

# Resilience and Social Change in the Context of a Drinking Water Crisis in Bouake

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## Abstract

The populations of the commune of Bouaké, located in the north-central part of Côte d'Ivoire, experienced in 2018 a drinking water crisis following the drying up of the 'loka' dam operated by the Water Distribution Company of Côte d'Ivoire. This crisis lasted for about 6 months in most of the said locality. To curb it and avoid its corollary of health risks, collective, individual and institutional responses have been made. Using a retrospective and highly ethnographic approach, this research analyzes the resilience and social changes brought about by this crisis in the commune of Bouaké. The data used in this study comes from direct observation, image capture, field diaries and semi-structured interviews with institutional, health and community actors, local authorities and the population.

**Keywords:** Strategies, Resilience, Social Change, Actors, Drinking Water Crisis, Bouake

## Introduction

At the United Nations (UN) High-Level Political Forum for Sustainable Development (FPHN) on Climate Change, held on July 19, 2019, it emerged that "climate change goes beyond the seventeen SDGs specified by the agenda 2030 for Sustainable Development. It is a threat multiplier with the potential to impede some of the most important challenges facing humanity, such as health, poverty and hunger." In the face of this threat, there has been a call to strengthen climate action as a key factor in achieving these so-called goals [UN, 2019]. The present research is in line with this call. Indeed, if there is something that deserves in-depth studies, it is precisely the impacts of the effects or manifestations of global warming on populations. For the moment, the reflection has always been limited to the causes, manifestations and consequences of global warming. Many research works exist on the subject and show in a common and summarized way that global warming is the result of a conjunction of natural and human factors (natural gas, fluorinated gases, production of greenhouse gases, use and burning of fossil fuels, industrial revolution, increase in animal husbandry, fertilizers containing nitrogen, etc..) whose direct consequences are visible (floods, melting ice, rising sea levels, drought, water scarcity, forest dieback, natural disasters, rising temperatures or heat, health problems, etc. (Anonymous, n.d.; Nature Québec, n.d.; European Union, n.d.; Seguin and Soussana, 2008; GreenFact, 2007; Blinda, 2009; Vennetier, 2012; Fournier, 2015; UN, 2019) [2, 3, 4, 5, 6, 7, 8, 9, 1]. But we note that these direct consequences, in turn, impact populations in several ways. This is the

case here for the water crisis that occurred in Bouaké in 2018. Indeed, the populations of the commune of Bouaké located in the north-central part of Côte d'Ivoire, experienced a water crisis following the drying up of the 'loka' dam operated by the Water Distribution Company of Côte d'Ivoire (WDCI). This crisis lasted for about 6 months in most of the said locality. In order to curb the crisis and avoid its corollary of health risks, a local, national and international mobilization took place, marked by the development and implementation of a set of strategies both by institutional and popular actors. These strategies made it possible to provide collective and individual responses adapted to the context, but above all they led to social changes in the supply, access and efficient management of water in Bouaké.

This research, based on an analysis mobilizing the theories of social representation from the perspective of Boudes (2008), resilience (Manciaux, 2001) and the tragedy of the commons (Hardin, 1968), makes it possible to explain the causes and understand the responses developed to deal with the water crisis in Bouaké, as well as the social mutations that occurred in the supply, access and efficient management of water [10, 11, 12].

## Materials and Methods

This study is based on an ethnographic approach. It consisted of a description and a detailed analysis of the system of responses to the water crisis in Bouake by institutional and popular actors as well as the effects of this system in terms of changes, mutations in the supply, access and efficient management of water.

