

PERCEPTION OF CLIMATIC DISTURBANCES AND ADAPTATION STRATEGIES: IMPACT OF LOCAL BELIEFS AND SOCIO-DEMOGRAPHIC FACTORS: THE CASE OF THE TERRITORY OF IKELA/TSHUAPA/D.R. CONGO

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ABSTRACT

Climate disruptions represent a major challenge for rural populations in developing countries, affecting ecosystems, economic activities and food security. This study examines the perception of these disturbances and the adaptation strategies of the inhabitants of the territory of Ikela (Democratic Republic of Congo) according to their local beliefs and socio-demographic factors. On a sample of 200 residents, the data was collected via a structured questionnaire and analysed quantitatively and qualitatively. The results show that the majority of inhabitants interpret climatic disturbances through a magical-religious and ancestral prism, with variations according to gender and level of education. Adaptation practices are mainly symbolic, with prayer being privileged, while technical alternatives remain little known or applied. These findings highlight the importance of integrating cultural and educational dimensions into local resilience strategies and open up opportunities to combine traditional knowledge and scientific approaches in climate adaptation.

Keywords: Psychology, Development, Sustainable

1.0 INTRODUCTION

Climate disruption is one of the major challenges of the twenty-first century, affecting ecosystems, economic activities and the daily lives of populations, particularly in rural areas of developing countries. In the Democratic Republic of Congo, these phenomena are reflected in changes in rainfall and agricultural patterns, compromising food security and livelihoods. The territory of Ikela, where agriculture, fishing and hunting are the main sources of income and subsistence, is a perfect illustration of the vulnerability of rural communities to climate change. People's perception of climate disruption is profoundly influenced by their social representations, belief systems and local knowledge. These cognitive frameworks guide not only the interpretation of the causes of climatic phenomena, but also the responsiveness of communities to risks (Leiserowitz, 2006; Adger et al., 2013). In addition, the adaptive capacity and strategies implemented by populations are modulated by perceived vulnerability as well as by socio-demographic characteristics such as age, sex, level of education or household structure.

In this context, this study aims to analyze how perceptions of climate disruptions influence the understanding of the origins of the phenomena, the perceived environmental and health effects, as well as the adaptation practices deployed by the inhabitants of the Ikela territory. More specifically, it is structured around two main axes: (1) examining the impact of local social representations and beliefs on the interpretation of climate disturbances, and (2) assessing the way in which perceived vulnerability and socio-demographic factors condition communities' adaptation strategies. The objective of this approach is to better understand the cognitive and sociocultural dynamics that shape the perception and adaptation of populations to climate disturbances. The expected results will contribute to the development of local resilience and risk management strategies that are scientifically informed and culturally adapted to the realities of the Ikela territory.

2.0 METHODOLOGY

To achieve the objectives of this study – to analyze the influence of social representations and local beliefs on the perception of climate disruptions, and to examine the role of perceived vulnerability and socio-demographic factors on adaptation practices – a descriptive and analytical quantitative approach was adopted. The target population includes residents living along the Ikela Forest and River, whose main economic activities expose them to climate disruptions. Quota sampling was used, based on economic activity as a selection criterion (Thiétart et al., 2014). Four categories have been selected: agriculture, fishing, hunting and other economic activities, with a quota of 50 individuals per category, for a total of 200 participants. Data collection was based on a structured questionnaire digitized via KoboCollect, with both closed and open-ended questions. Closed-ended responses were processed by frequency counting, while qualitative data from open-ended questions were analyzed by thematic content analysis. The SPSS 20 software allowed the statistical processing and exploration of the relationships between variables. Finally, participation was voluntary, with informed consent and respect for the anonymity and confidentiality of the responses.

3.0 RESULTS

a. Representations and explanations of climate disturbances

It is a question of understanding how the residents of Ikela explain the climatic disturbances. It was a question of who the population living along the Ikela territory attributes the climatic disturbances observed in this environment. The answers to this question are presented in Table 1.

