de bons sols. Il y installe même ses habitations, voire des villes, des usines. Chaque grande crue produit une catastrophe d'autant plus ces constructions, formant obstacle, gênent

l'évacuation des eaux et font augmenter les cotes de submersion. Dans les vallées du Gard, de l'Hérault, du Vidourle, c'est trois à quatre fois par siècle que de telles inondations se produisent et coûtent, chaque fois des dizaines de milliards de francs. Dans le cas du Goley de Sinfra, il s'est produit au moins 5 inondations qui affectent les riverains qui ont au moins dix ans de présence dans la zone riveraine. Dans le bassin du Goley, trois facteurs sont réunis. Il s'agit de l'imperméabilisation du bassin par l'urbanisation, la présence des zones d'expansion des crues due à la morphologie des versants, les aménagements utilisant les digues des voies et des étangs piscicoles présentes dans les lits qui endiguent le libre écoulement des eaux du réseau hydrographique urbain (F. LEONE, N. MESCHINET DE RICHEMOND, F. VINET, 2010, P. 159, 160).

Lutte Contre L'inondation par la Présence de Sites Sacrées dans les Servitudes du Bassin De Goley

Le rôle de la source sacrée dans le milieu urbain date des temps jadis et permet non seulement de protéger la ressource mais de respecter les périmètres de protections autour de ce point d'eau de génération en génération comme constaté dans le bassin versant du Goley à Sinfra. Ces pratiques autour des sources pérennes utilisées par les hommes sont révélées par C. GUYOT (1974, p.7) qui soutient que les sources ont toujours été l'objet d'un respect marqué de superstition. Sans doute l'attrait du merveilleux a-t-il porté les hommes à respecter une source ne tarissant pas, fournissant une eau fraîche et agréable à boire. Sans doute faut-il aussi penser que les prêtres, divins et « sages » des époques reculées, frappés eux-mêmes de cette bénéfique présence, ont jugé souhaitable de conférer ou laisser attribuer à ces sources un caractère plus ou moins mystique et religieux afin de les protéger de toute profanation ou souillure, la vénération remplaçant alors « le périmètre de protection » des législations contemporaines. Vu son respect scrupuleux par les populations autochtones de Sinfra, cette partie de la zone sacrée du réseau hydrographique urbain sera certainement un frein à son aménagement en vue de lutter contre les inondations.

Conclusion

Cette étude a montré que les inondations du bassin versant urbain du Goley de Sinfra ne sont pas liées à la forme spatiale du bassin. Mais que les inondations du cours d'eau Goley à Sinfra sont liées au mode d'occupation du bassin à travers l'urbanisation et l'anthropisation des espaces dédiés au fonctionnement hydrologique du cours d'eau.

Les facteurs d'inondation sont liés à l'occupation illégale des servitudes et des lits urbains mis en place pour l'écoulement du cours d'eau par des habitats, des aménagements agricoles et agropastoraux. La majorité de

ces installations est l'œuvre soit autorisée par les anciens propriétaires terriens du site. Une partie de cet espace hydrographique demeure une zone sacrée et adorée des populations locales des villages riverains du Goley. Cette pratique dans la zone domaniale montre la mainmise de ces dernières sur ces espaces devant faciliter le libre écoulement des eaux du bassin. Au total, les facteurs géographiques explicatifs des inondations sont d'ordres urbanistiques et humains dans le bassin versant du Goley de Sinfra. Face à la problématique généralisée des inondations à Sinfra et les autres villes de la Côte d'Ivoire, des études similaires doivent être entreprises dans leurs différents bassins versants urbains afin de donner des outils d'aide à la décision aux acteurs gestionnaires de ces espaces.

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