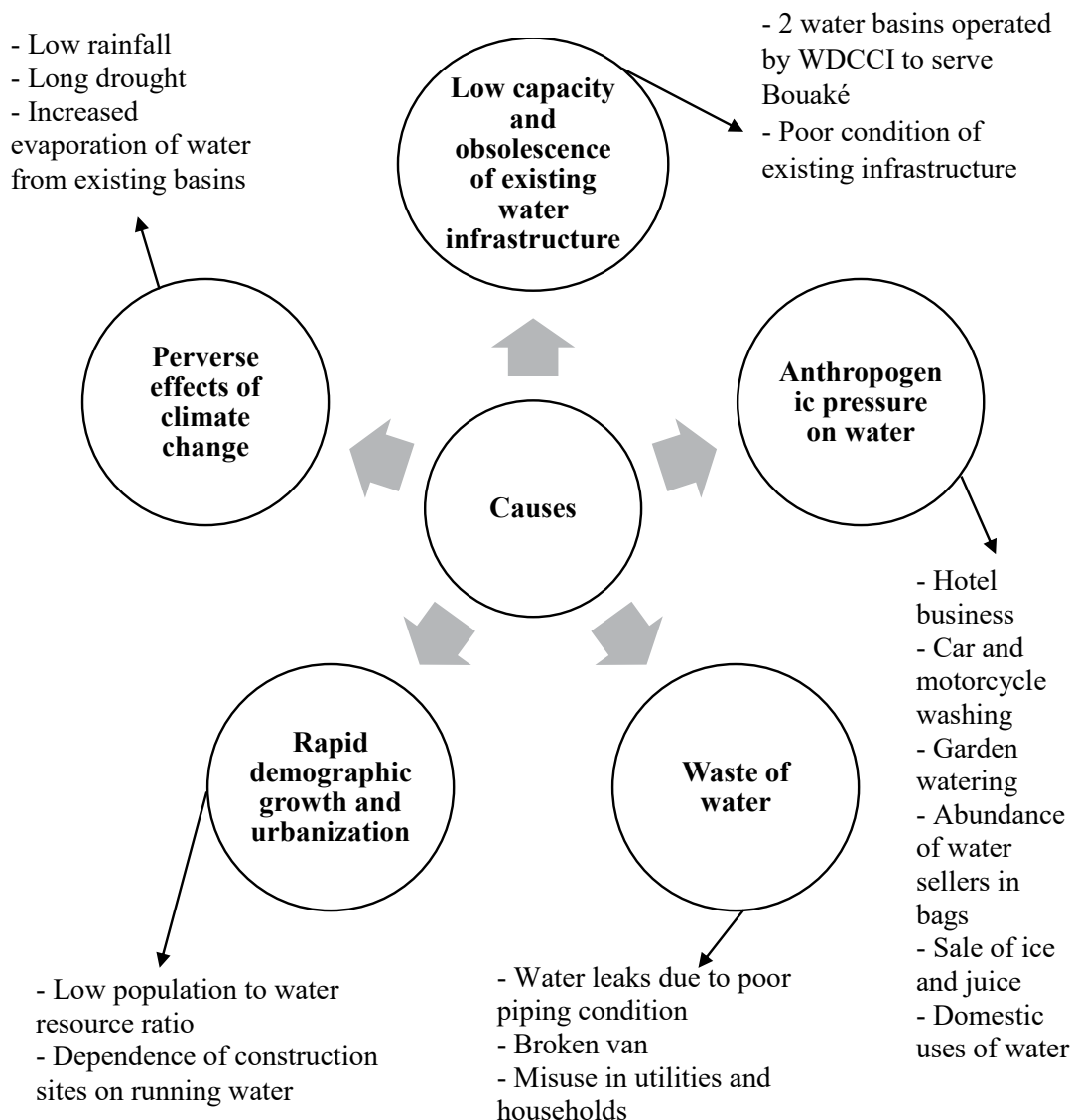
Various ethnographic technics such as direct observation, immersion, field diaries and semi-structured interviews were used to collect the data analyzed in this article. Documentary research was also used to construct the object of study and to discuss the results in the light of existing research. In addition, it was carried out in strict compliance with the ethical considerations in force in the field of social science research. The dignity and privacy of the actors and the principle of confidentiality were therefore respected. In this perspective, the respondent was informed about the ethical provisions and was free to participate or not in the study.