Table I: Designated CP Actors (n=200)

Origins	Activities				Total
	Fishing	Hunting	Agricult	Other	
God	35 (70%)	49 (98%)	38(75%)	40 (82%)	162(81%)
Satan	15(30%)	30(60%)	13(25%)	12(24%)	70(35%)
Demons	22 (44%)	11(22%)	10(20)	21 (43%)	64 (32%)
Ancestors	2 (4%)	12(24)	24(47)	6(12%)	44 (22%)

Whites	17(34%)	9(18%)	7 (14%)	6 (12%)	39 (20%)
Wizards	4 (8%)	14(28%)	8 (16%)	2 (4%)	28 (14%)
Male	5 (10%)	15(30%)	7 (14%)	1 (2%)	28 (14%)

A reading of Table 23 reveals that the magical-religious register constitutes the dominant framework of representations relating to climatic disturbances. Indeed, eight out of ten respondents attribute these phenomena to God's action, while four out of ten respondents link them to Satan and three out of ten respondents attribute them to demons. These results reflect a strong influence of magico-religious thinking in the interpretation of climate change. Since Satan is perceived as the leader of demons, the respondents often associate them in the same dynamic of concomitant action.

Moreover, the questioning of ancestors can be explained by the fact that Ikelian society remains deeply rooted in customary traditions, where ancestral spirits play a regulating role in the cosmic and social order. Finally, the mention of the "white man" reflects a contemporary representation according to which the activities of industrialized countries are responsible for the climatic imbalances affecting the region. In short, these data highlight an interaction between traditional beliefs and modern perceptions in the popular understanding of climatic disturbances within Ikelian society.

Explanations of the gender-related causes of climate disturbances are presented in Table 2.

Table II: Explanations by Gender of Respondents (n=200)

Origin	Gender		Total
	Male	Female	
God	118 (79,7%)	44 (84,6%)	162 (81%)
Satan	57 (38,5%)	13 (25%)	70 (35%)
The man	57 (38,5%)	7 (13,5%)	64 (32%)
The ancestors	19 (12,8%)	25 (48,1%)	44 (22%)
Whites	35 (23,6%)	4 (7,7%)	39 (19,5%)
The demons	20 (13,5%)	8 (15,4%)	28 (14%)
The sorcerers	20 (13,5%)	8 (15,4%)	28 (14%)

The content of Table 24 reveals that women overwhelmingly attribute the origin of climate disruption to a divine cause: eight in ten women (80%) cite God as the main culprit, compared to seven in ten men (70%) among their male counterparts. In addition, humans are more likely to cite Satan and humans as the sources of climate disruption, with four out of ten people respectively citing each of these factors. On the other hand, women associate these phenomena more with the action of their ancestors, cited by five out of ten women.

These results suggest a gendered differentiation in the perception of the causes of climate disruptions. Women seem to be more involved in a magical-religious reading of climatic events, mobilizing spiritual or ancestral references. Men, on the other hand, more often introduce anthropocentric or demonological explanations, attributing the disturbances to entities

Explanations of the origin of climate disturbances in relation to the level of study are presented in Table 3.

Table III: Origin of climate disturbances by level of study (n=200)

Origin	Level of education				Total
	No level	Primary	Secondary	Other	
God	4(66,7%)	40(83,3%)	113(82,5%)	5(56,6%)	162(81%)
Satan	2(33,3%)	17(35,4%)	49(35,8%)	2(22,2%)	70(35,%)
The man	1(16,7%)	8(16,7%)	51(37,2%)	4(44,4%)	64(32%)
The ancestors	2(33,3%)	25(52,1%)	17(12,4%)	0(0%)	44(22%)
Whites	0(0%)	7(14,6%)	31(22,6%)	1(11,1%)	39(19,5%)
The demons	1(16,7%)	12(25%)	15(10,9%)	0(0%)	28(14%)
The sorcerers	0(0%)	13(27,1%)	15(10,9%)	0(0%)	28(14%)

The table above reveals that people with primary and secondary education are the most frequently attribute the origin of climatic disturbances to divine action. In fact, eight out of ten primary school respondents and eight secondary school respondents mention God as the main person responsible for these phenomena.

This trend suggests that educational attainment influences perceptions of the causes of climate change, with less educated individuals relying more on a religious or spiritual explanation of natural events, while those with more advanced education are more likely to adopt a more scientific or rational reading of the phenomenon.

In terms of what or what the people living along the Ikela Territory attribute the climate disruption to. The views of respondents are presented in Table 4.