## Results

The drinking water crisis in Bouaké is analyzed from four angles : the causes, the implications, the strategies implemented and the social changes brought about by the crisis.

### Social Perceptions of The Causes of The Water Crisis

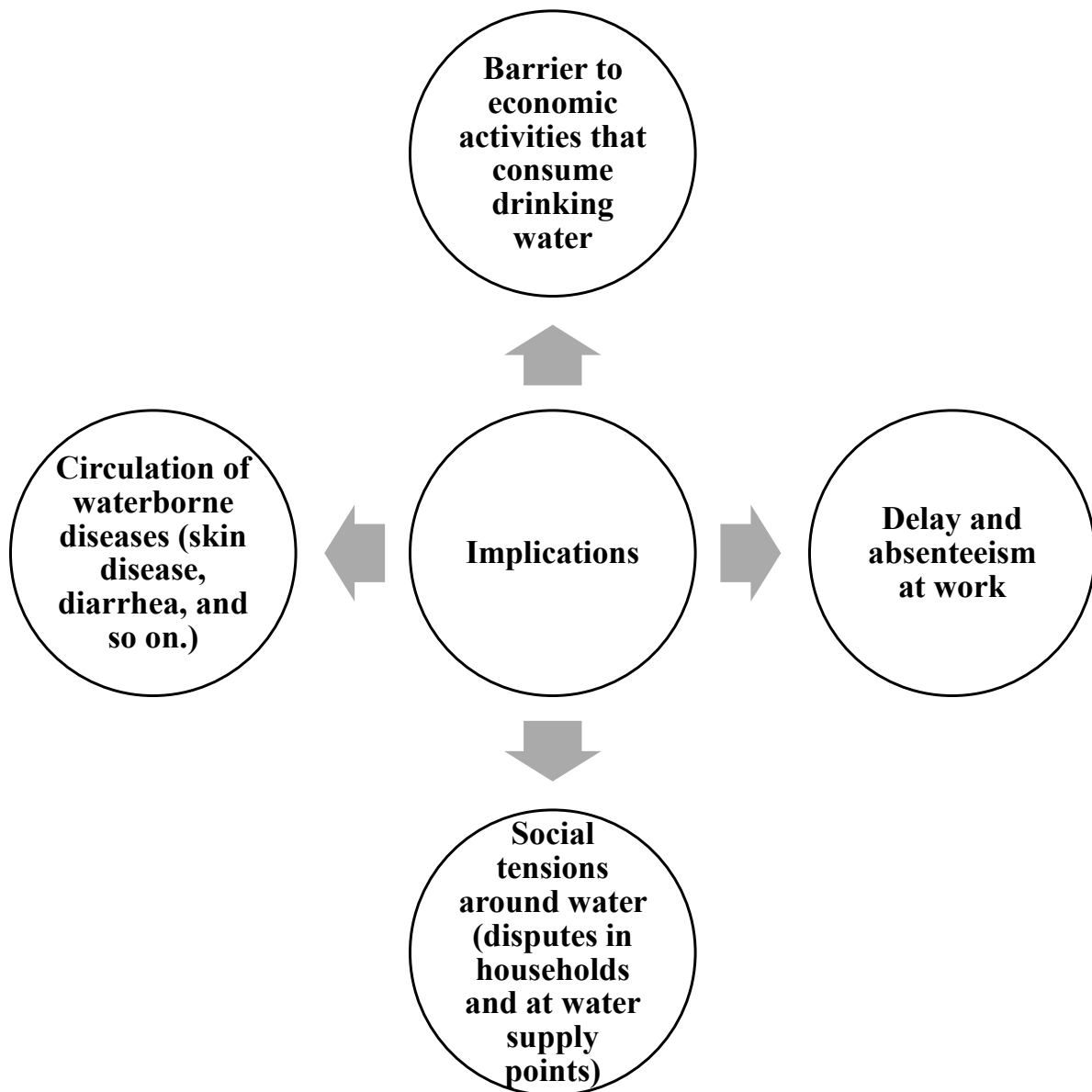
The water crisis in the city of Bouake is the result of a combination of factors. These are structural, demographic, climatic and behavioral. The figure below presents the causes of the water crisis according to the actors surveyed.



**Figure 1 :** Causes of the drinking water crisis in Bouaké  
Source: ethnographic survey, 2020

### Implications of The Water Crisis in Bouake

The water crisis has had many implications for the population. These are health, economic, professional and social (see figure below).



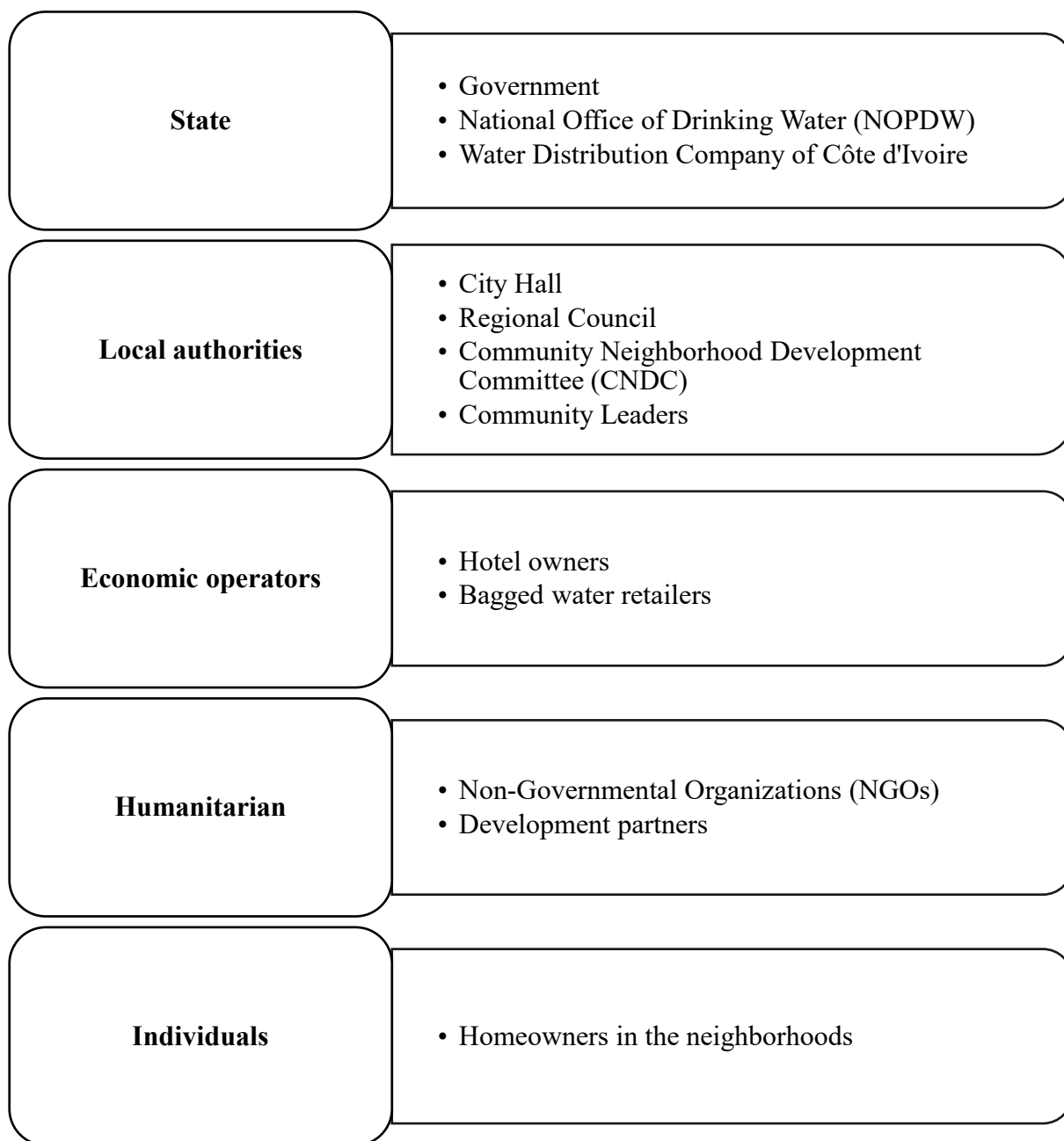
**Figure 2 :** Implications of the water crisis in Bouaké  
Source : ethnographic survey, 2020