Table IV: Background to Climate Disturbances (n=200)

PC Basics	Activities				Total
	Fishing	Hunting	Agricultu	Other	
Other	23(46)	22 (44%)	16 (31%)	35(71%)	96 (48%)
Old Earth	7(14%)	22(44%)	18 (35%)	9(18%)	56 (28%)
Sky	19(38%)	14(28%)	11 (22%)	4(8%)	48(24%)
Other Planet	7 (14%)	6 (12%)	8 (16%)	3 (6%)	24 (12%)

Analysis of the data in Table 26 shows that the majority of respondents attribute climate disturbances to causes other than those commonly accepted, such as the sky or the earth. Among the explanations put forward, the aging of the earth occupies the second position, while the sky is cited in third place among the elements perceived to be at the origin of the climatic disturbances observed in Ikela.

These results reflect a pluralistic and symbolic perception of environmental causes, where natural elements (earth, sky) are considered as living entities or actors of the climate imbalance. This representation testifies to the persistence of a cosmological vision of the world, in which nature is endowed with its own intentionality, directly influencing climatic phenomena.

b. Environmental Exploitation Practices and Recommended Solutions

To this end, attention is focused on the usual practices of community exploitation of the riparian forest environment and the solutions advocated by the population to deal with climatic disturbances.

To identify common environmental practices in the area, participants were asked to cite forest management practices. The answers given are shown in Table 5.

Table V: Environmental Operating Practices (n=200)

Forestry practices	Activities				Total
	Fishing	Hunting	Agriculture	Other	
Water pollution	45(90%)	45(90%)	44 (86%)	46(94)	180(90%)
Deforestation	42(84%)	47(94%)	40(78)	42(86)	171(85,5%)
Bushfire	22(44%)	43(86%)	35(69%)	41(84)	141(70,5%)
Fallow land	29(58%)	34(6%)	31 (61%)	28(57)	122 (61%)
Ember	20(40%)	35(70%)	34 (67%)	32(65)	121(60,5%)
Manufacturing Slash-and-burn culture	24(4%)	25(50)	33 (65%)	19(39)	101(50,5%)

The different environmental exploitation practices mentioned by respondents have frequencies ranging from 50.5% to 90%. Water pollution is at the top of the list, followed by deforestation and then bush fires. Fallow and ember production occupy the fourth and fifth positions respectively, while slash-and-burn agriculture is cited in last place.

However, the order of these practices varies according to the activities of the participants. Among hunters, deforestation comes first, followed by water pollution, bush fires, the manufacture of embers, fallow land and finally slash-and-burn farming. This hierarchy is also found among participants engaged in other activities. For fishermen and farmers, water pollution is the most important thing, followed by deforestation. Among the farmers, the practices then follow one another in order: bush fires, ember making, slash-and-burn cultivation and fallowing. Among the fishermen, the order is slightly different: fallow, slash-and-burn farming, bush fires and ember making.

Respondents were asked to identify the most commonly used practices among those mentioned above. The responses are set out in Table 6.

Table VI: More common practices in the community (n=200)

Environmental Practices	Activities				Total
	Fishing	Hunting	Agriculture	Other	
Deforestation	45(90%)	46(92%)	49 (96%)	47(96%)	187(93,5%)
Bushfire	43(86%)	45(90%)	42 (82%)	46(94%)	176(88%)
Slash-and-burn culture	34(68%)	34(68%)	47 (92%)	24(49%)	139(69,5%)
Fallow land	33(66%)	31(62%)	36 (71%)	30(61%)	130(65%)
Water pollution	15(30%)	14(28%)	4 (8%)	7(14%)	40(20%)
Ember	7(14%)	8 (16%)	6 (12%)	2 (2%)	23(11,5%)
Manufacturing					

Among the most widespread forestry practices in the study area, respondents place deforestation in first place, followed by bush fires. Slash-and-burn agriculture is in third place, while fallow is in fourth place. Water pollution and the manufacture of embers are cited with much lower frequencies.

This general trend is found regardless of the activity practiced by the respondents, especially among fishermen, hunters and actors engaged in other activities. However, among farmers, the hierarchy is slightly different: deforestation comes first, followed by slash-and-burn farming, bush fires and finally fallow. These results indicate that deforestation and bush fires are widely practiced by all residents of Ikela, regardless of their main activity. This reveals considerable pressure on the forest environment, reflecting the need for the local population to meet its needs through practices that are often destructive to the ecosystem.

The respondents were asked whether they were aware of alternatives to the usual practices in the study environment that have deleterious effects on the environment. The answers proposed by the subjects are recorded in Table 7.

Table VII: Knowledge of alternatives to current practices

Activities	Alternatives		Total
	Yes	Not	
Fishing	12 (24%)	38 (76%)	50
Hunting	4 (8%)	46 (92%)	50
Agriculture	0 (0%)	51 (100%)	51
Other activities	1 (2)	48 (98%)	49
Total	17 (8,5%)	183 (91,5%)	200

The data presented in the table indicate that very few participants adopt the proposed alternatives in their activities. Out of a total of 200 respondents, only 17 individuals, or one in ten respondents, say they are aware of the alternatives, while 183 participants and nine out of ten respondents do not know them.

In detail, 24% of fishermen (12 out of 50) use alternatives, compared to only 8% of hunters (4 out of 50). No farmers (0 in 51) use these alternatives, and among participants in other activities, only 2% (1 in 49) adopt them. These results suggest that the use of alternatives remains very limited across the activities studied, which could reflect a lack of awareness, access to available options, or motivation to change traditional practices. It therefore seems necessary to strengthen the promotion and dissemination of these alternatives in order to reduce the environmental impact of local activities.

The answers to the question of what solutions are recommended to combat climate disruption are presented in Table 8.

Table VIII: Solutions recommended by the population (n=200)

Solutions	Activities				Total
	Fishing	Hunting	Agriculture	Other	
Prayer	26 (52%)	45 (90%)	39 (76%)	41 (84%)	151(75,5%)
Education	16(32%)	24(48%)	19 (37%)	24(49%)	83(41,5%)
Scientific research	17 (34%)	14(28%)	16 (31%)	10(20%)	57(28,5%)

None	5 (10%)	3 (6%)	2 (4%)	1 (2%)	11 (5,5%)
Alternative	5(10%)	1 (2%)	1 (2%)	0 (0%)	7 (3,5%)

An analysis of the responses indicates that prayer is the most frequently recommended solution, cited by at least three-quarters of the participants. This is followed by public education, which is provided by about four out of ten participants, while scientific research is mentioned by two out of ten participants. These three main solutions are identified by all respondents, regardless of the type of activity carried out, particularly among hunters, farmers and participants engaged in other activities. However, the order of priority differs among fishermen, for whom scientific research is in second place, followed by public education in third place.

These results suggest that, although prayer is considered the priority solution, there is a relative interest in educational and scientific measures, reflecting a diversity of perceptions and adaptation strategies in the face of climate disruptions. The solutions recommended by sex are taken into account in Table 9.

Table IX: recommended solutions by sex (n=200)

Solution	Sex n=200		
	Male	Female	Total
Prayer	103 (69,6%)	48 (92,3%)	151(75,5%)
Education	62 (41,9%)	21 (40,4%)	83 (41,5%)
Scientific research	4 (32,4%)	9 (17,3%)	57 (28,5%)
Other solutions	9 (6,08%)	2 (3,8%)	11 (5,5%)
None	6 (4,05)	1 (1,9%)	7 (3,5%)

According to the data in Table 9, prayer appears to be the most frequently recommended solution, especially among women. In fact, nine out of ten women mention it, compared to about seven out of ten men. Population education is advocated in similar proportions for both sexes, with four out of ten women and four out of ten men citing it.

These results suggest that, although prayer is perceived as the priority solution by all respondents, its importance is more emphasized by women. Population education, on the other hand, benefits from an egalitarian consensus between men and women, reflecting a shared recognition of the importance of educational measures in the fight against climate disruption.

The question concerning the people or bodies likely to fight against climate disturbances. The proposals of the participants are set out in Table 10.

Table X: Agents likely to be involved in the fight (n=200)

Argens	Activities				Total
	Fishing	Hunting	Agriculture	Other	
Government	33(66%)	48(96%)	36 (70,6%)	43(87,8%)	151(75,5%)
Population	24(48%)	28(56%)	24 (47,1%)	31(63,3%)	102(51%)
Church	13(26%)	25(50%)	24 (47,1%)	13(26,5%)	70(35%)
Early life	17(34%)	21(42%)	14 (27,5%)	23(46,9%)	70(35%)
HOSE	13(26%)	20(40%)	12 (23,5%)	8(16,3%)	46(23%)

According to the participants, the government is perceived as the main actor expected in the fight against climate disruptions, followed by the population. In third place, tied for the future, are churches and youth, while NGOs occupy last place.