### **Actors and Strategies Implemented**

Different strategies were developed by a heterogeneous set of interacting actors to address the water crisis in Bouaké. For ease of reference, the figure below highlights the different categories of actors and the stakeholders interacting within each category.

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### Actors involved

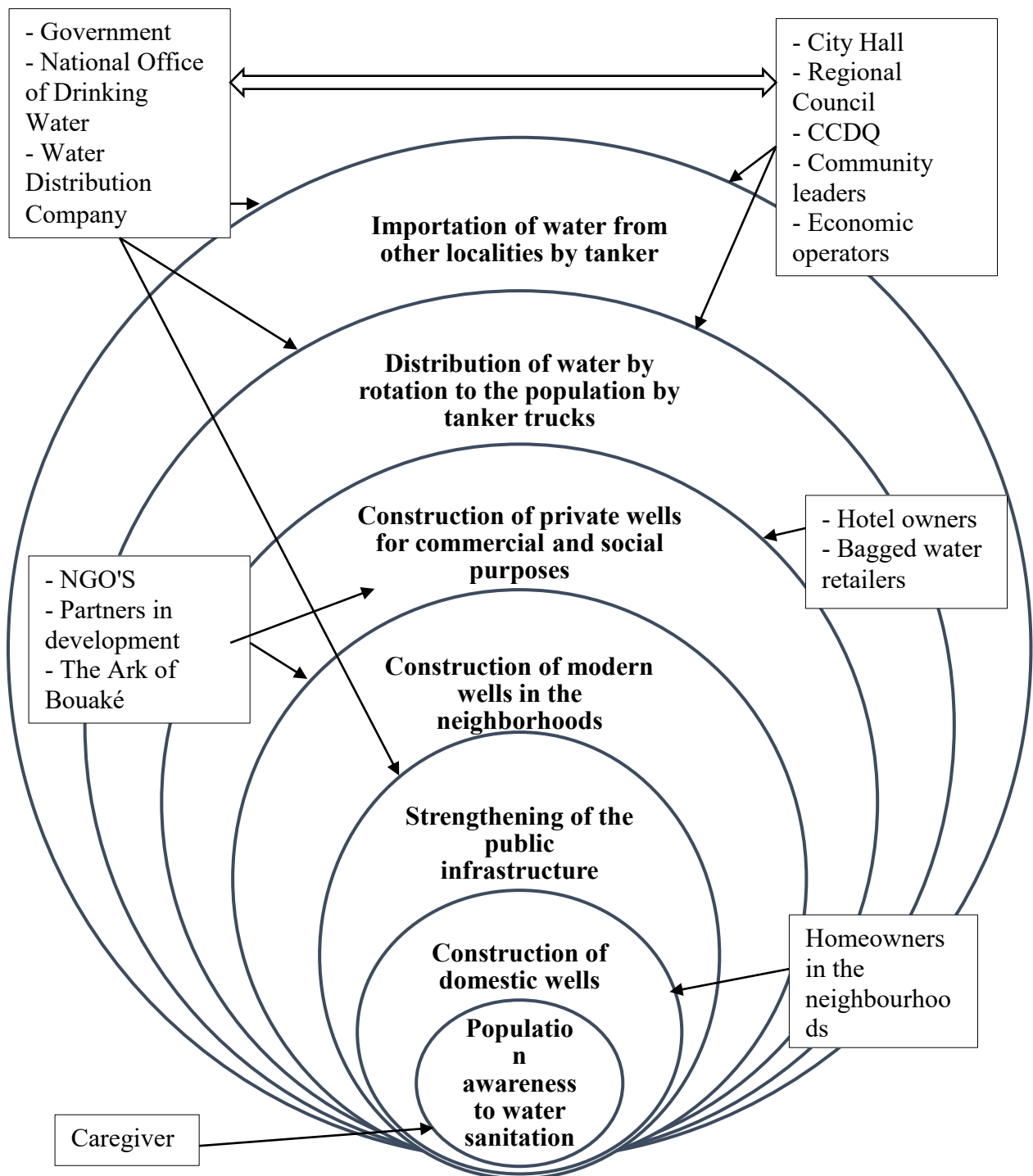


**Figure 3 :** Actors interacting against the water crisis in Bouaké

Source : ethnographic survey, 2020

Several strategies were developed and implemented by the above-mentioned actors to provide drinking water to the population during the water crisis in Bouaké. These strategies and their implementing actors are summarized in the figure Below :

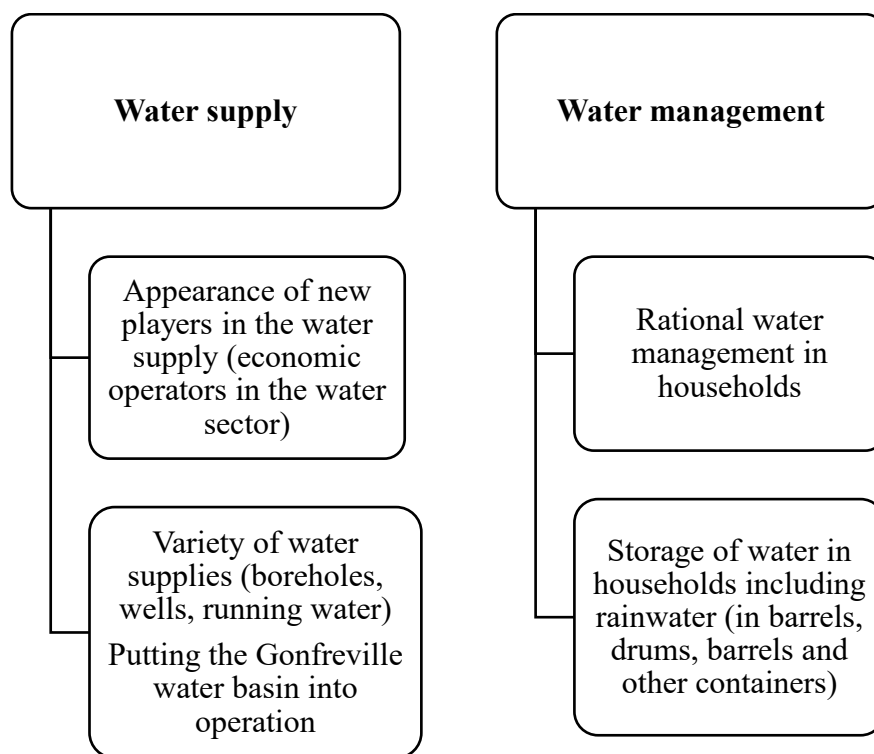
## Strategies



**Figure 4 :** Strategies implemented by actors  
Source : ethnographic survey, 2020

### Social Changes Induced by the Water Crisis

The water crisis in Bouaké has led to changes in the behavior of the population of Bouaké with respect to water supply and management. However, it should be noted that the economic activities that consume a lot of running water still have an impact on water availability.



**Figure 5 :** Social changes occurred by water crisis in Bouaké  
Source : ethnographic survey, 2020

## Discussion

The environmental phenomena, natural which integrate the problem of water, are conceptualized in the existing literature as an influence of nature on society and an influence of society on nature in the perspective of environmental sociology (Boudes, 2008) [10]. When we look at the work of Boudes and other authors such as Catton and Dunlap (1978), Woodgate (2000), Buttel (1986) and Weigert (1994), we see that one of the foundations of environmental sociology is the study of its influences on society [13, 14, 15, 16]. It will thus be interested in the natural disasters which occur and which have repercussions on the society. This is the case of floods, volcanoes, earthquakes and others. Man, in this perspective, is a victim of the manifestations of the environment, of nature. When we analyze the drinking water crisis that the city of Bouaké experienced in 2018 in the light of this approach of the sociology of the environment, it appears that it is a manifestation of nature, an influence of nature on society. This approach thus corroborates the social perception that this crisis is a perverse effect of climate change.