This hierarchy is generally found among hunters and farmers. However, it differs slightly among the other categories of activities. For fishermen, after the government and the population, the youth is cited in third place, while the church and NGOs come in fourth place. Among participants engaged in other activities, youth also ranks third, followed by the church, with NGOs in last place.

These observations indicate that the government and the population are generally perceived as the main actors in climate action, while the involvement of churches, youth and NGOs varies according to the type of activity carried out. This underlines the need to adapt interventions to local contexts and the specificities of different social groups.

4.0 DISCUSSION

At the beginning of this article, it was a question of analyzing how social representations and local beliefs influence the perception of the origins of climate disturbances, and of examining how perceived vulnerability and socio-demographic factors condition adaptation practices. The results of this study showed that the climatic disturbances in Ikela are apprehended through social representations dominated by magico-religious and ancestral referents, which is in line with the theory of social representations mobilized in the introduction. The strong attribution of climatic causes to God, spiritual forces, and ancestors illustrates the process by which a complex and abstract phenomenon is interpreted from socially shared symbolic frameworks. These findings are in line with the work of Boutaud (2009) and Tamidribe (2024), who show that, in many African contexts, environmental risks are embedded in religious and cosmological belief systems, rather than scientific frameworks. The variations observed by gender and level of education confirm previous analyses highlighting the role of socio-demographic factors in the structuring of environmental perceptions (Kabore, 2019).

The more frequent introduction of rational explanations among more educated individuals is consistent with the conclusions of Hwang, Kim & Jeng (2000), according to which education promotes the appropriation of scientific readings of natural phenomena, without eliminating pre-existing symbolic frameworks. In short, the integration of the cognitive paradigm allows us to deepen the analysis by showing that these representations are not only based on cultural beliefs, but also on universal cognitive mechanisms, such as availability and representativeness heuristics (Tversky & Kahneman, 1974). Respondents tend to interpret climate disturbances on the basis of significant events, recent or emotionally charged, as well as through culturally available explanatory schemes. This approach makes it possible to go beyond previous studies (Villa, 2012; Claire, 2012), often limited to a description of perceptions, highlighting the mental processes that guide causal judgments.

In connection with the second objective, the results show that adaptation practices remain weak, poorly planned and mostly symbolic, with prayer being the main response to climate disruptions. This orientation confirms the work of Adger (2007), who emphasizes that community adaptation is closely linked to social representations and cultural capital, rather than to the mere availability of scientific knowledge. The findings at Ikela are also consistent

with the analyses of Grothmann & Patt (2005) and Gifford (2011), who show that when risks are perceived as beyond human control, the adaptation strategies used tend to be non-technical and weakly sustainable. The results are also in line with studies conducted in sub-Saharan Africa (Nielsen & Reenberg, 2010; Below et al., 2012), highlighting the predominance of religious and traditional responses to climate disruptions, often associated with a weak institutionalization of local adaptation mechanisms. At Ikela, the magical-religious perceptions identified in the first hypothesis thus appear to be closely linked to the adaptive behaviors analyzed in the second, confirming the coherence between risk perceptions and implemented practices.

Overall, this study reinforces the approaches developed in the literature review by showing that climatic disturbances constitute a social fact in Ikela, the understanding and management of which are inseparable from the social representations and cognitive frameworks mentioned in the introduction.

5.0 CONCLUSION

At the end of this article, the results showed that the climatic disturbances in Ikela are mainly interpreted through magical-religious and ancestral representations, and that these perceptions are modulated by gender and level of education. Adaptation practices observed remain poorly planned and largely symbolic, with prayer being the main strategy, while technical and sustainable responses remain marginal. These results confirm that social perceptions of climate risk strongly condition adaptive behaviours and underline the need to take into account cultural and cognitive dimensions in local adaptation policies. However, some questions remain open. The study is based on declarative data and does not directly measure the actual effectiveness of adaptation practices on the ground. In addition, the influence of institutional arrangements, local public policies and NGO interventions has not been fully analysed. These limitations open up prospects for future research, which could integrate systematic behavioural observations, environmental indicators and institutional analyses, to better understand how perceptions and cognitive frameworks interact with effective adaptation practices. Particular attention could also be paid to the design of culturally sensitive adaptation strategies, combining traditional knowledge and scientific approaches.

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