However, these authors do not exclude the responsibility of man in the occurrence of natural phenomena. Indeed, according to the literature, environmental sociology is the study of the influence of society on nature. The natural phenomena are thus in this perspective the consequence of human behaviors. In other words, the drinking water crisis in Bouaké in this case has social origins. This is what the results of the research show in that the crisis is perceived as the result of anthropic pressure, rapid demographic growth and urbanization, and the waste of water.

In synthesis, if we take into account this duality between environment and society, we can say that the drinking water crisis in question is the result of interactions between society and the environment.

From a theoretical perspective, the drinking water crisis in Bouaké can be seen as a tragedy of the commons. From the biologist Garrett Hardin, the theory of the tragedy of the commons, established in 1968, constitutes a structuring reference in the debates on ownership, the government of resources, and the links between economic organization and ecological sustainability. Indeed, starting with the example of a pooled pasture, Garrett Hardin holds to a thought experiment, namely that : a pasture, pooled between farmers concerned with their economic prosperity, is inescapably ruined by the mere play of their individual behaviors. Hardin thus intends to demonstrate the incompatibility between common property and resource sustainability (Locher, 2013) [17]. Otherwise, this theory is based on the idea that in the use of a common good, when individuals individually seek to gain the maximum benefit at the expense of the collective, this ineluctably leads to the ruin of the good and the loss of all. This is what Allain (2011) attests to, evoking Hardin (1968), who writes that "he drew attention to the degradation of the commons by asserting that individual freedom of exploitation was a tragedy that could only lead to the ruin of all. Water is a natural resource, a common good for the people of Bouaké, but it is subject to various uses [18, 12]. The theory of the tragedy of the commons thus gives us the opportunity to reflect on the responsibility of the actors in the advent of this water crisis. The abusive exploitation of water for economic and individual purposes, to the detriment of the collective, is a determining factor in the water crisis or tragedy in Bouaké, especially when we consider the low capacity of available water resources.

## Conclusion

This research offers a better understanding of the drinking water crisis in Bouaké. It shows that this crisis is the consequence of a combination of various natural, demographic, structural, eco-

conomic and social factors. In addition, the response to this crisis highlights several types of resilience in interaction and in force. These are institutional resilience, individual resilience, community or collective resilience, and humanitarian resilience. This multidimensional resilience based on assets such as social support, solidarity, and collective action has made it possible to develop multiform alternatives such as importing water from other localities and distributing it by tanker trucks, building boreholes for commercial or social purposes, personal community wells, and reinforcing the existing system. Furthermore, we note that the occurrence of such a crisis leads to profound changes. These changes have been observed in the supply of water with the appearance of new operators in the field of water sales, the development of a variety of sources of drinking water supply and the strengthening of the existing system. Changes are also observed in water management. We are witnessing a rationalization of water use in households and the emergence of new forms of water including rainwater, often used for specific tasks such as laundry and washing up.

However, when we consider the current context, even though these strategies implemented by actors have helped address the drinking water crisis in an emergency context, they have not been sustainable. The problem of drinking water is still present in Bouaké. There is therefore a need to develop innovative and sustainable drinking water alternatives and to initiate reinforced communication for a change in social and behavioral patterns of drinking water use.

#### **Déclarations**

##### **Ethical Approval**

Not applicable

##### **Consent to Participate**

Not applicable

##### **Consent to Publish**

Not applicable

##### **Authors Contributions**

Not applicable

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##### **Competing Interests**

The author has no relevant financial or non-financial interests to disclose.

##### **Availability of Data and Materials**

The data and material used in this research will be available on request from the author.

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